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The United States MILLER

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THE SHELBY (OHIO) MILLS.

The "Shelby Mill Co." is the outgrowth of the original firm of Fish, Storer & Davis, which began business in Shelby early in 1876. This firm did a very successful business in its "Shelby Junction Mills," having a daily capacity of about 225 barrels of flour. There, under the burr system, they produced a flour not surpassed by any mill in the State, until the advent of the rolls on winter wheat. Their goods found ready sale in New York, Pennsylvania, and New Jersey, being especially noted for strength and uniformity. After the death of Baker Davis, the remaining partners continued the business under the firm name of Fish & Storer, that being the style of name from 1880 until the formation of the present company, incorporated in May, 1882, and which succeeded to the business in the following July.

The officers of the company are C. F. Fish, President, D. W. Storer, Vice-President and General Manager, and M. H. Davis, Secretary and Treasurer. These gentlemen, being fully aware of the great advancement in ideas as to the many valuable improvements in milling machinery that have been made manifest in the past few years, determined, with their characteristic energy, to push at once to the front among the advocates of better goods obtained through the medium of roller mills and scientific milling. Accordingly they made a thorough examination of the different systems, and after visiting a large number of mills, and a careful comparison of the quality of work and quantity of yield, they decided to adopt the Odell System, and entrust the planning and arranging of their mill, including the planning of the building, to Mr. U. H. Odell, milling engineer for the Stilwell & Bierce Manufacturing Co., of Dayton, Ohio. They at once procured a favorable location adjacent to their grain elevators, located on the C. C. C. & I. R'y, about a mile from their old mill, and near the business centre of the town. There, in July, 1882, they began the erection of their present imposing structure, built according to plans furnished by Mr. Odell. Work on the building was completed by October first, and it is probably the most perfect of its kind in the State, if indeed it is excelled by any mill building in the country in point of solidity and strength, and adaptation to what is required of it. Over one hundred car loads of stone and one million of brick were required in the construction of its walls. The building stands five stories high, each of which is from fourteen to sixteen feet in the clear, except the fifth story, which is eighteen feet. The main structure is about seventy feet square, and the engine and boiler room additions are together about forty by fifty feet. The smoke-stack contains nearly one hundred thousand bricks and is one hundred feet high. Power is furnished by a two hundred horse-power Harris-Corliss engine, supplied by a battery of three sixteen foot boilers, set according to plans of J. F. Randall, M. E., of Warren, Ohio.

The mill, which began making flour shortly before the first of March, last, is under the supervision of Mr. Thomas H. Sopher, with an ample corps of assistants. It is running day and night and has a daily capacity of about 400 to 450 barrels. The company makes its own barrels, and its shops and store houses are convenient to the mill. About fifty men in all are given employment by this company at its mills, elevators and cooper shops.

The first story, or basement, contains one Barnard & Leas' separator, one Morgan wheat polisher, one "Victor" brush, one wheat bin for 5,000 bushels and elevator boots, and shafting to drive rolls.

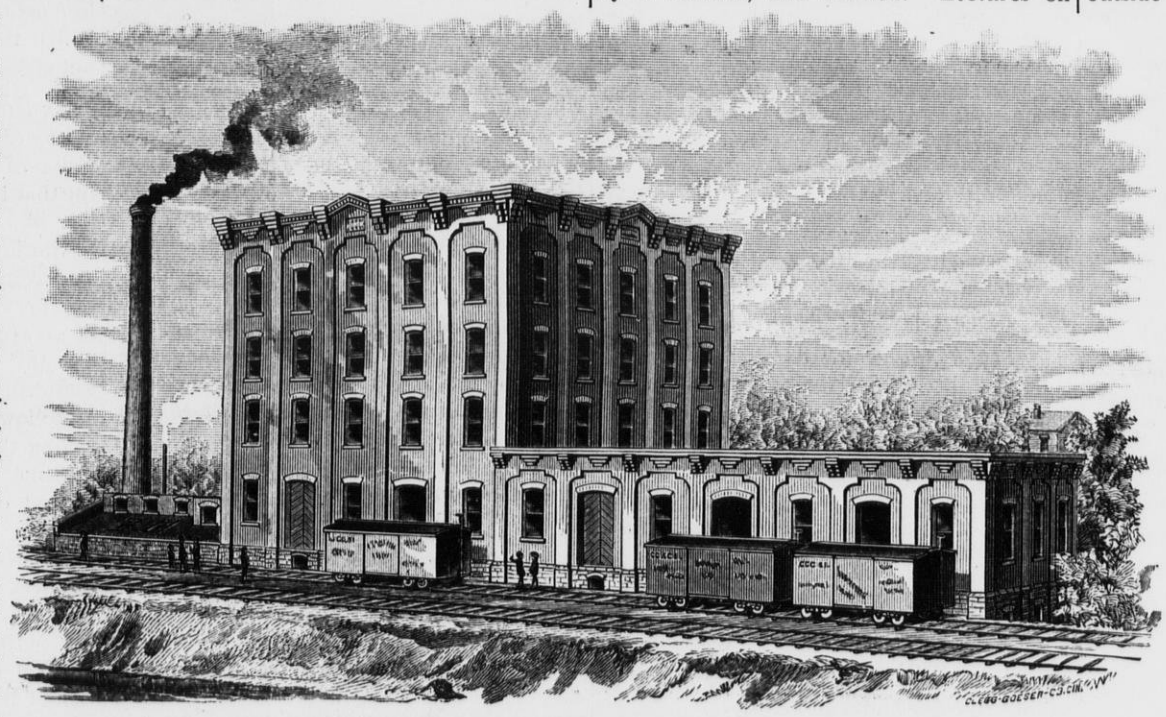
Second floor has twenty-two double sets of Odell roller mills with combined and simultaneous belt tighteners, and all the valuable adjustments peculiar to this roll, also two run of forty-two inch stone and four Matteson flour packers.

Third floor has eighteen reels, eight Geo. T. Smith purifiers, two C. N. Smith aspirators, flour bins, shafting to drive purifiers, wheat bins, bran and shorts bins.

Fourth floor same as third.

Fifth floor has four reels, two Martin centrifugal reels, three excelsior bran dusters, grading seives for grading middlings for purifiers, dust rooms, gearing to drive bolting chests and elevator heads.

All of the above machinery, except the rolls, was furnished by the Richmond City Mill Works, of Richmond, Ind., who also did the millwright work.



THE SHELBY MILLS, SHELBY, OHIO.

The mill is very perfect in all its details, and the flour is unsurpassed.

The entire contract for this work was taken by the Stilwell & Bierce Manufacturing Co., of Dayton, Ohio, and executed promptly and satisfactorily.

The mill worked satisfactorily from the start, and not a single cloth was changed.

INCIDENTS IN A PHILOSOPHER'S BOYHOOD.

Prof. Joseph Henry, one of the most eminent of American scientists, died May 13, 1878. On Thursday, the 19th of April, his memory was honored by the unveiling at Washington of a magnificent bronze statue, made by W. M. Story, and costing $15,000.

Among the interesting reminiscences of his boyhood is the story of his first pair of boots—a true story, often told by himself in later years.

When he was a boy, it was the universal custom to have boots made to order, and his grandmother, with whom he was living, indulgently allowed him to choose a style for himself. There was no great variety of styles. Indeed, the choice was limited to the question of round toes or square toes. Day after day Joseph went to the cobbler's and talked over the matter without coming to a decision, and this even after their manufacture was begun, until at last the shoemaker, fairly out of patience, took the decision into his own hands and made a most remarkable pair of boots—one boot round toed, the other square toed.

Later in life Prof. Henry often came deliberately to his decisions, with the advantage that he seldom, if ever, had occasion to abandon them.

While Joseph was a schoolboy he acquired a taste for reading in this peculiar way: One day he chased a pet rabbit through an opening in the foundation wall of the village meeting-house. While crawling about among dirt and rubbish a gleam of light enticed him through the broken floor, and he found himself in a room containing the open book-case of the town library. The title of one of the books struck his fancy and he took it down It was Brooks' "Fool of Quality," and he read, again and again coming through the hole in the floor, until access by the door was finally granted him. From this first book that he ever read with a relish, he passed on eagerly to other works of fiction in that library.

A few years later, in a way almost equally accidental, his mind was turned to an entirely different class of reading.

Confined at home by a temporary illness, he took up a book casually left on the table by a boarder, and entitled: "Lectures on Experimental Philosophy, Astronomy, and Chemistry, intended chiefly for the Use of Young Persons. By G. Gregory." It began with a few questions: "You throw a stone, or shoot an arrow into the air; why does it not go forward in the line or direction that you give it? . . . . Why does flame or smoke always mount upward, though no force is used to send them in that direction? And why should not the flame of a candle drop toward the floor when you reverse it or hold it downward? . . . Again, you look into a clear well of water and see your own face and figure, as if painted there. Why is this? You are told that it is done by the reflection of light? But what is the reflection of light?"

The trifling incident of taking up this book may be said to have turned the whole course of this lad's life.

After his death this book was found in Professor Henry's library with the following entry upon the fly-leaf, written in his own hand: "This book, although by no means a profound work, has, under Providence, exerted a remarkable influence upon my life. It accidentally fell into my hands when I was about sixteen years old, and was the first work I ever read with attention. It opened to me a new world of thought and enjoyment; invested things before almost unnoticed with the highest interest; fixed my mind on the study of nature, and caused me to resolve at the time of reading it, that I would immediately commence to devote my life to the acquisition of knowledge."

Many young men quit school at sixteen years of age. They should take a lesson from Joseph Henry, and regard education as not completed, but just begun.—*C. P. Osborne in the Scientific American.*

THE WISCONSIN LEGISLATURE AND GRAIN GAMBLING.

The Legislature did an unwise thing in modifying the law relating to contracts for future delivery. The courts have in this and other States treated many of these transactions in grain speculation, where millions of bushels of grain or other merchandise have been nominally bought and sold, in many times the quantity capable of delivery, as merely in intent, or in fact, a wager upon the future price; the buyer paying the difference if the price rose, the seller paying the difference if it had fallen at the time of delivery below the stipulated price. The courts have looked through the forms of these contracts to their actual purpose and intent, and have gone outside the mere terms of the agreements and admittted extrinsic evidence to show the real nature of the transaction. The decisions created a great murmuring among the men who profit by this kind of dealing, and they have wrestled with the judiciary in vain to have the system of speculation which enriched them legalized. But as the course of judicial decisions settled the law against them, and would not consider this speculation in "futures" as legal, but as simply a form of gambling, they have had recourse to the legislature; and the act which has passed and become a law is so framed as to undo all the courts have done in breaking up the system of gambling, more tempting to dishonesty, more alluring than the faro bank, or any or every form of gambling with cards or dice. Nearly all the defalcations and embezzlements chronicled by the tell-tale press—and every day brings its instances—are the results of speculation or gambling in stocks or grain or cotton. Fame and fortune and honor are daily wrecked. Bankers, trustees, cashiers, officials are lured into this fascinating speculation, oftener than otherwise to find that they have not gained but lost—lost their money, the money of others confided to them, their honor and all their standing among men. The Legislature made a grave mistake in so changing the law as to encourage this gigantic system of gambling, and take away the beneficial restraints the court were interposing to shield the foolish from the sharper and to deter men from ruin.—*Madison Democrat.*

A DINNER THAT WILL BE SERVED FOR SEVENTEEN UNTIL SIXTEEN DIE.—A novel banquet took place at the Hotel Bellevue. It was the third annual dinner of the Last Man's Club, formed three years ago. It has seventeen members. Each member must attend the dinner annually. Death, serious illness or separation by great distance alone excuses. At every dinner a place is kept for each absent member, whether living or dead, and dishes and wine are served opposite their empty chairs, the same as if they were present. A curious and elegant tankard of beaten silver, filled with wine, is passed around the table and quaffed by each one present until emptied. As each member dies his name will be engraved on the tankard until finally the last man, surrounded by the overflowing plates, the full glasses and the empty chairs, will drink to their memory alone. Then the dinners will cease and the tankard will become the last man's property.

Stilwell & Bierce Mfg. Co., have orders for Odell rolls for the mills of Frederick Doehler, Village Creek, Iowa.

UNITED STATES MILLER.

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MILWAUKEE, MAY, 1883.

ANOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & CO., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞ *The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

ATTENTION FLOUR MILL OWNERS.

We desire all flour-mill owners to write to us, giving us their correct address, with post-office, county and state. Please state also capacity of mill in barrels per day of 24 hours, what kind of power is used, and whether stones or rollers or both stones and rollers are used. Your compliance with above request will confer a benefit not only on us and the mill-furnishers and flour dealers, but on yourself. Address as early as convenient,

E. HARRISON CAWKER,
Pub. of Cawker's American Flour Mill Directory,
116 & 118 Grand Ave.,
Milwaukee, Wis.

MILLERS' NATIONAL ASSOCIATION.

The Millers' National Association will hold their annual convention at the Grand Pacific Hotel, in Chicago, June 26, 1883. President George Bain will have returned from his European trip by that time and will be on hand to greet the members. We hope that the attendance will be large. Matters of great importance to all millers will be discussed and acted upon. All members of the Association are expected to be present, and millers who are not members will do well to be on hand and become members. The terms of admission are very liberal. Let there be a regular old fashioned, rousing convention.

ANOTHER EVENT FOR THE SOUTH.

Augusta, Ga., is to have a full fledged 300 barrel gradual reduction mill. Miller & Co., proprietors. These gentlemen are among the foremost of the millers of the South and have given much study to the investigation of the different machines and systems now claiming the attention of millers. When they announced their purpose of changing over to a roller system they were regarded as of so much importance by the mill furnishers that the most of the large houses sent their representatives down to Augusta at once to secure their order. The contract was, however, accorded to the Case Mfg. Co., Columbus, O., who, by the way, did not send their man in person, but it was awarded to them by correspondence, giving evidence of the faith Messrs. Miller & Co. had in their line of machines and the Case firm.

CALIFORNIA FLOURING TRADE.

Though early dependent on foreign countries for her supplies of breadstuffs, and importing liberally from both North and South America, California has long since become one of the granaries of the earth. She raised enough wheat in 1880 to feed a population eight or nine times her size. The fertile valleys of the interior and the sea coast are practically inexhaustible, and will in days to come form another Egypt. They can supply with breadstuffs a population double that of all English speaking North America. It will be thus seen that flouring in California is but an infantile industry, no matter how comparatively gigantic it may appear to have grown to-day. That it is bound to be great and overshadowing, who can doubt. There are numerous markets all over the world to which our breadstuffs can be shipped, that do not possess the milling facilities that we do, and to these it will be necessary to send flour instead of wheat. The following table gives the total of exports of flour since we became exporters:

EXPORTS OF FLOUR:

Year.	FLOUR—Bbls.	FLOUR—Value.
1854	58,115	$ 523,035
1855	115,716	925,628
1856	77,260	588,080
1857	9,005	90,050
1858	16,330	177,630
1859	24,274	164,282
1860	114,936	590,763
1861	170,563	894,462
1862	105,242	654,412
1863	163,783	846,958
1864	122,462	843,546
1865	150,910	713,721
1866	310,321	1,816,790
1867	274,462	1,595,649
1868	340,766	2,291,734
1869	403,116	1,968,134
1870	239,735	1,204,066
1871	233,591	1,529,500
1872	248,172	1,315,000
1873	444,465	2,744,859
1874	493,901	2,765,180
1875	483,944	2,466,168
1876	470,359	2,436,543
1877	434,129	2,567,493
1878	498,726	2,612,777
1879	510,948	2,573,690
1880	548,761	2,727,647
1881	791,232	3,555,939
1882	966,492	4,845,296

During the present year the figures have been as follows:

	Bbls.	Value.
January	117,198	$561,432 25
February	74,540	392,543 00
March	105,878	566,985 00
Total, first three months	297,616	$1,521,010 25

We have thus made a very good beginning. If the rest of the year is as this we would ship nearly a million and a quarter barrels of flour.

The following table of shipments in 1882 will make the destination of our exports better understood:

Countries.	Bbls.	Value.
England	390,617	$1,977,680
China	233,517	1,137,580
Ireland	141,232	714,320
Central America	87,645	457,205
Hawaiian Islands	27,356	139,755
Australia	23,134	101,908
Panama	15,932	82,115
Japan	10,382	53,981
Tahiti	9,576	49,964
Asiatic Russia	5,543	26,699
Saigon	5,500	23,775
British Columbia	4,795	22,781
Africa	4,500	22,560
Mexico	2,260	11,734
Belgium	2,000	10,000
United States of Columbia	1,037	5,202
Peru	463	2,347
Apia	333	1,932
Phillipine Islands	225	1,337
New York	202	1,022
Brazil	73	420
New Zealand	50	264
Mangareva	50	265
Fiji	42	267
Botham Island	14	94
Java	9	50
Sydney Island	5	50
Total	966,492	$3,845,296

—San Francisco Journal of Commerce.

FLOUR AND GRAIN TRADE NOTES.

Dunlop Bros., of Glasgow, Scotland, write under date of April 18, as follows:

Business has been quiet throughout the week; but there is a better feeling in the trade, and some transactions have been effected at the low range of prices now current. Supplies of flour continue heavy, while moderate of wheat, maize and other articles.

To-day's market was rather thinly attended. Tone steadier all round; and wheat and flour are fairly firm at late rates, with more enquiry. Maize also is in improved demand, and 3d. per boll dearer since last Wednesday. Barley, oats and beans firm, but unaltered in value. Weather mild and damp.

Harris Bros. & Co., of London, under date of April 12, write as follows:

We have cold, frosty nights, with hot sun by day, and the growing wheat crops are not well spoken of, and much want warm rains; we have had a very fine spring seed-time, never better, and nice rains would soon bring away a splendid braird of oats, barley, &c. We have had only moderate supplies from our own farmers, but foreign arrivals have been ample since our last, with plenty more of everything close at hand and following on, now that Odessa and Nicolaief are open, as well as all Danube ports, and the Sea of Azoff. Wheat, since our last, has lost value, though there has been a very fair demand generally; the chief decline has been in C. F. & I. things, nice Ghirka off coast down to 41s. 6d., red winter to 43s., No. 1 Californian to about 44s. 6d., and other sorts in proportion; the trade in the near future seems to depend a good deal on the weather, and the ability of weaker holders to finance their cargoes as they come along. Flour quiet, and stocks do not decrease as fast as we should like to see them; we find a fair trade for good strong sorts day by day, but anything not quite up to the mark hangs fire. Maize is steady in all positions, the dry weather helping the article. The same remark applies to barley, which is not very plentifully offered "forward." Oats are very firm the last few days, and some sorts show an advance. Beans are cheaper, new Saida having been sold for London, April-May B. L., at 32s. C. F. & I. white peas quite steady, but not much doing. No millet on the market, but dari arrives in small lots, and sells at about late rates. Lentils are again cheaper to sell.

Kufeke's circular of April 18, reads as follows:

The weather is still rather cold for the season and in the absence of warm showers vegetation makes very little progress indeed. Farmers' deliveries of wheat continue on a liberal scale, namely, 221,000 qrs. at the average price of 42s 1d against 45s 11d same time last year.

Stimulated by somewhat unfavorable reports of the prospects of the winter wheat crop in America, our market has become rather firmer, during the last few days. A further downward movement in the value of flour, is therefore now stopped, and though sellers have not been able to obtain any advance in price, a fair amount of business in all descriptions of flour has been transacted.

Prices of foreign flour are certainly very moderate and relatively lower than wheat.

An improved demand for wheat has been experienced during the week, and sellers have been able to realize 1d per cental advance on last week's quotations.

BOOK NOTICES.

LITTELL'S LIVING AGE. The numbers of *The Living Age* for April 14th and 21st contains A Few Words About the Eighteenth Century, *Nineteenth Century;* Miss Burney's Own Story, and The Enchanted Lake, *Contemporary;* Jonathan Swift, *Blackwood;* Scenes during the Winter of 1794-5, *Temple Bar;* Queen Victoria as Goddess. Startling Poetry, The Conditions of "The Grand Style," Sir George Jessel, and Socialism and Anarchism at Geneva, *Spectator;* and in the line af fiction "Under the Snow," "The Three Strangers," and "The Wizard's Son," with the usual quantity of poetry,

The number for April 7th begins a new volume.

A new volume began with the first number of January. For fifty-two numbers of sixty-four large pages each (or more than 3,300 pages a year) the subscription price ($8) is low; while for $10.50 the publishers offer to send any one of the American $4.00 monthlies or weeklies with *The Living Age* for a year, both postpaid. Littell & Co, Boston, are the publishers.

A FAVORITE PAPER. Por judicious editing, select and popular contributors, and sprightly and entertaining reading, the *Youth's Companion*, of Boston, has no superior among the youth's publications. It has more than two hundred thousand subscribers, and unquestionably merits its success. A Special Correspondent—the well-known author Mrs. A. H. Leonowens, has been sent to Russia by the *Youth's Companion*, and will soon contribute a striking series of articles on "Life in the Out-of-the-way Nooks and Corners of Russia"

"THE 'CORNER' COMMITTEE ON CORNERS."

The "Corner" Committee of the Legislature have made their report, in which they divide corners into "accidental corners," resulting from fires, floods, or other operations of nature, which they say, do no great harm, are temporary in their nature, and at any rate cannot be prevented, and "protective corners," which are made by persons who sell without intending to deliver unless the value falls below the price at which they have sold. What the Committee think of "protective corners," as regards their effect on the public, does not clearly appear, but it seems as if they had a low opinion of those who make them.

On "futures" the Committee are, on the whole, inclined to look with a lenient eye, and do not see their way to compelling merchants by law to deliver everything they sell, and to acquire possession of it before they sell it. In fact, they have discovered, after careful inquiry—

"that the system of buying and selling for future delivery, to use the words of a witness, 'is the invention of a great necessity, and has answered the needs so well and has helped to build up interior towns and large cities and mercantile exchanges so rapidly, that it is universally recognized as part of our great and growing commercial development.'

"But it has been urged that sales for future delivery cause violent fluctuations in values greater than those which occurred prior to their general introduction into commercial trading. This statement has not been substantiated, however. Indeed, the evidence tends to show that the effect is, to some extent, quite the reverse."

The Committee also examined the question whether, supposing "futures" to be on the whole useful or indispensable to commerce, there was not "gambling" in them. They were compelled to admit that there was occasionally, among the "young and inexperienced," who will over-trade and operate on margins and what not. The Committee is not, however, prepared to prohibit futures in order to stop gambling. Of the system of "puts" and "calls," as carried on in "bucket-shops" and such places, the report speaks in terms of crushing severity. It adds, however, that the existing laws, if enforced, would break up the bucket-shops and punish the operator in puts and calls, and it asks, therefore, with much solemnity, conceding it to be "true that the operation of this system is attended with some objectionable features, would it be wise to abrogate or legislate out of existence the whole credit system because to the abuse of it can be traced in a large measure the failures and misfortunes which so often overtake merchants and commercial institutions? Shall our code or legal ethics present this paradox, that merchandise may be sold and delivered to the purchaser upon the promise of future payment, and at the same time deny the right to sell merchandise for future delivery with payment to be made upon delivery? Should it not be the end and aim of legislation in this state to attract and encourage every influence and element that will establish and perpetuate the commercial interests of her commercial metropolis!"

We answer unhesitatingly that to abrogate or legislate out of existence our whole credit system, in order to put down bucket-shops, would be a very unwise step, and we thank the Committee on behalf of the commercial world for throwing the weight of their influence against it.

While greatly admiring the whole report, which we think is the most important that has appeared in any commercial community since that of the Bullion Committee, what we like best in it is the recommendations. The first is that a tax should be levied on all sales for future delivery, to be collected at the time of settlement if no delivery takes place. There is to be no tax, however, on purchase for future delivery, which is just as wicked as sale, and the Committee fails to point out how the tax is to be collected at the time of settlement. Settlement in such cases consists in handing over a check for the difference or in crediting or charging somebody in a current account. Would the Committee have all such settlements made before a notary public or the sheriff? Was such a tax ever collected anywhere, or, in fact, proposed? Would it not be about as fruitful as a tax on sneezing in all cases where a person sneezes more than once at a time?

The Committee has got now to the point reached by the Illinois Legislature after ten years' experience of an attempt to put down futures and corners by law—that is, to the point of admitting that such attempts are idle, and ought not to be made by a commercial community. All excess in a thing which is harmless or useful in moderation is apt to be beyond the reach of law, and is pretty sure to be self-curing, if curable at all. No penalties of corners, or overtrading, or speculation which the wisdom of legislatures can devise, are half so effective as those which result naturally from the practice itself to those engaged in it. The reason why commercial gambling, in fact, is so much reprobated by the world generally is that those who engage in it usually come to grief, and lose everything they possess—a punishment which the law would not decree and could not enforce.—*The Nation.*

AN IMPORTANT PATENT DECISION.—The Secretary of the Interior has confirmed the decision of the Commissioner of Patents, holding that he has authority to institute proceedings like those in interference cases, to obtain testimony upon which to determine whether an invention has been in public use or on sale for two years, or more prior to the filing of an application for a patent therefor. Under this decision, a new practice will be established in the Patent-Office, substantially as follows: Where a petition is presented asking that an investigation be made to determine whether an invention which is the subject of an application for a patent has been in public use for two years, the Commissioner will direct the Examiner of Interferences to fix a time for taking testimony by the petitioner to show the facts alleged in the petition, giving thirty days for the production of such testimony. At the expiration of that time, the inventor or his assignee may produce testimony to show that the facts alleged are not true. The testimony will be returned to the Patent-office and considered in the same manner as testimony taken in interference cases.

A NEW method of manufacturing belts or bands for machinery, which comes from Paris, is applicable to rubber, woven tissues of guttapercha, and consists in making the belt in longitudinal ribs or grooves, the main object of which is to increase the capacity of the belt on the same cross section, say twelve inches, by the extra strength put in the same space, and also to prevent so much stretching and variation. Another modification of the same invention is grooving one side of the belt the same as saw teeth, then putting these two pieces together, leaving a plain bearing surface for contact besides, thus making a double belt, which is less liable to stretch or to warp. Especial machinery is built for the purpose, and the claim for it is that better contact is given. The pores are closed during this grooving process, the belts have a higher resisting power, and do not twist on the pulleys. The grooves may be regular, irregular, spiral, or crossed.

AN OLD STORAGE BATTERY PATENT.—Electricians are interested at present in the discovery in the Patent Office of a patent issued February 6, 1861, to C. Kirchof, a New Yorker, for an electric battery which presents all the features of the storage batteries in use at the present day—lead plates immersed in acidulated water, which becomes coated with the oxide of lead. The principle appears to be the same as that of the Plante (French) storage battery, and the storage batteries now in market must hereafter rely upon peculiarities of construction instead of comprehensive claims.

[Compiled for the UNITED STATES MILLER]

THE HISTORY AND THEORY OF BREAD MAKING.

Pliny informs us that barley was the only species of corn at first used for food; and even after the method of reducing it to flour had been discovered, it was long before mankind learned the art of converting it into cakes.

Ovens were first invented in the East. Their construction was understood by the Jews, the Greeks, and the Asiatics, among whom baking was practised as a distinct profession. In this art the Capadocians, Lydians and Phœnicians are said to have particularly excelled. It was not till about 580 years after the foundation of Rome that these artisans passed into Europe. The Roman armies on their return from Macedonia, brought Grecian bakers with them into Italy. As these bakers had hand-mills beside their ovens, they still continued to be called "*pistores*" from the ancient practice of bruising the corn in a mortar; and their bake-houses were denominated *pistoriæ*. In the time of Augustus there were no fewer than329 public bake-houses in Rome, almost the whole of which were in the hands of Greeks, who long continued the only persons in that city acquainted with the art of baking good bread.

In nothing, perhaps, is the wise and cautious policy of the Roman government more remarkably displayed than in the regulations which it imposed on the bakers within the city. To the foreign bakers who came to Rome with the army from Macedonia, a number of freedmen were associated, formed together an incorporation from which neither they nor their children could separate, and of which even those who married the daughters of bakers were obliged to become members. To this incorporation were entrusted all the mills, utensils, slaves, animals, everything, in short, which belonged to the former bake-houses. In addition to these, they received a considerable portion of land; and nothing was withheld which could assist them in pursuing, to the best advantage, their highly prized labors and trade. The practice of condemning criminals and slaves, for petty offences, to work in the bakehouse, was still continued, and even the judges of Africa were bound to send thither, every five years, such persons as had incurred that kind of chastisement. The bakehouses were distributed throughout the fourteen divisions of the city, and no baker could pass from one into another without special permission. The public granaries were committed to their care; they paid nothing for the corn employed in baking bread that was to be given in largess to the citizens; and the price of the rest was regulated by the magistrates. No corn was given out of these granaries except for the bake-houses, and for the private use of the prince. The bakers had besides private granaries, in which they deposited the grain which they had taken from the public granaries, for immediate use; and if any of them happened to be convicted of having diverted any portion of the grain to another purpose, he was condemned to a ruinous fine of five hundred pounds weight of gold.

Most of these regulations were soon introduced among the Gauls; but it was long before they found their way into the more northern countries of Europe. Borrichius informs us that in Sweden and Norway, the only bread known, so late as the middle of the 16th century, was unleavened cakes kneaded by the women. At what period the art of baking became a separate profession in England, we are not able to to ascertain; but this profession is now common to all the countries in Europe and America, and the process of baking is also nearly the same.

For the fermentation of bread, a certain degree of fermentation, not unlike vinous fermentation is requisite, care being taken to avoid acetous fermentation,which renders the bread sour and disagreeable. If dough be left to itself, in a moderately warm place (between 80° and 120°) fermentation comes on. When this is rapid, it is acetous; so that to effect that kind of fermentation of the best bread, a ferment is added, which is either leaven (dough already in a fermenting state) or yeast. Of these ferments, leaven is slow and uncertain, yeast is more effective; and when clean and good, it rapidly induces panary fermentation, but it is often bitter, and sometimes has a disagreeable taste.

All, then, that is essential to make a loaf of bread, is dough to which a certain quantity of yeast has been added. This mixture is put into any convenient mould or form, or shaped into a mass; and after having been kept for a short time in a rather warm place, so that fermentation may have begun, it is subjected to the process of baking in a proper oven. Carbonic acid is generated, and the viscidity or texture of the dough preventing the immediate escape of that gas the whole mass is puffed up by it, and a light, porous bread is the result. Along with the carbonic acid traces of alcohol are produced, but so insignificant as not to be worth notice; hence the attempts to collect it upon a larger scale have entirely failed in an economical point of view. Other flour besides that of wheat will, under similar circumstances, undergo panary fermentation, but the result is a heavy, unpalatable, and often indigestible bread, so that the addition of a certain quantity of wheat flour is almost always made. It is the gluten in wheat which thus peculiarly fits it for the manufacture of bread, chiefly in consequence of the tough and elastic viscidity which it confers upon the dough.

If we compare the baked loaf with the flour of which it is composed, we shall find that panary fermentation has produced considerable change in the latter. The gluten and the starch, which (exclusive of a little sugar) were the principal components of the flour have mutually acted upon and partially altered each other; the toughness and viscidity of the gluten is gone and the starch no longer forms a gelatinous mixture with hot water, a little sugar is generally formed as well as alcohol, but the principal cause of the change is the evolution of carbonic acid and of oxygen in the form of carbonic acid, the production of which is independent of the presence of external oxygen (or of air).

Instead of deriving the carbonic acid (which gives lightness and porosity to the bread) from fermentation, it has been proposed to substitute less indirect processes for its introduction into the dough. Thus, instead of adding salt to the mixture of flour and water, hydrochloric acid and carbonate of soda, in such exact proportions as to form common salt (chloride of sodium), have been used; in this case the evolved carbonic acid is received in the dough, causing it to rise to the same extent as by fermentation, and good palatable bread may be thus made; but it is very difficult to obtain it free from small doughy lumps, and the commercial hydrochloric acid often contains traces of arsenic.

(For THE UNITED STATES MILLER.)

TO ASCERTAIN THE ACTUAL VALUE OF WHEAT FLOUR.

The methods, below stated, of ascertaining the actual value of any sample of flour as an article of food, though not strictly accurate, approximate sufficiently to the truth for all practical purposes, and are well adopted to the wants of the manufacturer and large purchaser.

The value of wheat flour as a food depends upon the quantity of gluten, sugar, starch and phosphate of lime, which it contains; and its superiority over the flour of the grains of the other cereals is because it contains a larger proportion of the first and last of these substances than they do. The approximate quantitative analysis of flour is very simple, and may be easily made by persons unacquainted with chemistry, by attending to the following instructions:

a. Make 1,000 grains of the sample into a dough with a little water, let it rest an hour and then gently knead in successive waters, until the starchy particles are perfectly removed. Collect the portion (*gluten*) left in the hand, drain off the water, place it on a piece of filtering or blotting paper, several times doubled, and set it aside.

b. Mix the several waters employed in the preceeding process and set them aside in a tall vessel, to deposit the suspended portion (*starch*). After a sufficient time pour off the clear liquid, and throw the whole of the sediment on a weighed paper filter placed in a funnel, being careful to remove the portion adhering to the bottom of the vessel by means of a little clean water, that none may be lost.

c. Evaporate the decanted liquid, as well as what runs from the filter, until it becomes curdy, then filter it through a piece of weighed blotting paper, and preserve the sediment (*albumen*); next evaporate the residuum to the consistence of a syrup, agitate it with ten times its weight of alcohol, and filter, being careful to wash the paper filter clean with a little alcohol after the solution has passed through it. The substance on the paper is *phosphate of lime* and *gum*, and must be set aside. By subsequent digestion in water, filtration, and evaporation, the two may be obtained separately.

d. Evaporate or distil off the spirit from the solution and washings, as above; the residuum is *sugar*.

e. Dry the substances educed as above, by a gentle heat, and weigh them. The weight of the albumen may be taken with that of the gluten, as it possesses about the same nutritive value, and also because it has been asserted that the former substance is in reality gluten, and not albumen. By dividing the given weights by 10, the percentage value of the sample is obtained. The pieces of filtering papers employed should be carefully dried and weighed before using them, and the same degree of heat should be employed for this purpose as that to which they will be afterwards exposed in the drying of the substances resulting from the operations.

APHORISMS FROM THE QUARTERS.

(From the Century Bric a-Brac,)

Your luck aint always ekul to de lenk o' your fishin pole.

Grass don't grow high roun' de corn-crib.

De man aint put togedder right dat don't lub his own dorg.

It takes a hones' miller to keep lean shotes.

Don't kill de old goose in sight o' de fedder-bed.

De full moon is a po' han' to keep secrets.

Old hen got 'nough l'arnin' to tell her own chillun in de dark. J. A. MACON.

TWO OR THREE NEW ONES.

It was only two or three years ago that the owner of a grist mill on a creek in New Hampshire, having a capacity of about 15 barrels per day, entered the mill one morning, and said to his son,

"John, I've been thinking."

"Yes, dad."

"Flour is too low."

"She is that."

"We are all grinding too much."

"We are."

"If we grind less flour the market will stiffen up and prices will advance."

"That's it, dad; your head is as long as a mill race."

The mill was shut down for four months, and at the end of that time flour was just as plentiful and the price was no higher.

"John, I've been thinking," said the old man, as he concluded to start up again."

"Of how we missed it?"

"Exactly; you see my idea of shutting down was all correct and calculated to lessen the supply and increase the demand, and I couldn't think what in Halifax was the matter. I've got her now."

"What?"

"Why, jist about the time we shet down they must have started up two or three new six-barrel mills over in Varmount, and hence the market continued overstocked."

THE ADVANTAGES OF TECHNICAL SCHOOLS.—The *United States Economist* opines that the active interest now being taken in England in developing technical education, must have an important bearing upon the future of manufactures elsewhere. This is a subject which should commend itself strongly to the attention and support of our people, because it will not do to be late in taking advantage of the leading element in the great problem of superiority in the higher branches of manufacturing industries. The practical education of the young in all the details that enter into the manipulation of raw materials must be of the greatest service, as it will develop a class of thoroughly trained experts, and lead to new and novel methods of treatment in the processes of manufacture. As wealth increases there will be a growing demand for new artistic productions, and of a class where excellence will be the controlling question, as far as price and fashion are concerned. For this reason no pains should be spared in providing technical schools in every section of our country, so as to popularize the study of a most useful and necessary science—for such it really is—and which is, at the same time, both practical and useful. Technical schools undoubtedly develop a fondness for the manipulation of the various raw materials coming under attention, and this must lead to a feeling of content among those who finally, from choice, choose to earn a livelihood amid the clashing machinery of the mill. The question of fixity of labor, combined with educated skill in the use of materials, is one of great interest to American manufacturers. In England, the development of this system of education appears to have been rapid of late, and will, unquestionably, make great progress in the future. Anything that tends to raise the standard of manufactures at this time has a special value, for the reason that the best products command the best prices; being in increasing demand, and to secure fine manufactures, it is necessary to have skilled operatives of the best class.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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Bills for advertising will be sent monthly, unless otherwise agreed upon,

For estimates for advertising, address the UNITED STATES MILLER.

[Entered at the Post Office at Milwaukee, Wis., as second class matter.]

MILWAUKEE, MAY, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California 209; Colorado, 52: Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 404; Wisconsin, 780; Wyoming, 3;. Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

JUST A WORD, PLEASE.

Our April number concluded the seventh year of the existence of the UNITED STATES MILLER. We issue this first number of our eighth year with feelings of satisfaction at the progress we have made. It is not our way to brag a great deal; but it really makes us feel considerable pride when we compare the little sheet we issued in May, 1876, with our present one.

KANSAS millers are about to organize a mutual insurance company.

MESSRS. BIRGE & SMITH, Millwrights and Mill-builders of Milwaukee, report business good this Spring. They are crowded with orders.

WE were pleased to receive a friendly call April 20, from Mr. H. T. Vandercook, representing the Geo. T. Smith Middlings Purifier Co., at Jackson, Mich.

THE railroads in India have reduced their freight charges on wheat from the interior, and it is thought probable that it will stimuate wheat exports to a considerable extent.

WE recently had a pleasant call from H. W. Lyman of the firm of H. W. Lyman & Co. of Port Washington, Wis. This firm is doing a very extensive business in malleable iron casting, etc.

MR. J. E. Loomis, of St. Louis, representing the firm of Edw. P. Allis & Co., called on us March 30. Mr. Loomis reports the mill-furnishing trade to be fairly good in Missouri, although milling is dull just now.

SOME writers question the constitutionality of the tariff bill lately passed by Congress. It appears to be, however, a matter of great difficulty to get the question of constitutionality before the United States Supreme Court for decision.

WE have received from Mr. James Barker, General Passenger Agent of the Wisconsin Central Railroad a handsome little book issued by his Company entitled "The Apostle Islands and Lake Superior." It is beautifully printed, finely illustrated, and the descriptive matter is so good that when one has finished reading it he feels like packing up his gun and fishing tackle and starting away at once for that delightful section of the country penetrated by the Wisconsin Central Railroad. So far as we are personally concerned, we give fair warning to the fish that we are coming for them fully armed and equipped with the best fishing tackle we can borrow.

WE have recently received from the John T. Noye Manufacturing Co., of Buffalo, N. Y., a copy of their handsome new catalogue, for 1883. It is "a daisy," indeed, so to speak. It is well compiled, thoroughly illustrated and elegantly printed. Millers will do well to write for one at the earliest date.

THE great case of Downton vs. The Yaeger Milling Co. for infringement of plaintiff's patent on roller mill and process patents came up before the United States Supreme Court at Washington, and the arguments were all concluded April 17th. No decision has been rendered yet, and there will probably not be for some time to come. The case is one of great importance and a final decision is anxiously awaited.

THE National Exposition of Railway Appliances, to be held in Chicago from May 24 to June 23, promises to be a notable event. The demand for space is very great and beyond expectation. To accommodate exhibitors about 200,000 square feet are to be added to the space heretofore available for exposition purposes. This will be quadrupling the capacity of the present building. In the department of "old curiosities" will be shown Stephenson's "Rocket," the first practical locomotive built, which has been brought from the South Kensington Museum, England, for the occasion. Along with it will be exhibited a series of the earliest railway appliances, contrasted with the latest, so that the spectator will be able to measure at a glance the progress made in locomotive engineering in the last fifty years.

THE SOUTHERN EXPOSITION. The main building for the Southern Exposition to open at Louisville, Ky., August 1, is now in a sufficiently advanced stage of construction to give the spectator some idea of its extensive proportions. It will be one of the largest exposition buildings ever erected, as will be seen from the following comparisons of the area in square feet, of the main buildings of the world's great industrial expositions:

London, 1851	989,884
New York, 1853	249,891
Paris, 1855	545,934
Paris, 1863	456,923
Vienna, 1872	430,599
London, 1862	1,400,000
Philadelphia, 1976	872,320
Atlanta, 1881	107,520
Southern Exposition at Louisville	677,400

It thus appears that the main building of the Southern Exposition will be larger than the main building at Vienna in 1873, at Paris in 1863 and 1855, and New York in 1853.

PRESERVATION OF FLOUR.

THE *Boston Journal of Chemistry* says it frequently happens that wheat or rye flour, in spite of the greatest care in baking, yields an inferior loaf, and the failure is commonly attributed to adulteration; but when submitted to investigation, neither microscopic nor chemical tests reveal any adulteration. Such flour is returned to the miller or dealer as unfit for use. The miller says the flour was injured by the heating of the stones, and the dealer attributes the defect to the circumstance that the sun must have shown upon the sacks during transportation. It has been proved by numerous experiments, that flour cannot bear the action of the sun, even when exposed directly to its rays. When flour is exposed to the heat of the sun an alteration takes place in the gluten similar to that produced by the heating of the stones. For this reason it is advisable that the transportation of flour should take place, if possible, on cool days or by night, as well as that flour should be stored in a cool place.

MINNESOTA MILLERS' ASSOCIATION.

The Minnesota millers met in convention at Minneapolis, April 10, President W. P. Brown, of Red Wing, in the chair. The treasurer's report showed $1,097.26 on hand and no liabilities. Fifty milling firms belong to the association, representing a capacity equal to 927 run of stone. The following officers were then elected: President, W. P. Brown, Red Wing; Frank R. Pettit, Minneapolis, Sec'y; W. F. Cahill, Minneapolis, treasurer. The discussion following on patents litigation, filing of protective bonds, etc., was very similar to that in our report of the proceedings of the Wisconsin Association. [See report on page 12.]

A resolution was passed recommending members to use ten hoop barrels for patent flour after June 1, 1883.

Mr. Ames called attention to laws recently passed in Dakota and Minnesota enabling the mortgagee to recover at any time during six years from the buyer, the price of wheat sold by the mortgagee. He said: "This affects every miller and grain buyer, as it is impossible to keep track of every chattel mortgage on file in the State. The agricultural machinery dealers forced this law through both legislatures, and proposed to put it in force this summer on cases from one to six years old. It appears that this law has been declared legal and that nothing can be done but to work for its repeal next winter.

After a general talk about the amount of wheat in farmers' hands, etc., the convention adjourned to meet the second Tuesday in April, 1884.

BUSINESS EDUCATION AND BUSINESS MEN.

We but express the conviction and experience of the business community in saying that the better business education of business men in general would be the best remedy for and safeguard against many evils and embarrassments existing in the business world which arise from ignorance of the principles and methods, in accordance with which business affairs should be conducted. We deem it our duty therefore to urge the claims of the SPENCERIAN BUSINESS COLLEGE, Milwaukee, knowing, as we do, that it's work is thoroughly and conscientiously done, and that it is accomplishing much for the improvement of the qualifications and character of young people of both sexes entering business life. Its advantages are the best, and students are received at any time. For circulars or information address, R. C. Spencer, Milwaukee, Wis.

WINTER WHEAT.

ACREAGE.

The returns April 1, of comparative area seeded to winter wheat, indicate a very small increase in the breadth in this cereal, averaging scarcely one per cent. As nearly as can be ascertained, the acreage is as follows, counting the Pacific coast crop as winter wheat:

STATES.	ACRES.	Per cent. of last year.
Connecticut	2,100	101
New York	780,100	101
New Jersey	154,000	100
Pennsylvania	1,518,460	102
Delaware	96,800	98
Maryland	626,200	101
Virginia	928,000	101
North Carolina	717,100	101
South Carolina	223,100	97
Georgia	494,700	97
Alabama	282,100	99
Mississippi	52,200	95
Louisiana	2,200	100
Texas	490,200	97
Arkansas	257,100	101
Tennessee	1,234,800	98
West Virginia	425,700	99
Kentucky	1,287,000	100
Ohio	2,847,200	99
Michigan	1,965,100	99
Indiana	2,785,300	99
Illinois	3,015,100	102
Missouri	2,311,600	99
Kansas	1,449,100	95
California	3,043,700	110
Oregon	795,300	110

The acreage of these States in 1882, was 27,482,150 acres; it appears to be 27,734,200 acres at the present time. It is probable that these figures are fairly accurate, and they will stand as the acreage of winter wheat in these States, subject to modification from substitution of other crops on winter-killed areas, or from more complete information concerning districts not fully represented.

THE problem of compressing bran still continues to excite great attention among millers and inventors all over the country. H. G. Blinn, of Clinton, Ia., recently wrote that he believed it impossible to construct a machine that would compress 100 pounds of bran into a cube of fifteen inches, which is one of the requisits desired by the Millers' National Association.

In reply to Mr. Blinn, Mr. Seamans, secretary of the Millers' National Association, wrote a letter to the *Millers Journal*, N. Y., from which we quote as follows:

Mr. Blinn says: "If the Association insists that the size of the package of 100 pounds shall be, as per circular, not to exceed a 15-inch cube, it *can't be done*." Allow me to say that the gentleman is mistaken.

The Belt Packing Company, of Minneapolis, will pack one ton of bran in a space 6½x2½x2½ feet, which is equal to 3,375 cubic inches for 100 pounds. I have a sample in my office made by this machine, which is compressed to the rate of 3,150 cubic inches for 100 pounds. I have another compressed at the rate of 3,075 cubic inches; both are pressed dry. The party producing the latter sample says of his machine: "My machine will compress 110 pounds in a cube of fifteen inches square, which is more than you require. My machine is very simple, easy to operate, worked by hand or power, is not expensive. Full size, 9 feet high, 3½x2 feet on floor," &c., &c.

I have letters from at least ten parties that claim to be able to fulfill the requirements. A machine is now in operation in Chicago, which will not only compress dry bran to a much greater density than we require, but will compress straw and hay to the density of maple wood.

It will not do in this age and generation for any man or set of men to proclaim to the world that what they may not be able to accomplish is impossible. Mr. Blinn's machine may equal his ambition—be satisfactory to him—but will not help us to export our bran as at present represented to work.

ANNUAL MEETING OF THE MISSOURI MILLERS' ASSOCIATION.

APRIL 13th, the members of the Missouri Millers' Association met at Hannibal, Mo., President James F. Lawton, of Carrollton, presided. Secretary D. B. Kirk's report showed that fifty firms belonged to the Association. The treasurer's report showed $100.87 in the treasury and no liabilities. An assessment of $10 per unit of capacity (at present there are 274) was ordered.

President Lawton made a short speech in regard to operative millers, millers insurance, milling journals and other subjects. In regard to the milling newspapers, he said:

Without the slightest wish to pander to the milling press as a supplicant for notice, I must recommend to our members to take every milling paper they conveniently can. Assist the publisher and the advertiser, and by so doing you will most assuredly help yourself. A miller can not keep pace with the improvements unless he reads. The experience of the past may be changed on the morrow. Reason will enable us to determine the right though we commence prejudiced. We have every variety of ideas and experiences presented to us, and we can silently adopt or reject without feeling worsted by the argument in person of some neighboring miller. When a miller has not time to glance over a good milling journal, he has the prospect of not loosing much time counting his profits. The milling journals have been friendly to all of our organizations, and I think we are alike dependent one on the other.

The past officers were re-elected.

The Association, after passing resolutions sympathetic with and highly complimentary to Geo. Bain, Esq., president of the Millers' National Association, adjourned to meet on the second Tuesday in April, 1884.

POSTAL CHANGES.

Among the changes of general public importance effected by the last post-office appropriation bill are the reduction in the letter postage rate to two cents and the provision for transmitting money through the mails by a postal note payable to bearer at any money-order office which may be designated by the purchaser of the note. This note must be for an amount under $5, and will cost three cents.

The postal note will only be good for three months from the date of its issue, but can then be renewed by application to the Superintendent of the Money Order Bureau at Washington, when a duplicate will be issued to the holder or party making the demand upon payment of an additional sum of three cents.

The two-cent letter rate will not go into operation until October 1.

Money orders will be issued for sums not to exceed $100 in amount at the following scale of charges: For orders not exceeding $10, 8 cents; for orders exceeding $10 and not exceeding $15, 10 cents; for orders exceeding $15 and not exceeding $30, 15 cents; exceeding $30 and not exceeding $40, 20 cents; exceeding $40 and not exceeding $50, 25 cents; exceeding $50 and not exceeding $60, 30 cents; exceeding $60 and not exceeding $70, 35 cents; exceeding $70 and not exceeding $80, 40 cents; exceeding $80 and not exceeding $100, 45 cents.

RECENT MILLING PATENTS.

The following patents were issued April 3, 1883:

Guage for dressing and truing millstones—Hamilton D. Coleman, New Orleans, La.

Conveyor for mill products—Bobert Craik, Hawley, Minn.

Sieve for roller mills—Henry J. and G. A. Gilbert, Racine, Wis.

Roller mill—Daniel W. Marmon and J. Warrington, Indianapolis, Ind.

The following patents were issued April 10, 1883:

Roller grinding mill—Samuel L. Bean, Washington, D.C.

Apparatus for regulating of the flow and delivery of water through canals, flumes and waterways—James Emerson, Holyoke, Mass.

Roller mill—John Livingston, Assignor to Stout Mills & Temple, Dayton, Ohio.

Roller grinding mill—William Tennant, Faribault, Minn. (two patents).

The following patents were issued April 17, 1883:

Reduction machine—John Case, Columbus, O.

Roller mill—Daniel W. Marmon, Indianopolis, Ind.

Adjusting and supporting mill stones, etc.—Geo. Millbank, Chillicothe, Mo.

Screw-conveyor—Webster & Comstock Mfg. Co., Chicago, Ill.

Centrifugal machine—David M. Weston, Boston, Mass

The following patents were issued April 24, 1883.

Cockle screen—John B. Cornwall, assigned to Barnard & Leas Mf'g Co. Moline, Ill.

Bolting regulator—Joseph E. Fiske, Jamestown, N. Y.

Roller mill, (2 patents)—Henry J. Gilbert, Racine, Wis.

Roller mill—Daniel Marmon, assignor to Nordyke & Marmon Co., Indianapolis, Ind.

Machine for hulling and cleaning wheat—Samuel K. Todd, Eugene, Ind.

GEORGE BAIN.

The announcement was made April 9, that The Atlantic Milling Co., of St. Louis, Geo. Bain, President, had failed, but we are happy to state that matters have been satisfactorily adjusted and that the Company is again upon its feet and ready for business. A statement of assets and liabilities showed a considerable excess of the former. The temporary suspension is said to have been caused by the depression in the flour trade. Mr. Bain sails to Europe May 1st on business. The business will run right along as heretofore. Mr. Bain's temporary misfortunes must have been gratifying to him in one way—it showed him conclusively what a host of genuine friends he has ready at a moments' notice to "bear a hand" and help him when needed. We sincerely wish Mr. Bain the utmost prosperity in the future, and in so speaking we know we only voice the sentiments of the trade both far and near—on this and on the other side of the Atlantic. We are very sorry that Mr. Bain, who has been so long president of of the Millers' National Association, finds it necessary to be absent at the approaching meeting.

[For the UNITED STATES MILLER.]

DETECTION AND ESTIMATION OF ALUM IN FLOUR.

For quantitative estimation, Wanklyn uses at least 1544 grains of flour; incinerates it in a stream of oxygen, and treats the ash, not with hydrochloric or nitric acid, but with a weighed quantity of strong sulphuric acid; heats the moistened mass till the sulphuric acid begins to evaporate, mixes it with a little water and a weighed quantity of caustic potash; and precipitates the alumina from the solution with ammonium chloride. The object of weighing the re-agents is to take account of any small quantity of alumina that may be contained in them.

Wanklyn also points out that sulphuric acid always appears in the ash of flour, being formed during the incineration from the gluten, which contains about 1 per cent. of sulphur; and that consequently, for the detection of alum in flour and bread, it is of no use to determine the amount of sulphuric acid in the ash, the increase in the amount of their constituent caused by this adulteration being too small to yield any definite result. It is better to exhaust the flour with cold water, separate the gluten, and test for sulphuric acid in the filtrate.

The presence of alum in flour may also be detected by mixing 772 grains of flour with 3.05 cubic inches of water, 0.03 cubic inches of logwood solution, 0.3 cubic inches of aqueous ammonium carbonate. If alum is present, even in the the proportion of 1 part in 10,000 the color of the emulsion will be changed from pink to lavender-blue.

THE GREATEST RAILROAD ON EARTH.

The Chicago, Milwaukee & St. Paul Railway,—Nearly 5,000 Miles of Road in Operation.

THE CHICAGO, MILWAUKEE & ST. PAUL COMPANY'S report for 1882, nineteenth annual, is just issued. It shows a gratifying increase in the Company's several branches of business, and the financial condition of the Company to be most satisfactory, the net earnings during the year having been $8,200,652.65. Compared with the earnings of 1881, those of 1882 were $3,361,264.20 in excess.

During the year the Company has constructed the following branches and extensions: In the State of Iowa, the Chicago & Pacific Western Division has been completed to Council Bluffs, 64 miles, making a continuous road on the shortest practicable line, 488 miles in length, from Chicago to a connection with the Union Pacific and other railroads at the Missouri River. On the Iowa & Dakota Division a branch has been constructed from Spencer to Lake Okoboji, 17 miles; and the Emmetsburg branch has been extended 7 miles to Estherville. The Volga River branch of the Dubuque Division has been completed to West Union, the county seat of Fayette County, 14 miles. Of the line from Cedar Falls to Ottumwa, 2 miles have been completed and 10 miles graded ready for the track, and depot grounds purchased at Ottumwa. The narrow-gauge road, formerly owned by the Iowa Eastern Railroad Company, extending from Beulah, on the Iowa & Minnesota Division, to Stulta, 15 miles, has been purchased and changed to standard gauge. These add 119 miles to the Company's lines in Iowa.

In Wisconsin, a branch has been constructed from Brandon on the Northern Division to Markesan, 12 miles; and the railway of the Chippewa Valley and Superior Railway Company, extending from Wabasha, Minn., to Eau Claire, Wis., 50 miles, including a bridge across the Mississippi River, with a branch from Red Cedar Junction to Cedar Falls, 21 miles, has been purchased. These add 83 miles to the Company's lines in Minnesota.

In Dakota a road has been constructed from Yankton, on the Sioux City & Dakota Division, to Scotland, on the Running Water branch of the Iowa & Dakota Division, 27 miles; and one from Mitchell, on the main line of the Iowa & Dakota Division, north to Letcher, 14 miles. These increase the mileage in Dakota 41 miles; and make a total increase of 303 miles during the year, which, added to the 4,217 miles owned by the Company as by the last report, make it the owner of 4,520 miles of completed railway.

On the railway purchased from the Chippewa Valley & Superior Railway Company, there is annually manufactured over 300,000,000 feet of pine lumber, besides shingles and lath, nearly all of which instead of being rafted as hitherto, down the Chippewa and Mississippi rivers to Dubuque and St. Louis and points between those cities, will now be sent direct from the saw mills to the farmers of Minnesota, Dakota and Iowa over the lines of this Company.

The short pieces of road constructed in Dakota, from Yankton to Scotland and from Mitchell north, are in what is known as the James (or Dakota) River Valley, and are intended to form parts of the line of the Company, extending north from Yankton through the same. Seventy-three miles of this line were constructed from Ellendale to Ashton during the year 1881, and connect with the Hastings and Dakota line at Aberdeen. The distance from Ashton to Letcher is 75 miles, and from Mitchell to Scotland 45 miles. The construction of these two links would give the company a continuous line from Sioux City and Yankton through said valley to within 65 miles of the Northern Pacific.

REAL ESTATE PURCHASES. In the last annual report it was shown that the Company had, during the year 1881, paid $575,000 for real estate; yet, large as these purchases were, the Company had been compelled by increased business to buy additional grounds or terminal facilities in Chicago, Milwaukee and St. Paul, and for machine shops at Minneapolis, as follows:

At Chicago	$ 38,709 07
At Milwaukee	33,784 14
At St. Paul	6,252 40
At Minneapolis	65,033 95
And for additional grounds at other points	15,540 47
Total	259,320 03

COMPANY COAL LANDS. In the last annual report was stated that, for the purpose of securing a reliable supply of fuel to meet the large and growing wants of the Company, coal lands had been purchased at Braceville, in Illinois, and at Oskaloosa, in Iowa During the year additional coal lands have been purchased at Perry, on the Council Bluffs Line, about 125 miles east of Council Bluffs. The coal lands of the Company consist of 3,282 acres at Braceville, with 117 houses and three shafts, costing $426,823.61; 2017 acres at Oskaloosa, with 107 houses and three shafts, costing $268,748.65; and 240 acres at Perry, with twenty-three houses and one shaft, costing $35,069,55. The Braceville mine furnished during the year 242,136 tons of coal, the Oskaloosa 196,998 tons, and the Perry 3000 tons, being about two-thirds of the consumption for the year; and these mines are deemed capable of yielding a full supply for all the requirement of the Company. The total cost of these properties is $730,641.81.

The lands stated in the last report as belonging to the Company have been sold during the year, except about 100,000 acres, mostly in the State of Wisconsin. The net receipts to the treasury of the Company from sales of land during the years 1881 and 1882 are $1,224,364.38; and the amount now due the Company on contracts and mortgages is $1,787,508.90; in addition to which the sum of $210,000 is held in trust to abide the decision of a suit brought by this company in the Circuit Court of the United States for the District of Iowa, against the Sioux City & St. Paul Railroad Company, which was by court decided in this Company's favor, and is now pending on appeal in the Supreme Court of the United States.

There has been purchased and added to the equipment of the Company during the year, as follows:

Locomotives	100
Sleepers	6
Passenger cars	46
Dining cars	6
Box cars	1,100
Flat cars	100
Stock cars	1,000

ST. PAUL STOCK. The entire cost of the Company's property, including rolling stock, depot grounds, cattle yards, elevators, warehouses docks, coal lands, and other property is represented by

Common stock	$27,904,261
Preferred stock	16,447,493
Total stock	$44,351,744
Mortgage bonds, including all liens on purchased roads	89,635,500
Making the total of bonds and stock ..... on 4520 miles of road, being at the rate of	$133,987.244 $29,643 per mile.

The preferred stock of the Company was increased during the year $2,046,000 by the conversion of mortgage bonds into preferred stock, as provided by the articles of association and the terms of the bonds. The bonds so converted were:

La Crosse Division first mortgage	$301,000
Iowa and Minnesota Division	230,000
Iowa and Dakota Division	17,000
Iowa and Dakota Division Extension	482,000
St. Paul (or River) Division	193,000
Hastings & Dakota Division (old), payable in 1903	8,000
Chicago and Milwaukee Division	101,000
Consolidated	655,000
Prairie du Chien Division, 7-3 10 per cent	59,000

And thus the holders of all classes of bonds which are convertible into preferred stock availed themselves of the privilege.

In accordance with authority given by the stockholders at the last annual meeting, the common stock was increased $7,500,000; $7,101,948 of which was issued at par to the stockholders who subscribed for the same, one-half payable in cash and one-half charged to income account.

EARNINGS AND OPERATING EXPENSES.

Annexed to the Board of Directors' report is that of Manager S. S. Merrill. He gives a comparative statement of earnings and operating expenses for the years 1881 and 1882, which are furnished below:

Earnings—	1881.	1882.	Increase.
From freight	$11,884,795.53	$14,002,335.25	$2,117,539.72
From passengers	3,938,988.77	5,179,078.04	1,240,089.27
From mails express, etc	1,201,677.36	1,205,312.57	3,635.21
Total earnings	$17,025,461.66	$20,386,725.86	$3,361,264.20

Expenses—	1881.	1882.
Repairs of track	$1,542,590 51	$1,702,876.98
Renewal of track	341,370.04	221,112.30
Repairs of bridges	184,428.78	285,850.25
Repairs of fences	67,093.72	65,075.51
Repairs of buildings	224,310.31	204,514.25
Repairs of locomotives	566,970.97	827,511.08
Repairs of cars	699,326.18	1,042,901.65
Repairs of tools and machinery	101,376.56	128,690.63
Management and general offices	296,646.44	348,615.24
Foreign agency and advertising	111,008.04	181,356.45
Station service	1,388,650.64	1,677,599.53
Conductors, baggagemen and brakemen	724,473.27	937,156.62
Engineers, firemen and wipers	1,047,360.59	1,245,353.54
Train and station supplies	346,801.00	356,282.19
Fuel consumed	1,581,198 09	1,605,057.00
Oil and waste	173,687.24	228,222.37
Personal injuries	114,856.02	122,304.50
Damage to property	45,170.25	54,997.31
Loss and damage of freight and baggage	36,746.59	41,012.58
Legal expenses	53,714.37	70,441.24
New York office expenses	14,901.17	15,662.37
Taxes	473,166.43	589,613.80
Insurance	35,544.99	70,402.03
Miscellaneous expenses	65,367.33	93,609.05
Stock yard expenses	15,294.92	15'076.38
Expenses elevator "A"	21,193.14	10,324.33
Expenses elevators "B" and "C"	20,001.38	15 999.17
Expenses elevator "D"	11.97	.....
Expenses elevator "E"	89,441.57	18,710.73
Expenses elevator Minneapolis	5,228.63	9,342.18
Total expenses	$10,317,931.14	$12,186,073.21

RECAPITULATION.

	1881.	1882.	Increase.
Gross earnings	$17,025,461.66	$20,386,725.86	$3,361,264.20
Total expenses	10,317,931.14	12,186,073.21	1,868,142 07
Net earnings	$6,707,530.52	$8,200,652.65	$1,493,122 13

INCREASE FOR 1882.

The Company's income, from the several sources, during the year, was as follows:

From freight	$14,002,335.25
From passengers	5,179,078.04
From mail service	411,568.05
From express service	352,374.02
From news service	12,582.54
From rents	13,873.80
From telegraph	6,838'46
From extra baggage	38,034.91
From sleeping cars	141,770.74
From stock yards	73,545.37
From milk	36,852.18
From elevator "A"	17,057.97
From elevator "B" and "C"	30,313.45
From elevator "E"	43,014.79
From elevator Minneapolis	27,285.29
Total	$20,386,725.86

The Company's equipment Jan. 1, last was as follows;

Locomotives	626
Passenger cars (first and second class)	240
Sleeping cars	33
Parlor cars	6
Dining cars	6
Baggage, postal, mail and express cars	176
Box, Freight and caboose cars	12,006
Stock cars	2,364
Flat and coal cars	4,154
Wrecking and tool cars, etc	33

In fuel and supplies on hand Dec. 31, 1882, the Company had that representing a value of $1,495,112.82.

During the year the number of miles run by the Company's passenger, freight, wood and gravel trains was 18,305,321.

ROBT. S. WILLIAMS, ESQ., so long well known in Milwaukee as head miller of the Reliance and Empire Mills, called on us recently. He is now located at Faribault, Minn. He likes Minnesota and says he will make his abode there in the future.

THE M. SAINT-REQUIER SYSTEM OF MILLING.

A NEW FRENCH SYSTEM.

From an article recently published in *Industry*, we learn that M. Saint-Requier has invented what he terms a "New Process of Milling Flour." The *Miller* thus describes it: M. Saint-Requier, proceding upon the fact that the greatest demand is now for the whitest flour, color being considered a criterion of purity, describes his process as consisting of stages. The first of these includes an exhaust fan of about 1-horse power; a breaker sifter, 9-10-horse power; a revolving separator, 3-horse power; a decorticator, 6-horse power; a finisher, 2-horse power; making 12-90-horse power for cleaning 25 quarters of wheat per hour, or 550 quarters in 22 working hours.

The second series of operations, viz., the conversion of cleaned wheat into flour, combines, 1st, the cutter, 10-horse power; 2d, the sorter, 1-horse power; 3d, purifiers, 1-horse power; 4th, milling cylinders, 5-horse power; and 5th, the winnowing machine, 1-horse power; making in all 18-horse power for the flouring of 25 quarters of wheat per hour, or 550 quarters every 22 hours. Instead of being fed into millstones, the wheat is thrown into a large cone, in the middle of which revolves, at an immense speed, a spindle with small steel blades, which cut the wheat to pieces, the cut particles being subsequently converted into flour by passing between rollers. The cost of each sack of flour produced by the best English and French mills is stated to be 6s., or for 350,000 sacks, £105,000, while the cost of a sack of flour by the Requier system is stated to be 2s. 7½d. per sack, or for 350,000 sacks £45,500. The best quality of flour manufactured by the English and French systems is stated to produce 130 per cent. of bread by weight of flour, while the Saint-Requier flour is alleged to give in bread 150 per cent. by weight of flour. It is claimed that this system is not an adaptation of any other method, but that it is absolutely new and stands alone.

HOW A GOOD ENGINE SAVES COAL.

The best automatic engines (non-condensing) furnish one indicated horse-power for about three pounds of good coal, depending somewhat upon the fitness of the engine for the work and the quality of the coal. With a condenser attached, a consumption as low as two pounds may be quoted as good practice. The larger the engine the better the showing compared with smaller engines. For ordinary slide valve engines, the coal burned per indicated horse power will vary from nine to twelve pounds; for the sake of illustration we will say ten pounds, and that the engine is of such size as would require, for a year's use, $3,000 worth of coal. Now an ordinary adjustable cut-off engine with trottling governor, ought to save at least half that amount of coal, or say $1,500 per year. If the best automatic engine were employed, using two and a half pounds of coal per horse-power, a further saving of $750 per year could be effected; or, between the two extremes, $2.250 per year in saving of coal, without interfering in any way with the power, with the exception, perhaps, that the automatic engine will furnish a better power than the former engine. It is easy to see that it is true economy to buy the best engine and pay the extra cost of construction, if the saving of coal is an element (and it is generally the most important one) entering into the question of selection. The above considerations are given on the authority of *Barr*, a very careful and conservative writer on steam engineering.

A REMEDY FOR BURNS AND SCALDS.—It is now many years ago, says Mr. F. Peppercorne in the *Popular Science Monthly*, while engaged in some investigations as to the qualities and effects of the alkalies in inflammations of the skin, etc., that he was fortunate enough to discover that a saline lotion, or a saturated solution of bicarbonate of soda in either plain water or camphorated water, if applied speedily, or as soon as possible, to a burned or scalded part, was most effectual in immediately relieving the acute burning pain, and when the burn was only superficial or not severe, removing all pain in the course of a very short time; having also the very great advantage of cleanliness, and, if applied at once, of preventing the usual consequences—a painful blistering of the skin, separation of the epidermis, and, perhaps, more or less of suppuration. For this purpose, all that is necessary is to cut a piece of lint, or old soft rag, or even thick blotting-paper, of a size sufficient to cover the burned or scalded parts, and to keep it constantly well wet with the sodaic lotion, so as to prevent its drying. By this means it usually happens that all pain ceases in from a quarter to half an hour, or even in much less time. When the main part of a limb, such as the hand and forearm or the foot and leg, has been burned, it is best, when practicable, to plunge the part at once into a jug or pail, or other convenient vessel filled with the soda lotion, and keep it there until the pain subsides; or the limb may be swathed or encircled with a surgeon's cotton bandage previously soaked in the saturated solution and kept constantly wet with it, the relief usually being immediate, provided the solution be saturated and cold. What is now usually sold as bicarbonate of soda is what he has commonly used and recommended, although this is well known to vary much in quality according to where it is manufactured; but it will be found to answer the purpose, although probably Howard's is most to be depended on, the common carbonate being too caustic.

AMERICAN FLOUR IN BRISTOL, ENGLAND.

Report by United States Consul Louis A. Lathrop.

Bristol would seem from its position on the map to be the natural entrepot for American products intended for general distribution throughout Southern England; and it is to a great extent the distributing center for that section as well as for Southern Wales. Indeed, so regular and constant a market has Bristol in the latter section that Bristol is said to feed Southern Wales almost entirely, notwithstanding the circumstance that both Cardiff and Milford Haven have steamers running with more or less regularity to American ports. The trade in breadstuffs has become fixed by way of Bristol, and I am informed that a large portion of the breadstuffs carried by these direct Welsh lines is on account of Bristol importers or through Bristol commission merchants, thus, to all intents and purposes, becoming a part of the Bristol trade.

Those artificial elements that are liable to be introduced into any mercantile community, however, sometimes occur in Bristol, and temporarily change to some extent the field of trade, enlarging it perhaps and perhaps contracting it. For instance, it sometimes happens that a glut of flour in London will compel the London dealer to dispose of his stock at such a rate that he can undersell the Bristol merchant almost in Bristol itself, and vice versa the Bristol man sometimes supplies the demand for flour up to London itself. For the same reason the country between Liverpool and Bristol sometimes goes to Liverpool and sometimes to Bristol for its supplies of American flour, though its normal state is Liverpool-wards. Birmingham is the meeting place of the two tides of trade, and sometimes a glut in the Liverpool market will utterly overcome the normal Bristol tide and send a wave of products far beyond the meeting point; and so, sometimes Bristol is the aggressor.

In the counties to the south and west, Devon, Cornwall, Somerset, Bristol has a large and reliable market, though it very occasionally happens that London can compete, and in this way. Bristol has but one railroad to London, while Exter to the south and west has two, and the competition between the two is active. It is stated that special rates are sometimes given and discriminating charges made that enable a London man to put flour down in Exeter cheaper than the Bristol merchant can, though the distance between the latter place and Exeter is one-third of the distance between London and Exeter. There seems to exist here in the minds of those in the flour trade a considerable difference of opinion as to whether this last mentioned state of affairs affects the flour market of Bristol at all, and I think the weight of opinion is to the effect that no serious inroads into Bristol's consuming district is made by differential railroad rates. An occasional cargo of flour is landed at Plymouth or Southampton, though seldom, so that Bristol has almost a clear field in the southwestern counties.

During the year 1882 there were imported into Bristol 19,600 tons of flour from foreign countries. An insignificant portion of this was French or Hungarian, imported for the use of the pastry bakers, and commanding a price far beyond the average. The remainder came from the United States, barring a small quantity from Canada. This import was not quite up to the average of former years, and an increase in the amount from the United States may reasonably be expected during the coming year.

Every pound of this United States flour came here by steamer; nearly all under the English flag; nearly all in the two regular steamship lines that ply between Bristol and New York; almost every pound was shipped at New York, and came in sacks, that being the mode preferable to the consumer here.

Most of this flour was sent on consignment to commission merchants in Bristol, experience having proved that this is by all means the most satisfactory mode of handling the stuff, both to seller and buyer. It is very evident, it seems to me, that a miller or New York merchant can do much better with his flour here by sending it to an agent who disseminates samples industriously among, say, fifty or seventy-five possible buyers than he can by endeavoring to build up a regular trade with one or two importing houses or large consumers. In point of fact there is little or no flour coming here from the United States to a regular customer, buying regularly at stated intervals. There is, to be sure, at least one large firm here which imports flour direct, but they have an agent or clerk in New York who buys according to the market, having an eye to ocean and inland freights. This is a simple transfer of the agent from Bristol to New York, and is added proof that the miller cannot deal as satisfactorily with the Bristol importer direct as through commission merchants. It frequently happens that the consignment to the commission merchant is a consignment practically direct to the consumer, who has ordered it of the commission merchant, who in turn cables the miller or the New York exporter. An American exporter oftentimes cables his agent here that he can sell a certain quantity of specified grade at such a price. It is often disposed of thus. In neither of the above cases, it is evident, can the flour be considered to be shipped on commission, for though it passes through the hands of the middleman on this side, it is ordered from here before shipment.

Millers away from seaboards in the United States are at a disadvantage compared with exporters and millers operating where ocean steamers can come. In the first place, there is added a greater element of uncertainty in the time of arrival at Bristol of the consignment. It is often of vital importance to the importer to have his flour with as little delay as possible, and he can calculate almost to a day the time of its arrival, if coming from a seaport town only. The importer here not only desires to eliminate from his calculations the uncertainty of combined railroad and steamship transportation, but he also wants to deal only with ocean freights. Despite the low rates which interior millers can often obtain on a through bill of lading, the importer here would rather buy in New York, and calculate only on the ocean freight.

It has sometimes happened that a consignment sent by some western miller to this port, through railroad delay, trans-shipment, etc., arrives here after the maturing of the seller's draft, thus depriving the importer of his interest for a few days. Of course this is very exceptionable, but it often happens that a consignment from New York will arrive, be sold, and paid for, before the maturing of the seller's draft. An importer naturally appreciates this little interest, and the further west he buys the more he cuts himself off from all chance of making it.

Commission merchants here tell me that American exporters of flour as a rule will seldom or never profit by the advice or suggestions sent from this side. If a man here does well with a consignment of flour, in spite of representations he makes as to the poor market to the exporter, he possibly receives another consignment, which he is compelled to sacrifice, and which would not have been sent had his advice been heeded. They say further that if they notify an American exporter that the market would stand, say 500 barrels of a certain grade, they are just as likely as not to receive twice or thrice the amount suggested, some of which is sacrificed. I have heard considerable comment on this disposition of American exporters to overdo, and of their consequent losses, and it would seem to me that if an American firm has an agent here who has proved himself trustworthy and reliable, his opinion should be regarded more than it now is. It is often said that small consignments are far more likely to do well than large ones. By a small consignment I mean, say 500 barrels, but a first consignment should not be more than 50 or 100 barrels.

Having now set out what seems to be the best mode of getting the flour here, let me suggest as to its quality and the kind that will best suit the demand. The bulk of the flour used here is inferior as regards color, price and quality. Bristol is improving, I am told, in its taste for flour, but even yet no such general market for a fine grade of flour exists as there is in Liverpool or London. There are many reasons for this, the principal one being that by far the greatest portion of the American flour is used mixed with English. It is evident that the moment our flour approaches in price the English product of equal excellence it is just as cheap to use the English flour unmixed, and that is what the bakers do. The millers here often find it cheaper to mix than to grind, and I am informed that there is no doubt that a considerable portion of the product of English mills is American flour under a new name. It is manifest that the English miller does not need too good a grade for this purpose. He wants a reasonably excellent flour cheaper than his own.

Of course the gist of the matter is in the taste of the consumer, and as yet the price of the loaf is more of an object to him than the appearance or quality. The average consumer here, if selecting between two loaves, would buy the dark and heavy quartern he has been accustomed to at 13 cents, rather than pay 14 cents for a lighter and more attractive-looking loaf. Moreover, it is considered here almost an act of suicide to eat fresh bread, and the loaf is seldom eaten until at least one day after baking. The English compact loaf stands the test of time far better than our finer American products and is more palatable, after the lapse of a day or more between baking and eating, than our loaf is.

English millers are naturally averse to American competition, and are sometimes able to interfere successfully with the trade, and in this wise: The bakers are generally debtors more or less large to the millers, and they are sometimes given to understand that purchase of American flour will result in financial pressure, a significant hint, generally appreciated.

A brand is no longer a guarantee. I am informed that any flour can be branded in America as desired by the importer on this side. The result is that everything is thoroughly tested by baking it up. Nothing else will be admitted as a test, and a loaf is baked out of every lot the quality of which it is desired to investigate.

I conclude with a verbatim copy of the words of a man thoroughly up in the Bristol trade and worthy of the highest regard. His opinion, or rather statement of facts, is indorsed by the entire flour trade and is highly important. He says: "The most serious objection to American flour is the irregularity of quality. Brands are introduced which find a good demand at a fair profit. Very frequently after the first few shipments the quality is allowed to decline. The reputation of the brand is spoiled, and before the confidence of buyers can be regained, a new brand must be introduced."

(For the UNITED STATES MILLER).

A SENSIBLE ENGLISHMAN'S VIEWS ON THE AMERICAN PROTECTIVE TARIFF.

[Conclusion].

Milwaukee, April 22d, 1883.

Editor UNITED STATES MILLER:

In the February number of the UNITED STATES MILLER was published the first portion of extracts which were prepared for delivery before the Liverpool, England, Chamber of Commerce, late in 1881 by Mr. Samuel Smith, a gentleman, who has a large acquaintance in this country, and has mingled with Americans for many years. He says, in the preface to the pamphlet, from which we copy.—"It is written without bias of any kind, and simply with the view of putting forward the truth as it presents itself to the writer."

We conclude with the following concise explanation of the causes, which produced the panic from 1873 to 1878, they are set forth clearly, and their absolute disconnection with our tariff are plainly shown.

"I would further observe that political economy is far from being an exact science, its formulas are nearly always subject to important limitations, and when they are applied by mere theorists to solve practical problems they often conduct to conclusions the reverse of true. To a knowledge of the science in the abstract, there must be added a practical knowledge of business, or, at least, of public affairs, to make a man able to apply its dicta intelligently; it is more like the science of politics, or what has lately come to be called sociology, and those who know it best will apply its formulas with the greatest caution. Some of the current maxims which pass muster as infallible axioms are utterly misleading when applied to the practical problems of commerce—let me refer to one which is constantly quoted, viz: that all trade is barter, and that imports and exports pay for each other; and to another which one constantly meets with, viz: that an excess of imports is a proof of a wealthy and prosperous nation, and excess of exports of a poor and unprosperous one. Both of these maxims have a certain degree of truth when stated broadly, but are utterly misleading when applied to the commercial phenomena of particular years and particular nations.

I will take leave to illustrate this by reference to the recent experience of British and American trade. For convenience sake I will take the latter first, and examine the sixteen years that have elapsed since the conclusion of their civil war, and divide them into two periods of eight years each. The former was a time of great inflation and extravagant expenditure; the issue of inconvertible paper money caused by the war had produced a fictitious prosperity, and lead to heavy imports of European luxuries, while the great cotton crop, the chief article of export, was several years much reduced. America for these eight years imported in value nearly double what she exported—if the theory that all trade is barter is true, she was lucky in getting 40s. worth of goods for every 20s. she paid with—and if the further theory that excess of imports is a sign of wealth be true, she was rolling in wealth. But what was the true explanation? She was contracting enormous indebtedness in Europe—she was exporting national bonds, state bonds, railway securities, &c., to the extent of hundreds of millions sterling, and laying a foundation for a time of great suffering and distress—her exports and imports no doubt balanced, but in the same way as the expenditures of a spendthrift who pays by giving I O Us.

The time came when these debts had to be liquidated—the commercial crisis from 1873 to 1878 exploded the fabric of fictitious prosperity, severe thrift became the order of the day—imports fell off prodigously, exports largely increased, and showed for several years a heavy surplus, she became a creditor instead of debtor to Europe and her bonds and securities flowed back as fast as they went out; but a trifling proportion of the Federal debt is now held in Europe, and much fewer securities of all kinds than eight years ago; in addition to which she has supplied herself with an ample gold currency. America has in fact been laying the foundations of national prosperity the past eight years at a wonderful pace. But if we have to go by the formulas I have already referred to, we should have to believe the absurdity that her diminished imports and increased exports were a sign of growing poverty, that she was in fact only getting 10s. worth of goods in return for say 20s. she was paying to the foreigner.

The commercial history of England the last ten years affords a similar illustration—it may be divided into two sections, that of 1870—73, which were four years of great prosperity, and 1874—79, which were six years of great depression. In the first four our exports and imports, when proper allowances were made for re-export of foreign produce, for freight and interest on our immense capital invested abroad, left a large annual surplus, as Mr. Mongredien has admirably shown—indeed out of the great profits of our trade we were investing in fresh capital abroad to the extent of about 100 millions annually. No doubt much of that was lent to bankrupt states and lost, but much more was well invested and returns large interest; the country was really prospering. She was not eating or drinking the balance due to her from abroad as she has done since then. Then followed the six years of bad trade. All the figures were reversed—the imports immensely increased—our exports largely fell off—the balance against this country was on the average about sixty millions worse than for the previous four years.

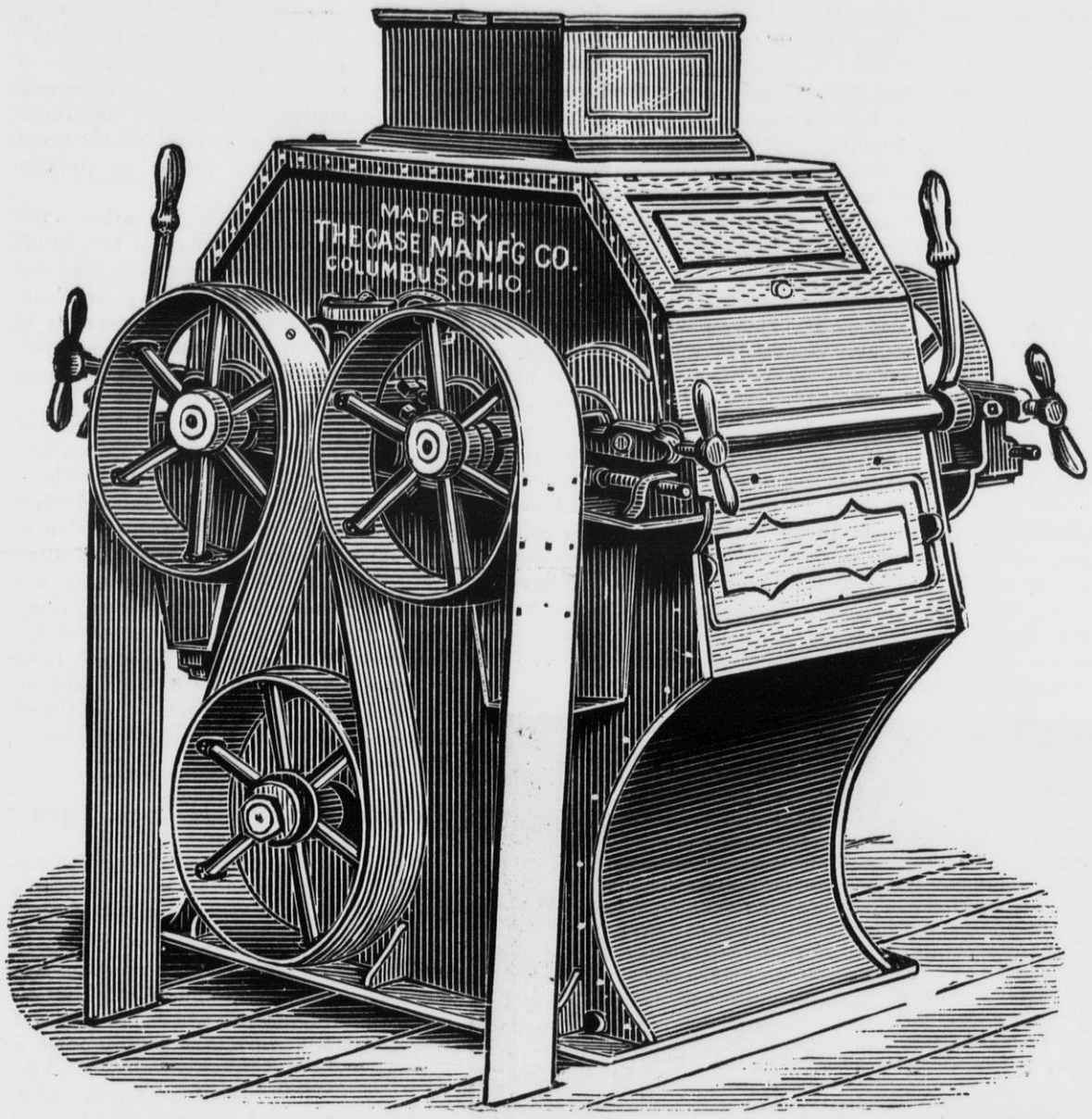
The cause of this is obvious—a succession of bad harvests caused us to import far more food than usual—the foreigner received forty or fifty millions a year more for the food than formerly, and instead of taking our goods in return, he raised his tariff against us, and took less of our goods than before. All the features of our trade became unfavorable, we might almost say alarming, and yet, strange to say, we ought to have been congratulating ourselves on our growing wealth, if the formula be accepted, that excess of imports is the test of a flourishing country. No doubt there is a measure of truth in that formula in-so-far as our large investments in former years enabled us to pay for the prodigious amount of food we require, but certainly it would have been a far truer sign of national prosperity if we had imported less and exported more. The fact is, that the trading of a country resembles in many respects the expenditure of a private individual—where we see a large expenditure maintained for many years, we conclude justly that there must be a large income to sustain it, but an inflated expenditure for a few years often shows only the recklessness of a spendthrift, and is the prelude to bankruptcy, so the large expenditure of the United States on European luxuries, in 1865 to 1872, was a bad sign, and heralded the crisis that followed, and the excessive amount of our imports, from 1874 to 1880, also showed that this country was in a very unprosperous state."

Rarely can be found a more comprehensive and thorough refutation of the false theory that excess of imports over exports necessarily implies an increase of natural wealth or natural prosperity.

JOHN W. HINTON.

OUR BISMARCK ROLL

The Prince Roll of the World!



Perfect Automatic Feed.
Wide Bearings.
Solid Iron Frames.
Best Motion.
Entirely Dustless.
No Slipping Belts.
No Noise.
No Heating.
No Feed Rollers.
No Stock Hoppers.
The Perfection of Simplicity, Strength & Durability.
A Model of Beauty and Perfection.
Protected by Patents.

We do not wish to appear boastful but we desire that the milling public should fully understand the merits of our "Bismarck" roll. Everything considered it is absolutely the best roll made. We do not by this mean to say, that the rolls themselves are any better than others, for rolls like the cutter bars of reapers and mowers, are all about alike, but it is the perfection of our frame; our splendid means of leveling; our adjustments for throwing the rolls open; our superior belt motion; our very wide bearings; the absence of wooden stock hoppers, springs and traps to get out of order; the superior tightening device; the dustless frame and noiseless belt motion that we can justly claim as superior to all others, as they are combined in the simplest possible manner and give to the roll the appearance of beauty and perfection; but the main feature of our roll which stands out pre-eminently above all others, is our

Absolutely Perfect and Automatic Feed,

which is the only perfect feeding device now applied to rolls.

There are others claiming to be automatic, but they are not. In our roll you need not look at the feed from one end of the year to the other, and the material is always spread the entire length of the roll under all circumstances. It does not matter whether you are feeding a peck or forty bushels an hour, the results are precisely the same. It takes the stock as fast as it is made and distributes it evenly, causing an even product under all circumstances. It is the same feed that we use on our purifiers and which we have applied to over Five Hundred other purifiers and many rolls made by other companies.

We are now applying this feed to the Allis, Noye, Livingston and Odell Rolls, the parties paying us liberally for making these changes.

This feed alone, if we had no other advantage, would place our rolls pre-eminently above all others, since a perfect uniform and even feed across the entire width of the roll is of the greatest importance to successful milling.

Notwithstanding these superior points of our roll we are daily traduced and lied about all over the country by jealous and dishonest competitors. They see us marching steadily to the front and have become aware of the fact that we are selling more rolls than any other company in the country, and hence resort to this system of black-mailing which is, we are glad to see, reacting upon them. Parties who visit our shops after examining the superior merits of our three roller break machine and the improved "BISMARCK," almost invariably leave their order. We will further say that we have running in this city a 300 bbl. mill in which we have displaced a line of reduction machines furnished by a leading manufacturer, which machines are now awaiting the junk-shop.

We will also add that we make the largest line of mill machinery of any firm in the country, all under our own patents, and having no royalties to pay, we can make you the lowest possible estimate on a complete mill varying from 60 bbls. to 1000 bbls. in twenty-four hours.

We invite those who contemplate making a change to pay no attention to the false statements of traveling agents, but come and see us, when we think you will be convinced that we have not overstated the fact when we say that our "Bismarck" is the best roll made in the world.

CASE MFG. CO.

Please mention the United States Miller when you write to us.

COLUMBUS, OHIO.

IS HE NOT ENTITLED TO THE $1000?

In reply to secretary Seaman's circular letter offering $1000 for a successful invention for packing bran, suitable for use in large or small mills, he has received the following letter which we give below *verbatim et literatim*, minus the date and signature. If he is not entitled to the prize, *we would like to know who is.* The accompanying cut "shows up" the inventor's bran-packer.

Mellers dena pani minari zde bich vam moch byt drobet drobet napomocnet zee vam posilam hnet jeden plan kdis ho schvalite bude dobre a kdis ho pohodite nekam na smetiste taki dobre, to bi ste potrebovali jenom jednu kdapku a provas l a pres to je as dost engine 10 horse power musel bi byt natu modu jako naposti abi hnal kepredu a naspask ato zavazi nemusi byt tak teski a tes nemusi bit ocelove.

GRAIN ELEVATORS.

Those whose business has led them hither and thither through the various great seaport and lakeport municipalities of the United States must often have cast a curious eye upward toward the elephantine grain elevators they saw touring above them, like Noah's ark, by every city waterside. What bustling, dusty, mysterious structures they seem to be! As to what is going on inside of them—how few know anything about it! People glance at them, beshrew them for their ugliness, have a vague feeling of comfort in the thought that the world can't starve as long as good sterling grain is flowing, like Pactolian rivers, along the railway and canals, and through the bins and shipping-pipes of these great grain-houses; and then they turn away and bestow no more thought upon them.

But that we shall not do. We propose to penetrate into all the mysteries and methods of this great business, and a round, unvarnished tale thereof deliver. Follow in your imagination a bushel of wheat, or Indian corn or rye, from the great golden grain fields of the world in Illinois, Nebraska, Kansas, or Da kota; accompany it on its long journey as it trundles over the glowing rail, or rushes through the yielding water; suppose it reaches the port of Boston to be shipped to some foreign port, say by a steamship of the Cunard or Allan line.

Now, an average freight car holds about twelve tons, or 500 bushels of grain. The car is run up along the side of the elevator building, and the grain is scooped out of each car by two men, who manipulate steam-power shovels, or scoops. Two men can thus empty a car in ten minutes, and can do the work of five men with hand shovels only. The scoops have two handles and are operated by a rope and pulley; the man pulls the rope, which then begins to wind in, and by digging the scoop down into the grain it is easily shoved out of the car. From the car it is conducted by a "leg," or pipe, into huge bins or sunken pits, in the basement of the building; these are square boxes which taper up to a point, or apex, where the elevator chute, or "leg," connects with them. The next thing to do is to weigh the grain, and each car load is weighed separately.

HOW GRAIN IS ELEVATED.

The *modus operandi* is this: Understand that the grain has got to be elevated to a great height and stored, in order that gravity may act on it when it is desired to transfer it to a ship. (And this is the reason elevators are made so high.) Well, now, it costs money to carry anything in a different direction from that which Mr. Principle of Gravitation is traveling; he is a very stubborn old gentleman, and likes to have his own way. Hence, as we have got to weigh that wheat and store it away both, we might as well lift it at once to the top of the building and weigh it there, and then it will be where it is wanted to remain.

Accordingly we have a mighty power-belt of rubber canvas two feet broad. This belt stretches perpendicularly through the building and runs over a pulley at the top. It runs the shafting, which in turn runs the half dozen or more endless traveling belts on which are set, about a foot apart, certain scoops, buckets, or grain-cups, made of thick tin bound with hoop-iron, and holding about a peck each. These revolving buckets pass through a leg or chimney, and dip into the pit of grain, carry it up to the receiving hoppers, where it is weighed by means of a pair of scales which stand away down by the car it came from. (Some car-tracks and canals are constructed directly under the roof of the building, but often they are at one side.) Weighing hoppers are suspended on iron stirrups so as to hang free, and have room for shaking themselves a little when they work, to get rid of the grain in their paunches. Next, the grain passes down one story into the storage bins, which are made of very stout planks, and have conical metal bottoms.

The way the grain gets into the storage bins is this: You have a good many of these bins, you know, hence you let your wheat fall first on a revolving table, placed directly under the weighing or receiving hopper. Around this table are ranged a number of spouts or sluices (numbered) and radiating in every direction into storage bins. A storage bin holds from 4,000 to 8,000 bushels. When it is desired to ship corn it is first allowed to run down again to the pits in the basement, whence it is elevated to the shipping hoppers, in the same way as described for the receiving hoppers. The present arrangement of elevators makes it necessary to thus lift every bushel of grain twice to the top of the building. The shipping hoppers are located just above the receiving hoppers and are the highest in the building. From the shipping hoppers long-hinged pipes conduct it to the hold of the vessel. It should have been mentioned that while the grain is *in transitu* to the shipping hopper, it is cleaned of chaff and dust by a fan-blower.

CLEANING AND LOADING.

One of the best methods of cleaning is to let the grain spread out over a sieve, the apertures of which are not large enough to let the grains fall through; then when a blast of air blows through the grain, thus thinly spread, it not only removes chaff and dust, but also the "cheat" or "chess." The shrinkage by fan-blowing is about one per cent., and the loss falls on the shipper. The charge for elevating and weighing grain and storing it for twenty days was formerly 1½ cents per bushel; at present it is only one cent. Charge for storage an additional twenty days is ⅜ of one cent per bushel, or less. A large shipper may have two or more storage bins assigned to himself, exclusively, or his corn may be graded and mixed with other corn of the like quality. A good elevator will ship from 8,000 to 10,000 bushels an hour. The storage capacity of some of the largest elevators of Chicago and Milwaukee, New York and Baltimore, is 1,500,000 bushels, and they can handle over 300 car loads a day. At the elevator of the Boston & Albany R. R., in East Boston, two-thirds of the grain handled in a year is Indian corn. A steamship of average size will take in from 30,000 to 50,000 bushels of grain.

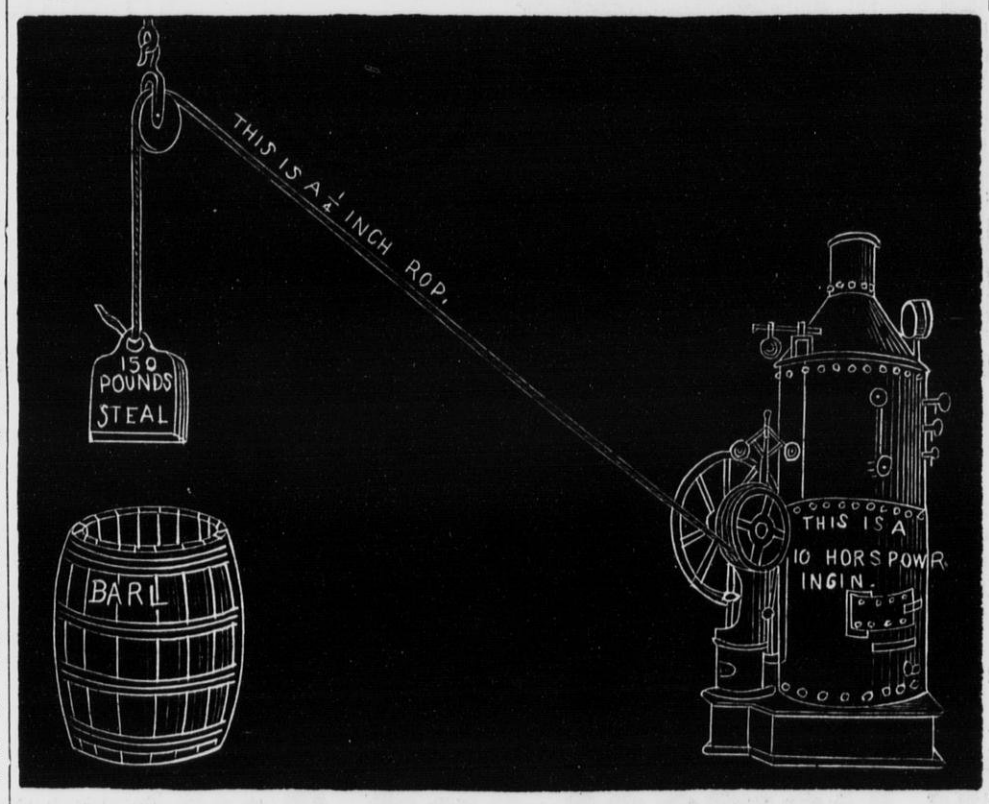
The method of loading ocean steamships which do not lie directly alongside the dock of an elevator, is to load into lighters, and these convey the grain to the steamers. These lighters, with their great chimney-like towers, look rather queer as they bob and nod on the waves of a harbor or river. By using lighters, steamships can save a day or so of their valuable time, since they can be taking in a miscellaneous cargo on one side and grain from the lighter on the other side, and both at the same moment. But in Boston there has recently been introduced a new system of loading, in connection with the great docks and elevators of the New York and New England and the Hoosac Tunnel, or Fitchburg Railroads. And this may serve as a hint to us to transfer our attention for a little to the grain elevators of Boston.

BOSTON'S LOCAL TRADE.

The local grain trade of Boston, fifty years ago, as now, was located entirely on the water front. The grain from Philadelphia, Baltimore, and Alexandria came by the Western canals, and was all received in Boston by water. The points of landing were the upper part of Long Wharf, above the T, City Wharf, Mercantile Wharf, and Commercial Wharf, and the Baltimore and Philadelphia Packet Piers. Later, when the through trunk railway lines came, the grain locality remained the same. But it is more particularly to the foreign export trade that we design now to call attention.

The father of all the grain elevators in Boston is the old Merchant's elevator just by the Boston terminus of the North Ferry to East Boston. It was established in 1858 by Alderman S. B. Stebbins. The Boston and Albany R. R. has two elevators in the city—one in East Boston between piers 1 and 6 of the B. & A. terminal grounds, capacity 1,000,000 bushels; and another in Boston proper, on Berkley street, capacity, 500,000 bushels. Another elevator is the Shawmut, on Constitution Wharf, not in operation now, but leased by the Hoosac Tunnel Dock and Elevator Company for use in the case of fire or accident to their immense new docks and elevator in Charlestown.

These huge works, with those of the New York & New England R. R. Co. in South Boston, are now the finest in the city. They are precisely identical in plan throughout, having been constructed by the same architect, Chas. R. McLean. The Hoosac Tunnel Company tried to purchase the territory in South Boston, now occupied by the New York and New England R. R. Co., but were defeated in their intent by the latter road. The Legislature then authorized them to take possession of Hittinger's, Damon's and Gage's wharves in Charlestown, close by the Boston bridge. Here they have constructed three great wharves covered by storage sheds and galleries.



THIS IS A BRAN PACKER, AND "DON'T YOU FORGET IT."

A MODEL ELEVATOR.

In enlarging the piers and excavating for new ones, the remains of ancient wharves were uncovered, and thousands of piles had to be pulled up, and stone walls removed. The dock numbered 5 has been completed within a few months. The elevator has a storage capacity of 600,000 bushels, and so arranged as to admit of a large addition. Five ocean steamships can be accommodated here at once. The great feature of the concern is the system of grain-carrying belts by which vessels can be loaded directly from the elevator.

High up above the sheds of the docks are three long covered galleries running out from the elevator. In these galleries are rubber belts two feet broad, and flat side up. The grain is conveyed on these belts through the galleries and is then shipped into the holds of vessels through the ordinary long-hinged pipes. The momentum of the swift-running belts keeps the grain from sliding off their flat surface, and a corner is turned by the endless belt dumping its load into a sort of pipe which lets the grain fall on another belt traveling at right angles to the former. Electric lights are used in the galleries and sheds, so that work can be prosecuted at night as well as by day.

The Hoosac Tunnel Dock and Elevator Company's works are divided into three distinct portions, each with its separate interests and management, namely, the grain, the freight, and the storage departments. The docks were opened Feb. 1, 1882. The Boston & Lowell R. R. Company talk of building new elevators near their depot] if they can get permission to construct new tracks across Chelsea bridge.

DUST AND INSURANCE.

The interior of a grain elevator is a most dusty-miller, pulverous, be-cobwebbed place, a vast net-work of heavy beams, and cross-braces, and hoppers, and thundering machinery. You step gingerly about among the beams, leaving tracks as you go, beholding with a rueful face the whitened appearance your black clothes are assuming, and feeling in generally much as if you were in your grand-mother's garret on a rainy morning. The dust and chaff ought to be swept up cleanly every day, if the insurance company's rights are respected, for there is danger of the chaffy substance getting into the journals of the machinery and taking fire. Insurance companies require the floors to be swept every day, when they insure an elevator building.

Chicago is the greatest grain market in the world, over 100,000,000 bushels of breadstuffs being received there every year. The city has between fifteen and twenty grain elevators, with an aggregate storage capacity of 12,800,000 bushels. The business is supervised by State inspectors and by a State registrar.

The first grain elevator in Milwaukee was constructed in 1840. There are now nine, with a total storage capacity of 5,330,000 bushels. The elevators can ship over 1,000,000 bushels a day, but can receive only 500,000, owing to the greater difficulty and slowness of elevating the grain. The Milwaukee elevators are almost all owned by the trunk railway lines, which drain the great wheat regions of the Northwest. Duluth, at the head of Lake Superior (population about 8,000), has three elevators, and Odessa, the great wheat city of Russia, on the Black Sea, has 500 granaries.—*Commercial Bulletin.*

THE FOUNDATION FOR PRACTICAL EDUCATION.

The child living with and brought up to his father's trade seems to have an intuitive knowledge of all the peculiarities of the business from the earliest age, and illustrates conclusively the advantage of this early acquaintance with manual knowledge. The best means of furnishing this training to boys and girls, is to familiarize them with it through a systematic use of their playthings in the kindergartens. There is no doubt but this is to be the foundation of practical teaching and to afford a solution of the problem of how to establish practical training for children in America. No child but has a natural bent which is here developed, and none but is the better, has the more practical efficient brain power for the aid given in the manual experience. St. Louis has for years had this foundation for her public schools, and Chicago is gradually coming up to the knowledge of the benefits thus conferred. Plans are already drawn for the erection of the first of the group of buildings on the lot 400x600 feet, bounded by Thirty-third and Thirty-fourth streets and running west from Dearborn street, as a memorial to the late Joseph Armour, and in obedience to certain provisions of his will. The entire group of buildings will be devoted to the manual and technical training of children, and when completed will form one of the largest institutions of learning of the kind in the world.

The structure, which has just been commenced, will occupy a space 82 by 126 feet, at the southwest corner of Thirty-third and Dearborn streets, with the main front on Dearborn streets, and will be a chapel and kindergarten. It will be constructed of Chicago pressed brick and brown stone, with some carved panels and enriched mouldings of terra cotta. In the first story are two large rooms for kindergarten work and four large class rooms for manual and other training for children; also a suit of rooms for kitchen-garden training, and the apartments of the superintendent. All of the rooms will be provided with every convenience for the accomodation of children and for the carrying on of the various forms of educational work contemplated in connection with the building. It is intended to have it ready for occupancy by October, 1883.—*Chicago Journal of Commerce.*

Messrs. Reel, Piersol & Co., of Cameron, Mo., the senior partner of which firm is well known to the milling trade throughout the country, having been formerly head of the firm of Reel & Seyler, purifier manufacturers, at Cedarville, Ill., are erecting a 150 bbl. mill at Cameron, Mo., and they have contracted with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for the complete outfit of rolls, bolting chests, and other machinery, including the iron work, and also a 14x36 Reynolds Corlis Engine, and complete steam power outfit. When completed, they intend their mill shall have no superior, for the same capacity, in any part of the country.

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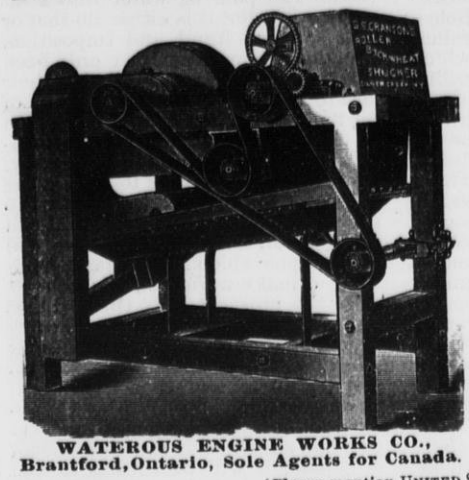

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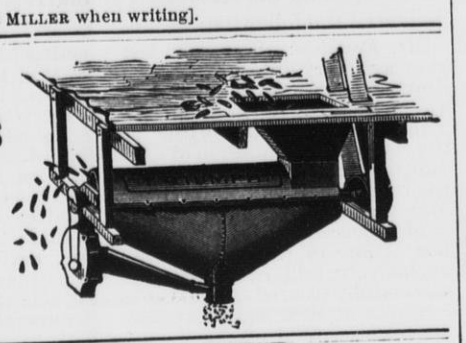

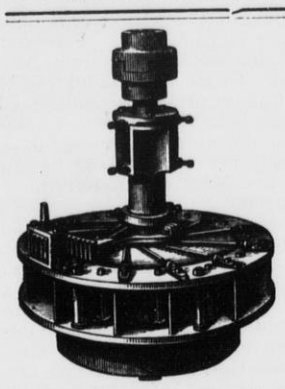

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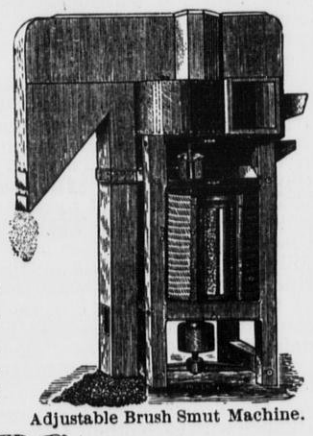

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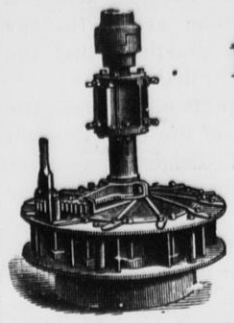

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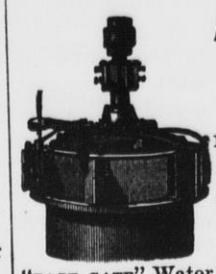

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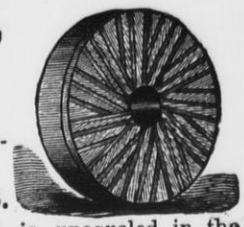

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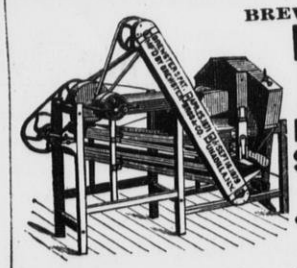

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[Mention this paper when you write.]

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Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and 'Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms.

The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine.

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[Mention this paper when you write to us.]

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is now issuing Policies of Insurance on all approved applications received so far. The Company has now sufficient members to allow it to increase the risks on any one Mill from $1.000 to $3.000.

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[Please mention the United States Miller when your write to us.]

GERMAN AND AUSTRIAN ADULTERATION OF AMERICAN PRODUCTS.

Report by U. S. Consul Geo. C. Tanner, of Liege, Belgium.

There are no people who cry out more lustily and energetically against adulterations than the Germans and Austrians, and yet there are none who indulge in such practices more extensively. Were the full extent of the talents displayed by these nations in adulterations turned into more honest researches, the benefits that would doubtless accrue to them and to science would be hard to define. They can take (and they do it, too), one gallon of our kerosene oil and make one and a half gallons out of it.

If you go into a shop in Germany where this kerosene is peddled, you will be surprised to find the oil, which you have already regarded as possessing but one grade, transformed by the Germans into three grades, and gravely told, when you manifest surprise, that it came from America that way.

The first quality will be found slightly dashed, the second considerably so, and the third so heavily as hardly to be detected by its oldest and most intimate acquaintance.

The science of dilution is carried into everything that is liquid, and adulterations into everything that is solid. Their wines, liquors, and beers, their medicines, and even their mineral waters, are full of all kinds of concoctions and foreign ingredients that are dangerous to life and health. Their sausages and hashed meats are a *mélange* of doubtful ingredients.

Even their woolen goods are adulterated with wool made from rags; the rags are passed through a machine, reconverted into wool, than made into cloth, and largely exported into the United States,

It is well known and abundantly proven that cloth made from such wool retains through all its transformations and rough handling germs of disease, and disseminates them broadcast. A German dying of smallpox, his clothing becomes useless for other purposes than old rags.

The American wearing a suit of clothes made of German cloth thinks little of the risk he is running, or of the condition of the person who has died, or worn at least a part of his suit before him. One must shut his eyes and go it blind when he makes up his mind to buy much that is brewed, baked, or manufactured in Germany, and to be at that reckless point that he does not care what may happen.

The adulterations of this cloth do not stop here. They sandwich in with the wool of rags, and a small proportion of pure wool, a new *fiber* known as Cosmos, just brought into use as an adulterant, and which is considered by recent investigations to be injurious to health. I have been told by a medical gentleman from Verviers that cloth in which this Cosmos existed, if placed in proximity to a young child, the parts touched thereby would become inflamed, and that it would produce eruptions if it came in contact with the mouth of a child. It is no secret that this article enters largely into the manufacture of woolen cloth in Germany and Austria.

Our flour when found in these countries becomes foreign to such an extent as to be beyond recognition.

An examination of this article will show many adulterations that could not possibly have taken place in the United States, because these ingredients would be more costly with us than the genuine article of the same grade. These ingredients are numerous. I will only mention a few of them: plaster of Paris, baryta, and potato flour. Bread made from this flour is also adulterated.

Our lard is also doctored in many ways, tallow and horse fat being the most conspicuous adulterations.

If evil consequences follow from such wholesale adulterations (as often happens), there is always a means of escape, and the German loses no time in availing himself of it; he sings out lustily that it is in consequence of American adulterations.

There are some things that are so audacious in their character as to puzzle us to know how to treat them, whether grave or gay, and this charge of poison and adulterations coming from such a source is one of these things. It is the clever device of the juggler, who diverts the eye, while he cunningly performs the trick.

The charge that our flour, lard, and other products that we export to those countries are adulterated is palpably false and absurd, Is it probable that we would use adulterations that would cost us more than the genuine article, or would betray itself at first glance? Is it not reasonable to suppose that where those adulterations are found, in a country in which the adulterating article is cheaper than the genuine article (to say nothing of a common practice), that the adulteratlon took place in that country?

The United States exports many times the quantity of necessaries of life into England that we do to Germany. Belgium and other countries remain steady customers of our pork and flour, and never a word was uttered against either until Germany commenced it. The case is simply this: when our products come into competition with the German home products, the latter suffer considerably, and in proportion to the magnitude of the former, the cry is raised of the "American invasion." It is treated, too, as a real invasion, and all the unfair methods known to warfare are resorted to.

If a choice was left with the German, he would naturally prefer buying an article that he could get at the lowest price, and a government that would try to force a dearer article on him would meet with opposition and be unpopular. In order to do away with this, and to carry out a made-up programme of prohibition, a prejudice must be created against the cheaper article, and hence the song of adulteration, poison and a copy of others falsehoods are raised. It has been proven by experience that protection is not popular in Germany, nor would prohibition be unless the public mind had been worked up to a state to receive it. The first act in this programme has been shrewdly executed and our pork has been driven in disgrace out of Germany by an order of His Majesty the Emperor. Emboldened by his success, the German now turns his attention to the next thing in order, our flour, and its fate is not hard to predict.

The same methods have been resorted to, the same prelude executed, and the same results will follow with this article as with the pork.

These things when allowed to go without protest injure us more than would at first glance appear. These sensational stories of deaths by the wholesale, caused by American adulterations, go from one country to the other with astonishing rapidity, and are accepted as facts, to the great detriment of our commerce, besides creating an inpression abroad that there is nothing so monstrous as an American.

Our government, with commendable energy, met the charge brought against our pork, and, at no little trouble and expense, instituted an investigation that resulted in a complete vindication of our hog; but this did not have the effect it was intended it should have, because the edict of prohibition was issued some time subsequent to its publication.

It seems to me that if Germany can prohibit the importation of our products, on a trumped-up and foundationless charge, that we could return the compliment on their woolen goods and other articles, on reasons that can be proven against them by any fair investigation, and in that way bring them to see and repair the injustice they are doing us. If some means are not devised to check this unjust and shameful war on our industries, one after another of our productions will fall as did our pork.

If the effects of this war were felt in but one country we might allow these things to pass, but this is not the case. Any one who will look at statistics will see that the German war against our pork has injured its importation into all other European states. Apart from a commercial view, and other considerations mentioned no one can be so amiable in disposition as not to smart under a *system* of injustice so doggedly followed up, to say nothing of the methods used.

IMPROVEMENT IN ENGINES.—The *Manufacturers Gazette*, in speaking of hot-air engines, says: "In an improved form of hot-air engines now coming into use, the action is such as to overcome almost all the difficulties encountered under the ordinary system. After the fire is made, the retort becomes heated to a dull red heat, which rise of temperature expands, the small amount of air inside the piston being by this means forced in the air cylinder downward. After this expanded air has done duty, the displacer, which is actuated from the crank, forces the air which has been condensed against the cold sides of the top part of the cylinder back to the hot end of the retort. As the piston performs its stroke, due to the expanded air in the cylinder, a small air valve is kept closed by the pressure; but as the piston makes the return stroke, a small valve on the top of the cylinder opens for a sufficient length of time to permit air to enter the cylinder, to replace any which has escaped through defect in packing. It is therefore not only automatic in receiving the proper supply of air for expansion, but is also automatic in its lubrication, for whenever this down stroke is made, a small amount of oil is drawn into the cylinder for lubricating the metallic piston—a great advantage in hot-air engines."

WISCONSIN STATE MILLERS' ASSOCIATION.

The annual meeting of the State Millers' Association was held in the parlors of the Plankinton House, Milwaukee, Wednesday, April 10, at 2 P. M. The attendance was not large. The milling press was represented by W. C. Edgar, of the *Northwestern Miller*, Minneapolis, Harley Mitchell, *American Miller*, Chicago, and E. H. Cawker, *United States Miller*, Milwaukee. The meeting was called to order by President Sanderson. S. H. Seamans, secretary of the Association, being called upon for the secretary's annual report, delivered the following:

Mr. President: Since our last meeting, one year ago, very little has transpired within the limits of our own State Association requiring any extended report from me as secretary. The most important matter accomplished is the complete organization of the Millers' Mutual Insurance Company of Wisconsin, which, under the indomitable will of the Hon. John Schuette, Manitowoc, its secretary, is fairly started on the road to success. I have been assured that very few if any of the mutual companies, taking exclusively mill risks, have started out and successfully secured an equal amount of selected business at such small expense. Under Mr. Schuette's careful management we look to see this company take the front rank among the mutuals. Our membership is nominally unchanged. No assessments having been levied for 1882, the question of increase or decrease has not been presented. The "Denchfield Case," which has been presented to you annually for several years past, is still before the United States Supreme Court. It was expected to have been argued in March, but is not yet reached. I am expecting, however, to hear from it every day. As to the result, there would seem to be no doubt, judging from the confidence as expressed by Mr. Harding, and also the late decisions of the Supreme Court in similar cases. The "Process," or "Germ Roller suit," entitled "Downton vs. Yeager Milling Co.," is also before the Supreme Court, and the time for argument is near at hand. While we are not parties to that suit, nor is our association vitally interested in the outcome (having a contract with Mr. Downton whereby our members are protected by a limit as to their liability in case Downton succeeds), the sub-executive committee have kept a watchful eye upon the proceedings of the ligitants, and believe it will be properly defended. The results may be briefly stated: If Downton succeeds, the royalty is limited; if he is defeated, we will have no royalty to pay. As your representative in the National Association and upon the sub-executive committee, I have to report that I attended the delegate meeting, which convened at Cleveland Jan. 31, pursuant to the call of the committee issued December 2, last. It was expected that each organized state association would be fully represented at this meeting, as it was considered one of importance to the milling interest of the country. But I regret to say that one association was represented by only a single delegate. This is not as it should be. Milling being one of the largest manufacturing interests in the United States, every year proves more and more conclusively the necessity of a closer alliance with each other. Competition increases, new methods of manufacture are presented, new markets are opened, ways of doing the business are changed, new frauds are brought to the surface, either among applicants for the business or the many crooked patents put forth, which requires and will continue to require, in an increasing ratio, constant watchfulness. The proper place to compare notes and discuss these matters is at the various meetings of the association—state and national. One of the important questions the national sub-executive committee have been called upon to discuss more frequently, perhaps, han any other, without being able to reach a definite decision, and one, too, which was mainly responsible for calling the Cleveland convention, was "to what extent shall the association undertake to defend its members against patent infringements?" This, at first sight, may seem a very simple proposition, but far from it. At Cleveland this matter was referred to a select committee composed of a delegate from each state, to which was added the chairman of the sub-executive committee and your representative. Nearly every member of this committee, aside from the last two were of the opinion that they would be able to return and report in a few minutes; but a session of three hours resulted in a report in leaving the matter just where the old committee had turned it over to a new, except the course which the regular sub-executive committee had adopted was confirmed by specific instructions, by resolution of the entire convention, and read as follows:

"*Resolved* That the Millers' National Association will defend or settle all patent right suits against its members, except in cases where the national executive committee, after full investigation, decide against the advisability of defending or settling such claims and so notify the member threatened with suit."

Now this resolution suggests two very important considerations. First, to avoid litigation by buying only from responsible parties, who are not only able but will guarantee to protect their purchasers in the ownership and use of the machinery they manufacture and sell. Do not, therefore, for the saving of a few dollars buy any patent machinery of irresponsible parties, and with the machine purchased take the chances of a lawsuit 'thrown in.' Second, members are expected to use ordinary business caution in buying machinery covered with patents. Very little of the machinery is now used in new process manufacture of flour but what is covered 'knee deep' with patents, 99 out of 100 worthless. perhaps, but it takes money to defend them, and the patent office is grinding them out at the rate of nearly 500 per week, of which the various milling machinery comes in for its share. Third, the Association has been frequently called upon in the past to defend quite a number of very vexatious and costly suits. We find it takes money, money without stint. It seems like pouring water into a rat hole—no end to it. But it is either do that or submit to all sorts of fraud and imposition, which your national committee have only been willing to take in small doses. While it is their aim and desire to keep our members out of trouble, they find one of the best remedies is to be prepared for any emergency, and well fortified with plenty of money in the treasury, which answers the same purpose to us that the standing armies of foreign nations do to the countries they represent. A 'patent shark' will stop and consider well the result before he will make an attack upon able and willing defendants, prepared to make a vigorous fight; they do not admire the prospect. To the end that your national committee might be able to carry out the instructions as expressed in the former resolution, they ordered an assessment for 1883 of 10 per cent. per amount of capacity, which is now in process of collection. While the sub-executive committee are fully authorized to defend any and all suits which they may deem advisable to defend, it will be their aim and desire to prevent their members from getting into trouble, rather than have to defend them after they get into it. The committee have been very busy the past year with matters tending in this direction, which I will briefly notice. It was deemed advisable to employ a patent lawyer, and they are now arranging for such, to watch and report upon all new patents as they are turned out from week to week, which refer in any way to the milling devices and machinery, that we may be kept fully posted in this direction. On dust collectors, which are fast becoming an important adjunct to every well-regulated mill, they are negotiating for good and sufficient bonds, which will be a sure protection to all members who purchase those machines. The agreement is settled and only awaits the few minor details which I expect will be consumated this week, when members will be duly notified. Other manufacturers of milling machinery have expressed a willingness to adopt a like course, believing it is not only for their interest to do so pecuniarily, but a guarantee which every purchaser is entitled to receive. The Ganz and Mechwart patents have created quite a stir, not only among millers, but also among the builders of roller mills, from the fact that they have lately been bought by parties in this country at a big, round price. who no doubt, believe they have secured a valuable prize. The committee are giving the matter such consideration as its importance demands, and members may rest perfectly easy, with the full assurance that their interests are not being neglected. At the Cleveland meeting a premium of $1,000 was offered for the invention of a successful machine to compress bran in a suitable form for export. This matter having been left in charge of the secretary, he will say that the prospects is certainly favorable, judging from reports so far received, that the successful machine will be forthcoming, which will enable us to put the entire product of the manufactured wheat into the foreign markets on the same basis of freight as flour and grain. The following resolution was adopted at Cleveland, which is at variance with the custom heretofore adopted in this state, and which will require some action at this meeting. The resolutions read as follows:

"*Resolved*, That organized state associations may admit members who will also be members of the National Association, upon payment of an initiation fee of $5 for each unit of capacity, and the assessments levied for 1883. From unorganized states new members will be admitted direct to the National Association upon the same terms with an additional fee of $5 for each unit of capacity." Heretofore new members, proprietors of old mills, have been obliged to pay full assessments, equal to the original members. The resolution proposes differently. The annual meeting of the National Association, time or place is not yet finally settled upon, but will be published at the earliest possible moment. If this meeting desires to express any preference in this matter, it will be desirable to assist in determining the location which will best suit the majority.

Respectfully submitted,
S. H. SEAMANS, Secretary.

Mr. Seamans then submitted the following:

TREASURER'S REPORT.

Wisconsin State Millers' Association in account with S. H. Seamans, treasurer:

1881			
April 11.	By balance on hand		$858,51
1882			
April 12.	For papers and printing	$ 2,00	
" 12.	Millers' National Association	200,00	
Feb. 3.	Expenses to Cleveland convention	40,03	
April 2.	Riverside Printing Company, books, etc	13,25	
	Secretary's services	250,00	
April 10.	Balance on hand	353,23	
			$ 858,51

S. H. SEAMANS, Treasurer.

Amount on hand	$353,23
Collected on 141½ units capacity, assessment No. 9	767,60
Total on hand this date	$1,060,73

On motion of C. A. Manegold, the above reports were received and adopted. The recommendation of the committee of the National Association regarding the admission of members was adopted. The committee appointed at the last meeting of the Association, to take action looking to the drafting of a bill against gambling and dealing in options and grain, asked for, and given further time, pending the decision of a case now before the Supreme Court. Two letters pertaining to bills of lading were presented and read by the secretary. These letters were published in the UNITED STATES MILLER for April.

Upon motion a committee of three, to act on the matter of a more equitable bill of lading, was appointed by the president, and instructed to report to the National Association. The committee selected was Wm. Sanderson, C. A. Manegold and F. Schleisinger. The first quarterly report of the Milwaukee Mutual Insurance Co. for the year 1883 was presented, same showing there to be 200 policies in force, with a total risk of $354,500. The total amount of loss paid during the quarter was $3,666.58. Total assets of the company $70,657.10.

Following this came the election of officers. Upon motion the present officers were unanimously re-elected by acclamation. After tendering a vote of thanks to the Plankinton House for courtesies extended, the meeting adjourned.

FOR THE NEAR SIGHTED.

Occasionally a Near Sighted Miller is encountered who can read nothing but "Loud" Print.

For his Benefit as well as **All Others** interested in the use of Roller Mills, it is eminently proper to say that the

STEVENS ROLLER MILLS

AS MANUFACTURED BY

THE JOHN T. NOYE MANUFACTURING CO.,

BUFFALO, N. Y.

have, by their Superior Excellence of Construction, embodying all the Most Recent and Modern Improvements of Any Merit, and Perfect Adaptation to All the Requirements on any

CLASS OF WHEAT,

Legitimately earned the name of being the

BEST IN THE WORLD.

Estimates given for Mills of any Capacity, from 20 to 20000 Barrels in twenty-four hours. Systems Simple or Elaborate. Results Guaranteed. Mills Remodelled in Short Order. Correspondence solicited.

Send for the Handsomest and Most Complete Roller Mill Catalogue ever issued.

[Mention the United States Miller when you write to us.]

[The following article which was written for *The Miller*, London, by a milling engineer, contains many points of interest and much information of value to young American millers who have a desire to learn. The publisher of the UNITED STATES MILLER has endeavored to obtain an article something similar to this from a well known American milling engineer, but as he has been unable to do so, he believes he renders a valuable service to his readers by republishing from *The Miller*, London, the article as below. The article was prepared with a view to assisting millers to pass the examination for admission to the ranks of English journeyman millers.]

STUDIES FOR YOUNG MILLERS.

Milling Technology, with Suggested Questions for Examination therein.

1. *Milling.* Corn or flour milling is, strictly speaking, a mechanical process, or rather a series of mechanical processes. But milling, thus looked at as a branch of applied mechanics, is consequent on the facts relating to supply, and is determined, so far as intention is concerned, at every stage by the relative good values of the various products into which the cereal operated upon is subdivided; whilst the physical properties of the different portions of the wheat berry furnish the limits within which these intentions are carried out. Thus milling, in its general signification, is primarily divisible into three divisions of the supply, manufacture, and the physical and chemical properties of the wheat operated on.

2. *Supply.*—Various questions, at once interesting and practically important, relate to supply, the sub-heads being Variety, Transit, and Storage.

3. *Variety.*—The variety of the supply at any given place depends upon the ratio of production to consumption, not only at the place in question, but on that ratio in every other wheat-producing country. On the assumption of perfect distribution, the diversities in the above-named ratio tend to the following result:—In every country in which the production exceeds the consumption the whole of the wheat will be native-grown. In every country in which the consumption exceeds the production, the deficiency of the latter will be made up from every country in which more is grown than consumed, in the proportion furnished by each country to the total quantity exported from all countries. How far this condition is realized in practice, and what are the causes—as transit, import and export duties, &c.—which hinder its realization in every place, are subjects which ask for satisfactory explanations.

a. What countries are there, which, under average circumstances, import wheat?

b. What countries, under average circumstances, export wheat?

c. In what countries does production (on an average) equal consumption?

d. What are the principal divergent characteristics of wheat?

e. Correlate these divergences, which depend on *habitat*, with the wheat-bearing regions producing them.

f. Indicate the probable increase or decrease in the importation and exportation of the above-mentioned countries, giving the causes leading to such increase or diminution.

4. *Transit.*—The carriage of wheat from place to place is interesting chiefly in the following ways: Methods of conveyance and handling; the cost of transit; and the effect on quality during transit.

a. What are the principal ports of importing and exporting countries?

b. What is the relative cost of transit from the exporting countries to the United Kingdom?

c. Explain briefly the route taken and the method of handling of grain from one of the American States (Oregon for instance) to the United Kingdom.

d. What is the effect on quality of a sea-voyage?

e. Give the import and export duties charged by the several countries.

f. State briefly the effects of these duties on the corn trade of any given country.

5. *Storage.*—Under this head will fall the manner of storage, its effects on quality, and the mensuration of wheat in bulk.

a. What is the specific gravity of wheat in bulk?

b. Given the length, breadth, and depth of a corn receptacle to determine its capacity in imperial quarters, and also the weight of its contents when full.

c. In what manner does storage affect the quality of wheat?

d. How may the deterioration consequent on storage be reduced to a minimum?

6. *Manufacture.*—The mechanical processes of milling pre-suppose the principles of of pure mechanics. Machines used in milling are actuated by motors, and the power is transmitted by means common to all machinery. Where possible, mechanical questions should relate to special milling machines, but with regard to the principles common to all machinery, independent of any special function, the ordinary methods of examination will suffice. It will be a question as to what extent this should be carried; but it would seem that for the present, and until the increasing stimuli to study mechanics have had time to operate, purely mechanical questions should, except so far as is necessary to illustrate special milling machinery, be included very sparingly, at least in the preliminary examinations.

7. *Motors.*—Motors being classified according to the immediate source of the energy actuating them, as wind, water, and steam, the mode in which the energy exists prior to its conversion in the motor, and also the manner of its transformation, should be brought out, as also the relative advantages and disadvantages of the different motors for the special purposes of flour milling with respect to cost, locality, uniform emission of power, etc.

a. Explain briefly the mode of energy and its successive transformations as existing in the steam engine.

b. Explain the use of the fly-wheel on the steam engine.

c. Estimate the cost per 20-stone sack of flour of a steam motor (stating in question the number of breaks).

d. What is the immediate source of energy utilized in water motors?

e. What differences are there in this respect in the cases of overshot, breast, undershot, and turbine wheels?

f. What are the advantages and disadvantages of motors actuated by wind, water, and steam respectively?

8. *Machinery.*—The transmission of power by machinery is the principal thing to be considered under this head. Each piece of moving machinery has some function determined by its connection with fixed and other moving pieces. The shape of the connected surfaces, the effect of their connection on the energy transmitted, and the effect of their connection with other moving pieces upon the variation of the two factors, velocity and intensity, define the function of the several pieces.

9. *Technology.*—The technology of milling proper should be taught mainly by discrimination based on function. With regard to classes of machinery this is apparent. The leading divisions are the preparation, reduction, and subsequent separation of the grain and its products; and the machinery used in these several processes will naturally fall under the same heads.

10. *Preparation.*—Under the head of preparation is included cleaning, the elimination of damaged grains, sizing, heating, &c. Separation can only take place through some physical differences existing between the good grain and the substances which it is sought to remove. When these differences are considerable it matters not how many kinds of foreign substances there may be; or what differences these various substances exhibit; a combined apparatus can be easily constructed to eliminate all at one operation. In proportion as the physical differences on which the separation is based become less, a more elaborate, or at least more specialized, machine—one constructed with a view to that construction alone—becomes necessary.

a. Give a brief explanation of the objects sought to be attained in the preparation of wheat.

b. What are the characteristic effects on the resulting flour of unremoved smut balls, garlic seeds, cockle seeds, and sprouted grains?

c. What are the consequences of milling damp wheat?

d. What are the advantages said to be gained by those who advocate heating the wheat previous to reduction?

e. Explain the rise to the surface of the lighter grains and substances upon a general agitation of a mixed bulk.

f. What are the objections to washing wheat?

11. *Reduction.*—The reduction of wheat is complicated by the circumstances that the resulting particles, or portions of the berry, are required to possess certain distinctions as to size, as on this the desired quality and also the subsequent separation is based. Each distinct kind of machine gives rise to a variety of scientific questions. Millstones and rollers are the principal *kinds* of reducing machines. The essential points to be considered are the shape of the acting surfaces (there being two in co-operation), their relative motions, and the irregularities of the surfaces of revolution, whether due to the nature of the material, or produced by art.

a. Explain in what the principal problem of grinding or reduction in milling consist.

b. Supposing this reduction to be accomplished, by millstones, describe the mechanical action of the stone on the wheat.

c. Explain the development of heat in the millstones.

d. What is meant by "standing balance," and what by running balance in millstones?

e. Describe an adjustment which will affect the running balance, but not the standing balance.

f. What is the effect on a displacement of a running stone, in running balance, when the point of suspension is at, above or below the centre of gravity of the stone respectively?

g. What effect has more or less draft in the furrows on the course of the feed through the stones?

h. Describe the forces acting on a particle of feed during its progress through the stones.

i. What is the principal difference between the mechanical action of smooth rollers and millstones?

j. What alterations in the manufacture and motion of rollers cause their action upon the feed to approximate to that of millstones?

k. What are the relative advantages claimed for porcelain and chilled iron, as material for rollers, respectively?

l. What are the relative advantages claimed for rollers and millstones, respectively?

12. *Separation.*—Separation is here, as elsewhere, based on difference, the differences utilized being those of size and density.

a. Into what products is it desirable to separate the meal as it comes from the stones or rollers?

b. In what respect does separation in modern processes differ from the simple operation following low grinding so long in practice?

c. Explain the principle of action of a middlings purifier.

d. Explain the mechanical conditions under which separation based on size can take place.

13. *Chemical composition and physical properties of the wheat berry.*—Milling from its chemical side asks, "What are we to do?" from its physical side, "How are we to do it?" It is evident, then, that the former, in so far as it affects practice, precedes the latter—hence its importance. This question of desired chemical constitution in flour concerns the miller and the baker equally—the miller so as to know how to produce it; the baker, because of its importance with reference to the further changes to be made, and the result to be aimed at in the loaf. It is, however, for those undertaking the chemistry of bread making to indicate the chemical and other characteristics desired in the flour, and then for those engaged in milling to meet the requirements as best they can.

a. Give the principal differences of structure of which the wheat berry consists.

b. Which of the above portions is it desirable to retain in the best flour?

c. Give the organic chemical compounds to which the different structural portions are their properties.

d. Give the ultimate chemical substances which predominate in the different portions.

e. Describe the mechanical properties of the several portions which render the desired separation possible.

f. What is the chemical distinction between hard and soft wheats, and to what is this difference due.

g. In what manner does sprouting alter the chemical composition of wheat?

h. State concisely the contentions of those who advocate, and of those who oppose, the use of whole-meal bread.

14. *Explosions.*—Flour dust when diffused in air is highly inflammable, and the products of combustion occupying many times the space (under the same pressure) taken up by the air and dust previously, an explosion takes place.

a. To what chemical constituents of wheat is the inflammability of flour dust due?

b. What chemical alteration takes place on combustion?

c. To what is it owing that the combustion of flour dust causes an explosion?

d. What is the measure of the intensity of an explosion under the most favorable conditions?

e. What causes render explosions more frequent now than formerly?

15. *Storage.*—Grain is generally stored in granaries by heaping it in layers of certain thickness on well ventilated floors, or it is put in specially adapted receptacles. In Hungary, Spain and Russia grain is often stored in large pits cut into the rocks (silos), or also in dry earth pits. In India and similar grain-producing countries the natives store their grain in earth pits.

a. The specific gravity of wheat in bulk varies according to its species, its dryness, and its quality. The weight of a bushel of wheat varies from 52 lbs. to 62 lbs., and its average weight is 60 lbs. A bushel contains 2,117 cubic inches, and if filled with water would weigh 80 lbs. Therefore the average specific gravity of wheat *in bulk* is only=0.75, although the *absolute* specific gravity of wheat is greater than that of water (about 1.5). Therefore, as one cubic foot of water weighs 62.425 lbs., one cubic foot of wheat only weighs 46.82 lbs. *Note.*—The American bushel is smaller than the English bushel; it only contains 1,848 cubic inches, and only holds 66.7 lbs. of distilled water.

b. In order to ascertain the capacity of a receptacle in imperial quarters, and the weight of its contents when full, for a given length, breadth and depth, find the contents of the receptacle in cubic feet and divide by 10.2638, roughly 10¼ cubic feet (the capacity of an imperial quarter in cubic feet).

The weight of the contents can then be found either by multiplying the number of cubic feet with 46.82 lbs. (the weight of a cubic foot of wheat), or by multiplying the number of imperial quarters with 480 (the weight of a quarter of wheat.)

The following rules may be employed for finding the contents of the receptacle:—

1. *Cylinder or prism with plane parallel ends.* Multiply the area of either end by the perpendicular distance between the end planes.

2. *Rectangular prism with plane ends, not parallel.*—Measure the sectional area on a plane perpendicular to the axis; multiply it by the half-sum of the lengths of a pair of opposite edges.

3. *Triangular prism, with plane ends, not parallel.*—Measure the sectional area at right angles to the axis; multiply by the third-part of the sum of the lengths of the three edges.

4. *Cone or pyramid.*—Multiply the area of the base by one-third of the hight, measured perpendicularly to the plane of the base.

5. *Sphere or ellipsoid.*—Multiply together the three axes of an ellipsoid (or take the cube of the diameter of a sphere); then multiply by the factor $\frac{3.1416}{6}=0.5236$

6. *Frustrum, prismoid, spherical and ellipsoidal segments and zones.*—The following rule is applicable to—

I. A frustrum or part cut off from a cone or pyramid by a plane parallel to the base.

II. A prismoid, or solid, bounded by two parallel quadrangular ends and four plane faces, parallel or not.

III. A segment cut off by one plane, or a zone cut out by a pair of parallel planes, from a sphere or an ellipsoid (barrel).

And generally to any solid bounded endwise by a pair of parallel planes, and sidewise by conical, spherical, or ellipsoidal surface, or by any number of planes.

Rule.—To the areas of the ends add four times the area of a cross section made by a plane midway between and parallel to the ends; divide the sum by six and multiply by the perpendicular distance between the two parallel ends.

Example: A quantity of wheat is stored up on a mill floor in the shape of a frustrum of a square pyramid. Its top surface is 20 ft. by 20 ft., and its bottom surface 24 ft. by 24 ft.; its depth is 3 ft.; what are its contents in imperial quarters, and what is the weight of the wheat?

The area of the mid-cross-section is 22 ft. x22 ft.=484 square feet; the area of top surface is=20 ft. x 20 ft.=400 square feet; and the area of bottom surface is 24 ft. x 24 ft.=576 square feet.

Therefore:

$$\frac{\text{area of top surface+area of bot. surface+4 times mid. cross sec.}}{\text{six}} \text{ xper. dis.=cont.}$$

$$\frac{400+576+4\text{x}484}{6}\text{x}3=1.456 \text{ cubic feet.}$$

One imperial quarter contains 10.2638 cubic feet; therefore, 1,456 cubic feet is equal to 141.86 quarters. One quarter weighs 480 lbs.; therefore the weight of the wheat is=68,092 lbs.=30 tons 8 cwt.

Example: The inner diameter of a flour barrel is 2 ft. at top and bottom, and its largest diameter is in the middle=2 ft. 6 in. Its height is 3 ft. The areas of top and bottom surface are=3.416 square feet each. The area of mid-section is=4.9087 square feet, and we find

$$\frac{3.1416+3.1416+4\text{x}4.9087}{6}\text{x}3=12\ 959 \text{ cubic feet.}$$

c. The influence of storage on the quality of wheat is twofold—first, deterioration by rats, mice, insects, &c.; and second, chemical

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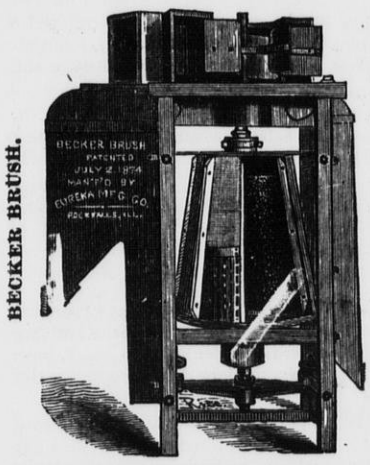

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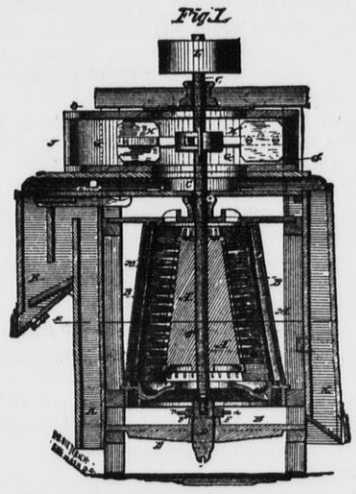

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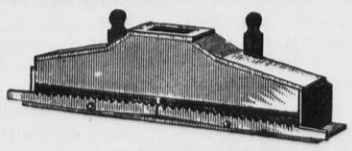

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deterioration by action of atmospheric moisture. The latter deterioration is the most injurious one, and it is therefore of the utmost importance to keep stored-up grain as dry as possible, in order to prevent all fermentative and fouling action, which would turn the wheat musty and mouldy. So far as moist wheat or fresh harvested, wheat is concerned the influence of storage, if properly managed, may be said to be beneficial, because it causes the superfluous moisture to evaporate, and thereby renders the wheat fit for grinding.

d. The deterioration resulting from storage, may be reduced to a minimum by various means. The most effective arrangement is probably that of storing the wheat in cast iron or wrought iron air-tight receptacles, and to exhaust them by means of exhaust fans. By thus withdrawing the oxygen, all fermentative and fouling action and the growth of fungus is checked, if not made impossible; and also vermin and insects cannot exist in such evacuated receptacles.

Another means for diminishing deterioration from storage is continual motion of the grain and good ventilation with dry air.

Grain stored on floors in ordinary granaries, therefore, requires frequent turning. The granary should not be situated in the neighborhood of watercourses or large trees, so that only pure air is allowed to pass through the floors. A constant draught should be maintained, except in wet weather, and plenty of light should be provided, because dry air and light keep the wheat from getting musty. Fresh harvested wheat contains, as a rule, too much moisture, and it must, therefore, in the beginning, be heaped only in thin layers. It requires frequent turning, and as it becomes gradually drier it can be stored in thicker layers.

In order to avoid this turning by hand, granaries have been specially constructed so as to keep the grain in continual motion.

An arrangement constructed by Mr. Conink of Havre, consists of a series of strong perforated floors, which are arranged in such a manner that the grain in passing through the floors forms a number of air spaces. These air spaces are in communication with the outside air or with an exhaust fan, and through them a continual ventilation takes place. As the wheat is drawn off at the bottom of the store, the grain moves gradually downwards. By putting a worm in the bottom of this grain receptacle and feeding with the same an elevator which delivers the grain again to the top, a continual motion can be kept up in the grain, which not only prevents deterioration by insects but also keeps the grain dry and sound.

A somewhat similar arrangement has been constructed by Huart of Cambrai, which is in use in several large Continental mills. It consists of ordinary large wheat hoppers, with a worm at the bottom and an elevator to keep the contents of the hopper in motion. The perforated floors and the air spaces are omitted, but an exhaust fan is arranged for causing a strong draught of air to pass through the wheat.

Another arrangement for circulating and ventilating grain is that of Valery, who employed a large wooden drum divided into a number of compartments. The outer mantel of this drum is perforated so that the grain will drop from the wheat hoppers into the upper compartments of the slowly revolving drum. When these compartments reach their lowest position the grain gradually runs out through similar perforations into a wheat worm lying below the drum. Inside the large drum is a smaller one, also perforated, which is in connection with an exhaust fan, so that the grain is well ventilated. The large drum is carried by small friction rolls, and is slowly revolved by means of a ratchet on a small crank-shaft. If the drum would be made with a shaft through its centre, instead of resting on friction rolls, it would be made self-acting.

When grain is stored in earth pits, or in silos, it is important to put the *dry* grain in the *dry* pit and to prevent the access of moisture and air. This can be done by covering the filled pit first with straw and next closing it up with a good layer of earth. Or some burnt lime is spread on the surface of the grain, whereby the latter will be caused to grow and thus form a water-tight crust.

The best silos are those cut out of the dry, close rock, or those of masonry which have been covered with cement; but those which have been dug in clayey soil and have been afterwards dried, (burnt) have been found to be well suited for their purpose.

This method of storing grain in pits is cheap; it does not require any manual-labor, which is unavoidable in granaries, but when opened the pits must be emptied at once.

[To be continued.]

NEWS.

JOSEPH WILLMAN, Flint, Mich, lately changed his mill to the Case System of gradual reduction.

THE CASE MFG. Co., Columbus, O., are furnishing W. H. Starr, Brock, Neb., with a line of rolls, etc.

THE CASE MFG. Co. have telegraphic orders for six No. 1 double purifiers from J. K Mullen, Denver, Col.

J. GEIB & Co., Louisville, O., will start up their mill in a few days on the Case system of gradual reduction.

H. C. POTTS of Lancaster, Ky., has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N. Y., a pair of Stevens' rolls.

THE CASE MFG. Co., Columbus, O., are furnishing C. Harvy, Wilber, Neb., with a line of rolls, purifiers, etc.

THE CASE MFG. Co., Columbus, O , haye lately shipped Barrett & Son, Spring Valley, Ohio, one Case centrifugal reel.

THE CASE MFG. Co., Columbus, O , have shipped to Kloose & Bradford, Creston, Iowa, a line of rolls, purifiers, etc.

THE CASE MFG. Co., Columbus, O., have the order of Sloss & Son, Traer, Iowa, for one "Little Giant" break machine."

M. H. MOORE, Columbia, Lancaster, Co, Pa., has ordered a pair of Stevens' rollers of the Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

THE Sumner Milling Co. at Vincennes, Ind., have ordered additional Stevens' rolls of the Jno. T. Noye, Mfg. Co. of Buffalo, N. Y.

THE CASE MFG. Co., Columbus, O., have taken the order of R. Cochrane, Westfield, Mo., for a full line of breaks and rolls.

W. A. BAER of Ligonier, Pa., has placed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill.

L. BUCHLER, Tamaqua, Pa., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a double Stevens roller mill.

THE CASE MFG. Co., Columbus., O., have the order of the Richmond City Mill Works of Richmond, Ind., for one 4-roller "Bismarck" mill.

WERNER MILLER & Co., Wright City, Mo., have lately started up their mill on the Case System of gradual reduction, with the best of results.

WINEGAR BRO'S, Montgomery City, Mo., have ordered from the Case Mfg. Co., Columbus, O , one 9 x 18 bran roll with patent automatic feed.

THE JNO. T. NOYE Mfg. Co. of Buffalo, N. Y., will fill an order for a double Stevens' roller mill for E. Stratton & Son of Salem, Columbiana Co., Ohio.

THE CASE MFG. Co., Columbus, O., have taken the contract of Wm. Hamilton, Flint, Mich., for a line of breaks, scalpers, rolls, centrifugal reels, etc.

THE RICHMOND CITY MILL WORKS, Richmond, Ind., have placed their order with the Case Mfg. Co., Columbus, O., for a line of break machines.

SMITH, HILL & Co., Quincy, Ill., have ordered from the Case Mfg. Co., Columbus, O., a line of break machines for the mill they are building at Clayton, Ill.

M. E. MOORE, Waterville, Kans., has lately started up his mill on the Case System of gradual reduction, with good results and the best of satisfaction.

EVANS, INMAN & Co., Blairsville, Pa., have ordered of The Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Rounds' sectional roller mill and other Stevens' rolls.

MESSRS. A. DEHNER & Co., of St. Louis, Mo., have ordered of Messrs. Edw. P. Allis & Co. a 20x42 Reynolds Corliss Engine for one of their customers.

THE CASE MFG Co., Columbus, O., are furnishing J. F. Katterjohn, Boomville, Ind., with one break machine and scalping reel, making three separations.

GEO. & W. C. PAGE of Mumford, N. Y., has salted an order with the Jno T. Noye, Mfg. Co , of Buffalo, N. Y., for a pair of Stevens' rolls for low grade grinding.

THE CASE MFG. Co., Columbus, O., have the order of Underhill & Rommell, Manchester, Mich., for one 4-roller "Bismarck" mill, with patent automatic feed.

H. GATES of Bryant, Clinton Co., Ia., has lodged an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill with Stevens' rolls.

H. V. LINE, E. Springfield, Pa., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill and a double Stevens' roller mill.

JNO. WEBSTER of Detroit Mich., has filed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for Pfeffer & Traudt, Mt. Vernon, Ind., for four pairs of Stevens' rolls.

SCHAAD, MANRER & SEITER, Petersburg, O , have lately remodeled their mill, putting in the "Case" System of gradual reduction; they expect to be running in a few days.

STONER & KERLIN, Chambersburg, Pa., have ordered of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., a Rounds' sectional roller mill, and two single Stevens' Roller Mills.

B. F. Gump of Chicago, Ill., in connection with The Jno. T. Noye Mfg. Co. of Buffalo, N Y., is putting in a machine to regrind and recorrugate chilled iron rolls.

THE NEENAH WATER POWER Co., of Neenah, Wis., has just been incorporated. The incorporators are J. L. Clement, Edward Smith, J. R. Davis and J. A. Kimberly.

CHAS. HUBER, the St. Louis milling expert, has sent in to the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., an order for Chas. Seely, Crete, Neb., for a double Stevens' roller mill.

THE St. Louis, Mo , milling engineer, Chas. Huber has ordered of the Jno. T. Noye Mfg. Co. of Buffalo, N Y., for P. Heiss & Son, Centralia, Ill , two single Stevens' roller mills.

J. P. SMITH of Mankato, Minn., the popular representative of the Stevens' roller mills, has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N Y., a Rounds' sectional roller mill.

THE CASE MFG. Co., Columbus, O., have taken the contract of J. A. Nagle, Lodi, O., for breaks, rolls, scalping reels, etc., for a full gradual reduction mill on the Case system.

M. E. CLEARWATER of Mattewan, N. Y., has ordered of The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., a four-break Rounds' sectional roller mill, and a pair of Stevens' rolls in addition.

SHULER & Co. Minneapolis, Minn , the busy millwrights, have directed the Jno. T. Noye Mfg. Co., Buffalo, N Y., to forward a Stevens roller mill to Everett & Auchenbaugh, Waseca, Minn.

MESSRS. EDW. P. ALLIS & Co., of the Reliance Works, Milwaukee, Wis., are furnishing a 14x36 Reynolds Corliss Engine, with boiler, pump, heater and everything complete, for the new mill of Messrs. Piersol & Co., Cameron, Mo. The mill is also being built by Messrs. Allis & Co., and when completed will have a capacity of 125 to 150 bbls. of flour in 24 hours.

THE CASE MFG. Co , Columbus, O., are the only firm in the country that manufacture, under their own patents, a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc.

WM. R. DELL & SON, London, Eng., have cabled The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for the immediate shipment of two Rounds' sectional roller mills. The order will be promptly filled.

MESSRS. BAUFORD & Co., of Midway, Pa., have lodged an order with The Jno. T Noye Mfg. Co. of Buffalo, N. Y., for twelve pairs of Stevens' rolls, for the new mill they are building at that point.

THE CENTENNIAL MILL Co., of Avoca, Iowa, recently ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., a 14x36 Reynolds Corliss Engine, complete, for their flouring mill at Avoca.

THE CASE MFG. Co., Columbus, O., have taken the contract of J. M. & H. C. Allen, Grafton, Ill., for breaks, rolls, purifiers, scalping reels, etc, for a full gradual reduction mill on the Case System.

JNO. WEBSTER, the famous milling expert of Detroit, Mich., has instructed the Jno T. Noye Mfg. Co. of Buffalo, to furnish J. & S. Emison of Vincennes, Ind., with an additional double roller mill.

AGAIN an order from the Pacific coast for Stevens' roller mills has been telegraphed The Jno. T. Noye Mfg. Co. of Buffalo, N. Y. This time it reads fourteen pairs, and will, as usual, be promptly filled.

A. A. CHATEAU, Deadwood, D. T., has filed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y , through Chas. Huber, St. Louis, Mo., for a double Stevens' Roller Mill for flouring purposes.

JNO. WEBSTER of Detroit, Mich., has scooped an order for fourteen pairs Stevens' rolls for the mill of Eckert Bros. at Jasper, Ind. The Jno. T. Noye Mfg. Co. of Buffalo, N.Y., will promptly fill the order.

MESSRS. HAGGERTY, HUNTER & Co., of Peoria, Ill., are remodeling the mill of the McHenry Milling Co., at McHenry, Ill., and are putting in twelve pairs of Allis' rolls in Gray's Noiseless Belt Frames.

MESSRS. EDW. P. ALLISS & Co., of the Reliance Works, Milwaukee, Wis., lately received an order for a 14x42 Reynolds Corliss Engine, complete, for the Dorset Pipe and Paving Co., of Chicago, Ill.

THE CASE MFG. Co., Columbus, O., have taken the contract of S. R. Hackman & Son., Eagle City, O., for breaks rolls, purifiers, scalping reels, etc , for a full gradual reduction mill on the Case system.

THE CASE MFG. Co., Columbus, O., have taken the contract of I. H. Jones, Jamesport, Mo., for breaks, rolls. purifiers, scalping reels, centrifugal reel, etc., for a full gradual mill on the Case System.

MAUNTEL, BERGESS & Co. of East St. Louis, Ill , has ordered a double Stevens' roller mill of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., they will fill the order which was taken by Chas. Huber of St Louis, Mo.

MESSRS. VAN EPPS & Co., of Fremont, Ohio, have recently placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for four pairs of the celebrated Allis' rolls in Gray's Noiseless Belt Frames.

MESSRS. BABCOCK & WILCOX Co., of Chicago, Ill., recently placed an order with Messrs. Edw. P. Allis & Co., of Milwaukee, for 22x48 Reynolds Corliss Engine, for the Economist Plow Co., of South Bend, Ind.

B. F. GUMP, the able representative of the Stevens' Roller Mills in Chicago, Ill., has bagged an order from F. J. Maunck, Dallas, Ill., for two mills. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will fill the order.

THE CASE MFG. Co., Columbus, O. have been awarded the contract of Swift & Co., Ann Arbor, Mich , for breaks, rolls, purifiers, scalping reels, etc., etc., for a 300 bbl. gradual reduction mill on the Case System.

THE CASE MFG. Co., Columbus, O., have the order of the Maple City Milling Co., La Porte, Ind., for a line of breaks, rolls, scalping reels, centrifugal reels, etc., for a gradual reduction mill on the Case System.

THE Riest Mill Co. of Williamsville, N. Y., have determined to put in more rolls, and have lodged an order with The Jno. T. Noye Mfg. Co. of Buffalo, N.Y., for a Rounds' sectional roller mill with other Stevens' rolls.

DEANINGER BROS., Adrian Mich., have lately remodeled their mill, known as "Deaninger Bros Old Red Mill," to the Case System of gradual reduction. They are now running with the best of results and satisfaction.

L. O. RATHBUN, Rochester, N. Y., has determined to accept the exclusive handling of the Stevens' roller mills, and has placed an order with The Jno T. Noye Mfg. Co., Buffalo, N. Y., for a Rounds' sectional roller mill.

THE CASE MFG. Co., Columbus, O , have furnished A. F. Ordway & Son, Beaver Dam, Wis, with an additional pair of rolls, 9x18 scratch, with patent automatic feed, for the mill they are now building at Fond du Lac.

THE GREAT WESTERN MFG. Co., Leavenworth, Kans., have lately placed an order with The Case Mfg. Co., Columbus, O., for some machinery to go into the mill that they are building for J. W. Graham, St. Joseph, Mo.

THE CASE MFG. Co., Columbus, O., are furnishing Allen & Co., Lenox, Iowa, in addition to the machines they have already shipped them, one Little Giant break machine and scalping reel making three separations.

THE CASE MFG. Co., Columbus, O., have taken the contract of Armstrong & Co., Fayette, Mo., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc., for a gradual reduction mill on the Case System.

AND now comes Heack Bros. of Tecumseh, Mich., saying that in order to keep up with the times The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., must send them fourteen pairs of their celebrated rolls. The said company will do it.

W. E. TEUCH, Chippewa, Ont., has placed an order with The Jno. T. Noye Mfg. Co , Buffalo, N. Y., for a Rounds sectional roller mill with Stevens' dress, as well as additional machinery to change his mill from stones to rollers.

THE CASE MFG. Co., Columbus, O , have been awarded the contract of Miller & Co., Augusta, Ga., for a full line of breaks, rolls, purifiers, scalping reels, centritugal reels, &c , for a full gradual reduction mill on the Case System.

THE SHEBOYGAN MFG. Co., of Sheboygan, Wis., lately placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a 22x48 Reynolds Corliss Engine complete, to run their factory at Sheboygan.

SOMETHING less than a thousand roller mill manufacturers have extensively advertised that they have secured the order of Gilbert & Barber, Geneva, Wis., for the building of their new mill: but Mr. B. F. Gump of Chicago, Ill., writes us that he has taken the contract himself and proposes to do it himself; we believe him. The Jno. T. Noye Mfg. Co of Buffalo, N. Y., will furnish twelve pairs of their celebrated Stevens' roller mills for the purpose

J. F. SCHOELKOPF, a well-known miller, has been elected president of the Buffalo Board of Trade.

BURNED—April 10.—Alex. McMullen's mill at Sandwich, Ill. Loss, $15,000. Insurance, $7,000.

Stilwell & Bierce Mfg Co. have just shipped to Spinks & Berkeley, Potomac, Ills , one 9 x 18 Odell roller mill.

MCMILLAN'S elevator at Winnipeg collapsed recently, and 60,000 bushels of wheat were spilled out on the ground.

Jno. Heabler & Bro , Attica, O., have ordered a double Stevens' roller mill of The Jno. T. Noye Mf'g Co., Buffalo N. Y.

THOS. BROWN, SR. Toledo, O , has lodged and order with The Jno. T. Noye Mf'g Co., Buffalo, N. Y., for four pairs of Stevens' rolls.

Stilwell & Bierce Mfg. Co , have orders from Eisenmeyer & Co., Little Rock, Ark , for one 9 x 24 double Odell roller mill.

C. Fogarty, Junction City, Kas., has placed an order with The Jno. T. Nyye Mf'g Co. Buffalo, N. Y., a double Stevens' roller mill.

Twelve additional pairs of Stevens' rolls for the Pacific Coast, have been telegraphed for to The Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

L. & G. N. Doolittle, of Birmingham, N. Y , have placed their order with Stilwell & Bierce Mfg. Co. for four pairs of Odell Rolls 9 x 18.

E. SCOULLER of North East, Pa., has ordered of The Jno. T. Noye, Mfg. Co., Buffalo, N.Y. a Rounds' sectional roller mill and other Stevens' rolls.

SHULER BROS. of Lyons, N. Y., has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a pair of Stevens' rolls for grinding middlings

HENRY KALBFLEISCH & Co , St. Louis, Mo., have placed an order with The Jno. T. Noye Mf'g Co of Buffalo. N. Y. for a 9x18 double Stevens roller mill.

D. L. BRINKER & Co., Mt. Pleasant, Westmoreland Co., Pa. have placed an order with The Jno. T. Noye Mf'g Co. of Buffalo, N. Y.,, for a Stevens roller mill.

BRUNER & REEDY, Toledo, Ia., has ordered of The Jno. T. Noye, Mfg. Co., Buffalo, N. Y., a three-break Rounds' sectional roller mill, and a double Stevens' roller mill.

THOS. MOSES of Sharon, Pa., has discarded the use of stove plates for first reductions, and ordered two double Stevens' roller mills of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

THE Model Roller Mills, Minneapolis, Minn., owned by R. P. Russell & Co., burned April 17. Loss $60,000. Insurance $44,000. The mill had a capacity of 250 barrels per day.

The Stilwell & Bierce Mfg. Co. have just shipped 6 pairs of Odell rolls to Wm. Gardner, Gloucester, England. Mr. Gardner acts as their agent for Great Britain and the colonies.

To thoroughly satisfy Chas. Lounsberry of Oswego, N. Y., he must have seven pairs of Stevens' rolls, as furnished by the Jno. T. Noye Mfg. Co. of Buffalo, N. Y. He will soon be happy.

JNO. WEBSTER of Detroit, Mich., the popular millwright, has placed an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for another double Stevens' roller mill, for Richardson & Evans, Indianapolis Ind.

CHAS. HUBER, of St. Louis, Mo., the milling expert, has planned the mill at Carlisle, Ill., for the Carlisle Milling Company, and has placed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for eight double Stevens' roller mills.

THE CASE MFG. Co., Columbus, O., have been awarded the contract of Ailes & Co., Ann Arbor, Mich., for a line of breaks, rolls, purifiers, scalping chests, centrifugal reels, etc., for a full gradual reduction mill on the Case System.

THE energetic Neenah, Wis., representative of the Stevens' roller mills, E. W. Pride, has captured an order from Uhling Bros. of Afton, Rock Co., Wis., for a three-break Rounds' sectional roller mill, as well as a single mill for low grade.

SHULER & Co., the progressive mill builders of Minneapolis, Minn., have bagged an order from Jno A. Cole, Rochester, Minn , for a complete and full line of Stevens' roller mills, as manufactured by The Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

MASSACHUSETTS occasionally comes in for a show in the the roller boom. Otis Cole of Pittsfield has planted an order with the John T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds' sectional roller mill and four pairs of additional Stevens' rolls.

THE mill of Bundy Bros. at Angola, N. Y., will soon be changed "in the twinkling of an eye," to the roller system, under the directions of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y. A Rounds' sectional roller mill, with other Stevens' rolls will be employed.

A Rounds' sectional roller mill, with Stevens' rolls, will soon be placed in the mill of William Thistle at Parma Center, N. Y. Rolls for bran and low grade reduction will also be added. The Jno T. Noye Mfg. Co. of Buffalo, N. Y., will promptly fill the order.

MESSRS. WARDELL & HINCKLEY, of Chicago, Ill., lately placed an order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for a 14x36 Reynolds Corliss Engine, complete, for Messrs. Rath, McMahon & Co , manufacturers of cracker machinery, etc., Chicago, Ill.

LLOYD & BEVINS, Terrell, Texas, after thoroughly investigating all the roller systems, placed their order with the Case Mfg. Co., Columbus, O., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, &c., for a full gradual reduction mill on the Case System.

PERHAPS Jno. Webster of Detroit, Mich., thinks he hasn't a soft thing in Indiana. At any rate he has gobbled an order for six double Stevens' roller mills (a full line) for the firm of Emerson & Callender, Vincennes, Ind. The Jno. T. Noye Mfg. Co of Buffalo, N. Y., will fill the order.

The contract for remodeling the mill of Keppel & Co., Hamilton Miss., has been awarded to the Stilwell & Bierce Mfg. Co., of Dayton, O They furnish a complete line of Odell rolls consisting of ten pairs of 9 x 18 rolls and all necessary machinery for a capacity in this mill of 125 barrels per day.

Taylor, Romeny & Armstrong, of Salt Lake City, Utah, have determined to let the Mormons and other inhabitants of that country see what can be done fos them in the way of a Stevens' roller mill, and have placed an order with The Jno. T. Noye Mf'g Co., of Buffalo, N. Y., for a four-break concentrated roller mill and threg double mills.

MESSRS. EDW. P. ALLIS & Co., of the Reliance Works, Milwaukee, Wis., have completed the plans and are furnishing the machinery for rebuilding the mill of Messrs. Herr & Cessel, of Georgetown, D. C.; the mill, when completed, will contain forty-four pair of Allis' rolls in Gray's patent noiseless Belt Frames. The millwright work is being pushed forward rapidly, under the direction of Mr. J. H. Nye, one of Messrs. Allis & Co's. best foremen.

Odell rolls are to be placed in the mill of E. P. Smith of Union City, Ind.

I. F. Dull, Shanes Crossing, O., is putting in a 9 x 18 Odell roll for bran.

The Stilwell & Bierce Mfg. Co. have sold to J. Bierbauer, Mankato, Minn., four pairs of Odell rolls.

The Stilwell & Bierce Mfg. Co , are furnishing the Odell rolls for the mill of A. Bodendorfer, Cedarburgh, Wis.

E. Z Waldron of Meyerstown, Pa., has placed his order with the Stilwell & Bierce Mfg. Co., for two pairs of Odell rolls.

The Lima Mill Co., of Lima, O., has ordered from the Stilwell & Bierce Mfg. Co , two pairs of Odell rolls for bran.

The Stilwell & Bierce Mfg., of Dayton, Ohio, have orders from the Richmond City Mill Works for two pairs 9 x 18 Odell rolls.

The Stilwell & Bierce Mfg. Co., have orders from Henderson & Supplee of Gulf Mills, Pa., for four pairs of Odell rolls.

Odell rolls have been ordered by R. M. Griffey & Co., of White Deer Mills, Pa. from the Stilwell & Bierce Mfg. Co., of Dayton, O.

Two pairs of Odell rolls have been ordered from the Stilwell & Bierce Mf'g. Co., for the mill of G. Frick, Chillicothe, Ohio.

The Stilwell & Bierce Mfg. Co., have orders from Grey Flora, of Shuqualax, Miss., for a 20 inch "Eclipse" turbine wheel.

Messrs. Colton Bros., of Bellefontaine, O., have placed orders with the Stilwell & Bierce Mfg. Co. for one 9 x 24 Odell roller mill.

Stilwell & Bierce Mfg. Co., have received order from the Gratiot Mfg. Co. of Chicago, Ills. for eight pairs double roller mills.

Four pairs of Odell rolls have been ordered by Geo. House, Lockland, O , and other mill machinery from the Stilwell & Bierce Mfg. Co.

The Stilwell & Bierce Mfg Co., have just shipped Amstutz & Co., of Amwell, Wayne Co., O., one double 9 x 24 roller mill for bran.

The Stilwell & Bierce Mfg. Co., have just shipped one thirty inch and one forty inch "Victor" wheels to James Wagner & Co., of San Francisco, Cal.

The Stilwell & Bierce Mfg. Co have just received orders for Odell rolls from John M. Wagner, Millersville, Pa , also from I. B. Wamsley, Schuylkill, Chester Co., Pa.

The mill of Robinson & Co., Maysville, Ky., lately remodeled to the Odell system, will be started in the present week. This mill is expected to do very fine work.

The Stilwell & Bierce Mfg. Co. have secured the order of Geo. Brose, Evansville, Ind., for a complete roller mill on the Odell system, using ten pairs 9 x 24, four pairs 9 x 18 and two pairs 9 x 30 Odell rolls and all necessary machinery for a 200 bbl. mill.

Orders for the "Victor" turbine wheel have been sent by J. D. Edge, of Minneapolis, Minn.; H. W. Blake, Naples, N. Y., and S. Parsons, Auburn, Me., all to furnish power for flour mills

The work on the Seiberling Bros. large mill at Akron, is progressing rapidly, the Odell rolls, which are being manufactured by the Stilwell & Bierce Mfg. Co., are to be shipped early in June.

The Stilwell & Bierce Mfg. Co.. have the contract to remodel the mill of Geo. S. Mauser, Treichlers, Pa. using ten sets 9 x 18 rolls and all necessary machinery to make 125 bbls flour per day.

The Sebago Wood Board Co., of Portland, Me., have just ordered three more 25 in. "Victor" wheels for their large pulp works, this makes twenty-five "Victor" wheels which this company has now in operation.

The Stilwell & Bierce Mfg. Co. have the contract to remodel the mill of Johnston, Fogeler & Co., St. Elmo, Ills.; furnishing a complete line of the Odell roller mills and all necessary machinery for a capacity of 125 bbls. per day.

Eight pairs of Odell rolls are to be placed in the mill of the Middleport Flouring Co, Middleport, Ohio. This mill is to be remodeled to the roller system, the contract having been awarded to the Gratiot Mfg. Co of Chicago, Ills.

The mill of A. Good of Williamsport, Pa , which has been under process of reconstruction to the Odell system has recently been started and is giving excellent satisfaction, the demand for the flour exceeding the capacity of the mill.

The contract for remodeling the mill of R. B. Kline of Leipsic, O., has been taken by the Stilwell & Bierce Mfg Co. of Dayton, O., who furnishes nine pairs Odell rolls, this mill is to produce 75 barrels of flour per day when completed.

The Stilwell & Bierce Mfg, Co., have the contract to remodel the mill of J. H. Hermance of Coopersville, Mich. to a complete roller mill on the Odell system. A four break concentrated mill will be used, and also the Odell double roller mills.

Eberhart & Bros., of Newport, Pa., have just started up their mill and are very much pleased with it. They are producing a very high grade of flour which is in great demand. This mill was remodeled by the Stilwell & Bierce Mfg, Co. of Dayton, Ohio,

Orders have been placed with the Stilwell & Bierce Mfg. Co., of Dayton, Ohio, for ten pairs of Odell 9 x 18 rolls and two pairs of 9 x 24 Odell rolls for the mill of Vance & Parrott, Pierce City, Mo. The order was placed by the Richmond City Mill Works, who have the contract for building the mill.

Messrs. Carnegie Bros. & Co., of Pittsburgh, Pa., have ordered of Mrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., a pair of blowing engines for their new plant at the Edgar Thompson Steel Works. This pair of blowing engines is similar in design to those already constructed by Messrs. Allis & Co. for the Joliet Steel Co., Joliet. Ill. The steam cylinders are 56 inch diameter and 54 inch stroke, and the air cylinders 54 inch diameter and 54 inch stroke.

Messrs. J. H. Townsend & Co., of Stillwater, Minn.., have ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., a 20x48 Reynolds Corliss Engine, condensing. This engine is to take the place of a 14x36 Reynolds Corliss Engine, in order to furnish additional power to increase capacity of the mill.

The hearts of Jno. Strong & Son of Rockwood, Mich., will soon be gladdened by the introduction into their mill of six double and one single Stevens' roller mill, all to be supplied by the sole manufacturers, The Jno. T. Noye Mfg. Co. of Buffalo, N. Y. Jno. Webster of Detroit, Mich . will make the plans and superintend the work.

Messrs Mandel Bros., of Chicago, Ill., have lately placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for a 16x42 Reynolds Corliss Engine, complete, to drive an electric light plant and pneumatic cash tubes in their large wholesale and retail dry goods store. The order was secured through Messrs. Wardell & Hinckley, the Chicago agents for the Reynolds Corliss.

C. C. Grove, Williamsville, N. Y., has for a long time had an anxious eye on the milling business, and finally has concluded to erect at Tonawanda, N.Y., a complete roller mill; he has therefore placed an order with the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a full line of Stevens' roller mills for the purpose. Tonawanda has long felt the need of a flour mill, and Mr. Grove is to be congratulated on his business enterprise.

We notice in the *Indiana Progress* published in Indiana, Pa., an interesting descriptive article of the Penn mills which have recently been remodeled and which has now been running about two weeks, it says: "The Penn mills now are an excellent example of the modern American mill built after new ideas with no old faults to which modern machinery and processes had to be conformed. Such a mill not only marks the energy and enterprise of Messrs. Ellis & Sons, but still more our progressive and scientific milling. The building is now 50 x 50 ft, five stories high including basement, the boiler house is 15 x 50 ft., built of brick, and contains two large double flue boilers. The engine room adjoining contains a 12 x 48 engine which supplies power for all the machinery. This floor also contains all the heavy pit gearing, counter shafts for rolls, elevator boots, etc. The pit gearing was furnished by Poole & Hunt of Baltimore, is very accurate in pitch and noiseless in operation. The second or ground floor contains ten pairs of Odelt roller mills built by the Stilwell & Bierce Mfg. Co. of Dayton, Ohio, (a cut of which we present on front page), also a Silver Creek flour packer built by Howes, Babcock & Ewell of Silver Creek, N. Y. The third floor is taken up with stock hoppers, a three reel bolting chest, gearing conveyors, and a pair of hopper scales of the Howe make. The fourth floor contains four of the Geo. T. Smith and one Garden City purifier, an eight reel scalping chest which is a model of beauty and convenience, built of clear pine and cherry alternately, and is provided with double conveyors and speck boxes throughout, also grading reel and grading machinery which consists of a Barnard & Leas separator, Eureka smut and separator and a Eureka brush machine, on this floor are also one of Stevens, Hughes & Co's bran dusters. On the fifth floor is a four reel bolting chest, a two reel bolting chest and two reel scalping chest, heads of elevators, conveyors, gearing, etc. Every floor of the mill is lighted by gas. The principal part of the shafting and gearing was furnished by the Christiana Machine Co. of Christiana, Pa., and Major I. McFarland of Indiana, Pa. The milling diagram was made by U. H. Odell of the Stilwell & Bierce Mfg. Co., of Dayton, Ohio, builder of several of the largest roller mills in the country, notably among which is the Washburn A. mills of Minneapolis, Minn. The millwright work was under the supervision of Joseph Clingenberger and W. H. Gamble, two most excellent millwrights. The assistants on the job were John Gamble, Jas. Gamble, J. B. Work, and Wm. Kennedy. The machinery is all of the best and latest, neither owners nor workmen spared pains to make the mill first-class in every repsect. The capacity was first rated at 125 bbls. per 24 hours, but since starting up find plenty of power and capacity for 150 bbls. The flour enjoys an excellent reputation and finds ready sale in any market wherever offered."

The United States MILLER

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(For The United States Miller.)

CEREALS.

The *cerealia*, a genus of the family *graminæ*, derives its name from Ceres, the goddess of corn, and is the most important to man of all those into which vegetables have been divided. It consists of several species, all bearing a strong natural affinity to each other, and all resting their claims, as articles of nourishment, on the quantity of farinaceous or starchy matter which their seeds contain. To this family also belong the grasses, so necessary for the support of herbivorous animals, especially those of the domestic kind, as also the sugar-cane, which furnishes another important article of diet.

The principal plants forming the cerealia are wheat, rye, barley, oats, millet, rice, maize or indian corn; other cereal grasses, possessing the same farinaceous properties, are neglected only on account of the smallness of the seed. Every civilized nation, from the earliest records, has sedulously cultivated grain. In the sepulchres of the most ancient of the Egyptian monarchs, which have been explored by modern travellers, was found the common wheat, in vessels which were so perfectly closed, that the grains retained both their form and color. The wheat, buried there for several thousand years, affords a proof of the ancient civilization of Egypt as convincing as the ruins of temples and the inscriptions of obelisks. And yet, what is sufficiently singular, the corn plants, such as they are found under cultivation, do not grow wild in any part of the earth. Wheat has been traced, indeed in Persia, springing up in spots very remote from human habitation, and out of the line of the traffic of the natives; but this circumstance is far from proving that it is a production natural and indigenous to Persia. Other seeds are dispersed throughout the earth by winds and currents, and various other ways, but the corn plants in common with many other important vegetable productions, follow the course of man alone. The manner in which the most imported gifts of Providence to mankind have been diffused by the influence of conquest or commerce, has some striking instances in the history of America. None of the cereal grasses, properly so called, were found in cultivation among the Mexicans when their country was first visited by Europeans. The foundation of the wheat harvests at Mexico is said to have been three or four grains, which a slave of *Cortez* discovered in 1530, accidently mixed with a quantity of rice. The rice of Carolina is now the principal produce of that portion of the United States. Mr. Ashby, an English merchant, at the close of the 17th century, sent a hundred weight from China to this colony; and from this source all the subsequent rice harvests of that division of the new world, and the large exportations of the same valuable grain to Europe, have sprung. Facts such as these are highly interesting, because they exhibit the moral as well as the natural causes which influence the distribution of vegetable food throughout the earth.

Before describing the different kind of corn, it may be interesting to take a general view of their cultivation over the globe. The utmost northern limit of the culture of grain in Siberia reaches to 60° of latitude; and in the more eastern parts of the province these important products are scarcely to be met with higher than 55°. In the more southern parts of Siberia and in districts adjoining the Wolga, the land is exceedingly fertile, so that crops of grain are obtained with a very trifling amount of labor. Buckwheat is very commonly cultivated in this district, and it is found that one sowing of the seed will produce five or six crops in as many successive years, each harvest yielding from twelve to fifteen times the quantity first sown, Europe is indebted to Siberia for a particular description of oats, which are considered excellent; and at Yakoutch barley is sometimes seen to arrive at maturity. Barley and oats are the kinds of grain the culture of which extends furthest to the north. Rye follows next in order, being associated with oats and barley in the more northern division of the temperate zone. In the southern part of Norway and Sweden, in Denmark, in districts bordering on the Baltic sea and in the north of Germany, rye forms the principal object of cultivation, barley being raised in those countries, as with us, merely for the purpose of brewing, and the oats being limited chiefly to the feeding of horses. In all these last mentioned places wheat is also grown; but its consumption is limited, and the principal part is made an object of internal trade. In Sweden agriculture is pursued in a systematic and scientific manner, by which means the natural barrenness of the soil is in a considerable degree remedied—the province of Gothland producing barley, oats, rye and wheat, as well as pease and beans. Somewhat farther to the south rye in a great measure disappears, and wheat becomes the principal grain used for human food. France, England, part of Germany and Hungary, and the lands of western and middle Asia, fall within this description. In most of these countries the vine is also successfully cultivated, and wine forming a substitute for beer, the raising of barley is consequently much neglected. Still farther southward wheat is found in abundance, but maize and rice are also produced, and enter largely into the constituents of human food. Portugal, Spain, that part of France which borders on the Mediterranean sea, Italy and Greece, are thus circumstanced. Still farther to east, in Persia and northern India, Arabia, Nubia, Egypt and Barbary, wheat is indeed found; but maize, rice, and millet form the principal materials for human sustenance. In the United States wheat, rye and maize grow as in the more temperate regions of Europe and in the southern parts of the Union rice also is very largely cultivated. In Australia, wheat also forms the principal object of cultivation on the part of the settlers, but in the southernmost portions of that vast island or rather continent, and in Van Diemen's land, barley and rye are likewise to be found!

Wheat, *Triticum*, perhaps the most valuable of all the cerealia, is an annual herbaceous plant, possessing the usual characteristics of the gramineæ. Two sorts of wheat are cultivated in this country, *triticum hybernum*, or winter wheat, and *triticum æstivum*, spring or summer wheat. The former has a large plump ear, smooth or destitute of awn, with a conspicuous bloom, and a strong vigorous and erect stem. It is sown in autumn, begins to vegetate and remains green during the winter, and comes to maturity towards the end of the following summer. It is very apt to pass into varieties, arising from soil, climate, and modes of culture. Two of the most marked of them are the red and white wheat. Spring wheat, supposed to have come from the north of Europe, is less hardy than the winter wheat, the stem is more slender and delicate, the ear thinner and drooping, and furnished with beards and awns. According to the analysis of Sir H. Davy the nutritive quality of this kind is not quite equal to that of winter wheat, the proportions being 95½ per cent. in the latter, and only 94 per cent. in the former, of the entire bulk of the grains. The gluten contained in the two kinds varies in a greater degree, that of winter wheat being 24 while that of spring wheat is only 19, so that the winter variety is more eligible for the purpose of the baker.

Rye, *Secale cereale*. This grain has an appearance something intermediate between wheat and barley. The ear is bearded, and the stem tall and slender. Four species of this plant are enumerated, *Secale villosum*, *orientale*, *creticum* and *cereale*. The *Secale cereale* is said to be a native of Candia. With the exception of wheat, rye contains a greater proportion of gluten than any of the cereal grains, to which fact is owing its capability of being converted into a spongy bread. It contains, likewise, nearly five parts in every hundred of ready-formed saccharine matter, and is in consequence easily converted into malt and thence into beer or ardent spirit. Rye is the common bread-corn in all the sandy districts to the south of the Baltic sea and the Gulf of Finland, furnishing abundance of food for the numerous inhabitants of places which, without it, must have been little better than sandy and uninhabited deserts. This grain, to which so many human beings are thus indebted for aliment, is subject to a disease which, when it occurs, not only deprives it of all its useful properties as food, but renders it absolutely noxious, and, it may even be said, poisonous to man. Whenever this disease has been witnessed, it has usually happened that a wet spring has been succeeded by a summer more than ordinarily hot. *Tissot*, a French physician, bestowed much attention on this subject, and it is from him we learn that the excrescence, which the grain then bear, is an irregular vegetation, which springs from the middle substance, between the grain and the leaf, growing to the length of an inch and a half and being two-tenth of an inch broad. It is of a brownish color.

Barley, *Hordeum*. This species of grain has a seed of a slenderer from, and a rougher covering or husk than that of wheat; the awn too is larger and more serrated than any of the other species of corn. Barley differs still more from wheat in containing more farina or starch, much less gluten, and about 7 per cent. of combined saccharine matter, which latter wheat does not possess previous to germination—There are four distinct species of barley, besides numerous varieties: *hordeum vulgare* or spring barley; *hordeum hexasticon*, winter or square barley; *hordeum distichon*, long-eared barley; *hordeum zeocriton*, sprat or battledore barley. In one respect barley is of more importance to mankind that wheat. It may be propagated over a wider range of climate, bearing heat and drought better, growing upon lighter soils, and coming so quickly to maturity, that the short northern summers, which do not admit of the ripening of wheat, are yet of long enough duration for the perfection of barley. It is the latest sown and the earliest reaped of all the summer grains. In warm countries, such as Spain, the farmers can gather two harvests of barley within the year, one in the spring from winter-sown grain, and the other in autumn from that sown in summer. The property of not requiring moisture admirably fits barley for propagation in those northern countries, where the duration of summer is limited to a very few months in the year, and where wet is of very rare occurence from the time when the spring rains are over. The purposes to which barley is principally applied are those of brewing and distilling. Some portion is still brought more directly into consumption as human food; but this portion, for the most part, now undergoes the previous process of decortication (removal of the bark,) whereby it is converted into what is called pearl-barley.

Oats. *Avena*. This grain differs in its external appearance from wheat, barley, or rye, especially in the form of the ear. The ear is a panicle formed by the rachis, dividing into numerous branches, the large ones being at the base, while towards the top they gradually decrease, thus forming a conical or tapering figure. While the ear is yet recent the branches are erect, but as the seeds advance towards maturity, and become full and heavy, they assume a dependent form. By this position the air and light has more free access to the ripening grains, while the rain washes off the eggs or larvæ of insect that would otherwise prey upon the young seeds. From these circumstances, as well as from the nature of the plant generally, oats are found to be of such a hardy nature as to thrive in soils and climates where the other grains cannot be raised. The nutritive quality of oats is smaller in a given weight than that of any other cereal grains. In oats of the best quality it does not exceed 75 per cent., while that of wheat is 95½ per cent. The very small proportion of saccharine matter ready formed in oats renders it very diffident and unprofitable to convert this grain into malt.

Rice. *Oryza sativa*. This is a panicled grass, bearing, when in ear a nearer resemblance to barley than to any other of the corn-plants. The seed grows on separate pedicles, springing from the main stalk, each grain is terminated with an awn or beard, and is enclosed in a rough yellow husk, the whole forming a spiked panicle. The stalk is not unlike that of wheat, but the joints are more numerous. The farina of rice is almost entirely composed of starch, having little or no gluten, and being without any ready formed saccharine matter.

There is little reason for doubting that this grain is of Asiatic origin. From the earliest record it has formed the principal, if not the only, food of the great mass of the population on the continent and islands of India and throughout the Chinese empire. The introduction of rice as an object of cultivation in America is of modern occurrence. The swamps of South Carolina, both those which are caused by the inland floodings of the rivers, are well suited for the production of rice; and not only is the cultivation accomplished with trifling labor, but the grain proves of a remarkably fine quality, being decidedly larger and handsomer than that of the countries whence the seed was originally derived. Rice is sown in Carolina in rows in the bottom of trenches. The sowing is for the most part completed by the middle of March. The rice harvest usually commences at the end of August and extends through the entire month of September, or even somewhat later.

Reported Brewery Opening.—We don't send any more reporters down to brewery openings from this paper if we know it. Last Thursday's experiment flooded us with valuable experience. We engaged a young man who recites poems at the temperance meetings on Sunday evenings, and told him to give us a full report of the Fredericksburg brewery by telegraph if necessary. This is what we got:

"Calaboose, San Jose, Thursday evening. Your man locked up on three charges of assault and battery, drunk and disorderly, resisting the police, vulgar language and malicious mischief. Signed, ——, Chief of Police."

The next man that wants to represent the *News Letter* at any convivial gathering must bring a written certificate, signed by at least three saloon keepers, that he is a good reliable hard-drinker, who can stand up in front of a bar all night and write a good solid article about the depreciation of silver afterward. There are plenty of such men to be had, but we missed it this time.—*San Francisco News Letter.*

APHORISMS FROM THE QUARTERS.

(From the Century Bric a-Brac,)

Your luck aint always ekul to de lenk o' your fishin pole.

Grass don't grow high roun' de corn-crib.

De man aint put togedder right dat don't lub his own dorg.

It takes a hones' miller to keep lean shotes.

Don't kill de old goose in sight o' de fedder-bed.

De full moon is a po' han' to keep secrets.

Old hen got 'nough l'arnin' to tell her own chillun in de dark. J. A. Macon.

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ANOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & Co., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞ *The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

NOTICE—NINTH ANNUAL CONVENTION.

SECRETARY'S OFFICE, MILWAUKE, WIS., May 16, '83.

The next ANNUAL Meeting of the Millers' National Association will be held in the GRAND PACIFIC HOTEL, CHICAGO, commencing Tuesday, June 26, 1883.

EVERY MEMBER should *make it his business* to be at this meeting. Make it manifest by your presence that you appreciate an association that has saved its members more money, in *dollars and cents*, than any other organization ever formed in this country, and the "grist isn't half ground out." While there may not be as much "*desperate*" business on hand as usual, there are still important matters to claim your attention. Let it be a grand re-union to celebrate victories won—renew old acquaintances, and make new ones "Outsiders" may join, by making application to the Secretary and accepting the terms offered at the Cleveland convention, viz. $5.00 per unit capacity—Membership fee, and the assessment ($10 per unit) for 1883.

ORDER OF BUSINESS.

1st. Opening of the Convention, 11 o'clock A. M.
2nd. Report of Committee on Credentials.
3rd. Proceedings of Last Convention.
4th. Enrollment of members.
5th. Official Report.
6th. Call of Standing Committees and Filling Vacancies.
7th. Appointment of Committee on Nomination of Officers.
8th. Reports ot Standing Committees.
9th. Reports from Special Committees.
10th. General Business.
11th. Reports of Committee on Nominations, and Election of Officers for the ensuing year.

S. H. SEAMANS,
Secretary and Treasurer.

NOTICE.

MILLERS' NATIONAL ASSOCIATION.

Secretary's Office, Milwaukee, Wis., May 5th, 1883.

Mr. Julius Schlesinger, Secretary Milwaukee Dust Collector Manufacturing Co., Milwaukee, Wis.

DEAR SIR:—Your favor of yesterday, giving official notice that arrangements are concluded whereby purchasers of your machines are fully protected under all the patents of Messrs. Kirk & Fender, The Geo. T. Smith & Co., and J. L. Bean, which, with the Prinz patents, cover fully all known devices of importance necessary to a successful Dust Collector—and I see no reason why this arrangement will not be perfectly satisfactory and acceptable to our members, as well as millers at large. I congratulate you upon this "Master Stroke" which enables you to furnish a successful machine that carries with it a perfect title to the purchaser. My own experience with your machine warrants a favorable expression as to its merits, and your policy to protect purchasers is worthy the consideration of other manufacturers.

Yours truly,
S. H. SEAMANS, Sec'y.

Mr. Henry Hamper, who ably represents Messrs. Howes, Babcock and Ewell, Silver Creek, N. Y., made the UNITED STATES MILER a pleasant call.

Mr. Seamans, Secretary of the Millers National Association, in his recent report on the "condition and outlook of the wheat crop &c" —estimates, that from present indications, the yield from 21 states, representing nearly all the wheat producing area in the United States, for the present year will be 373,500,000 bushels indicating a prospective shortage from 1882 crop of nearly 93,000,000 bushels in same states.

We are in receipt of a copy of Sec'y Seaman's Crop Report, issued under the auspices of the Miller's National Association, showing the Condition and Outlook of the Wheat Crop May 16th, in the principal Wheat Area of the United States. It covers 14 pages of closely printed matter making the most complete report we have seen, and gives evidence of a large amount of labor in its compilation, which must be of great value to members of the Association.

S. W. Tallmadge, of Milwaukee, has compiled the following table, showing the annual production of wheat and corn in the United States for the past twenty years:

Year.	Wheat bu.	Corn bu.
1863	173,677,900	397,839,200
1864	160,695,800	530,451,400
1865	148,552,800	704,427,800
1866	151,999,900	867,946,300
1867	212,441,400	768,320,000
1868	224,036,600	906,527,000
1869	260,146,900	874,320,000
1870	235,884 700	1,094,235,000
1871	230,722,400	991,898,000
1872	249,997,100	1,092,719,000
1873	281,254,700	932,274,000
1874	309,102,700	850,148,500
1875	292,136,000	1,321,069,000
1876	289,356,500	1,283,827,000
1877	364,194,100	1,342,558,000
1878	420,122,400	1,388,218,700
1879	448,756,630	1,547,901,790
1880	498,549,868	1,717,434,543
1881	383,280,090	1,194,916,000
1882	504,185,470	1,617,025,100

Average Wheat ..... 292,000,000 bushels.
Average Corn..... 1,071,000,000 "

Average production past five years:

Wheat ..... 451,000,000 bushels.
Corn..... 1,480,000,000 "

The *Roller Mill* Buffalo, N. Y., says in regard to the Downton suit: "The defense was entrusted entirely to a German lawyer, representing the Wegmann interest until the Miller's Association appeared in the case at the urgent solicitation of a well known Manufacturing Company in this State."

It is true that the Manufacturing Co. alluded to paid half of the fees of counsel employed by the Millers' National Association, and are entitled to much credit therefore, but it is a *fact* that to our knowledge the Secretary of the Millers' National Association discovered the condition of the defense and called the attention of the balance of the Executive Committee thereto in May of last year, and the correspondence with the firm alluded to in regard to the matter did not *commence* until August 1882.

A UNITED STATES SUPREME COURT DECISION ON OPTIONS.

Justice Miller of the United States Supreme Court at Washington, D. C., rendered a decision, April 16, on the case of John H. Rountree, plaintiff in error *vs.* Ernest F. Smith and M. C. Lightner, brokers on the Chicago Board of Trade. This case was an appeal from the decision of the Circuit Court of the United States for the Western District of Wisconsin, wherein the brokers sued and obtained judgment against plaintiff for margins due the former on dealings for the latter in pork, lard, wheat, etc., in the Chicago market. The appeal was based on the grounds that these dealings were purely speculative on the part of the brokers, who did not intend to actually buy or sell the products, but to settle by margins, and were therefore illegal. The plaintiff failed to show that the particular contracts in controversy were of this nature, but reasoned on the general fact claimed that the very large proportion of the business on the Board was of the nature of betting. The Court held that what other people intented by similar contracts, however numerous, is not sufficient to prove that the parties to these contracts intended to violate the law or justify a jury in making such a presumption. Besides, in this case the Court said the original plaintiffs were not suing on the contracts, but for services performed and money advanced for defendant at his own request, and thought under some circumstances they might be affected by the morality of the contract. They are certainly not in the same position as the party suing for enforcement of the original agreement. The decision of the court below was affirmed with interest.

GRAIN STORAGE IN MILWAUKEE.

The total grain storage capacity of the elevators of Milwaukee in 1882 was 5,530,000 bushels; receiving capacity 580,000 bushels, and shipping capacity 1,000,0000 bushels per day. Five of the elevators are owned and used by the Chicago, Milwaukee & St. Paul Railway Company, having an aggregate capacity of 3,130,000 bushels. Messrs. Angus Smith & Co. own three elevators, with an aggregate capacity of 2,150,000 bushels, built for the use of the Chicago & Northwestern Railway. The Chicago, Milwaukee & St. Paul elevators receive grain from the Wisconsin Central and Milwaukee & Northern Railroads and the Chicago & Northwestern elevators from the Milwaukee, Lake Shore & Western Railway. The Northwestern Marine elevator, 250,000 bushels capacity, receives grain from vessels and teams, and is not connected with any of the railroad tracks. Most of the grain received from ports along the west shore of Lake Michigan, in small cargoes, is discharged at this elevator.

GRAIN ELEVATORS.

Designation of Elevators.	Present Actual Storage Capacity Bush.	Receiving Capacity per day. Bush.	Shipping Capacity per day. Bush.
C., M. & St. P. Ry Co.'s Elevator A...	850,000	90,000	150,000
" B...	650,000	75,000	120,000
" C...	330,000	50,000	80,000
" D...	300,000	40,000	100,000
" E...	1,000,000	100,000	175,000
Angus Smith & Co.'s Elevator A...	850,000	90,000	150,000
" B...	900,000	90,000	150,000
" C...	200,000	25,000	40,000
Warehouse.....	200,000	.....	.....
Northwestern Marine Elevator.....	250,000	20,000	40,000
Total.....	5,530,000	580,000	1,005,000

The storage charges remain as established in 1877, and for the first ten days or part thereof are 1¼ cents per bushel, and for each additional ten days or part thereof ½ cent per bushel. Winter storage commences on the 20th of November and terminates on the 15th of April. During that period, when 4 cents per bushel shall have accrued at the foregoing rates, the grain is not subject to additional charge. The elevators reserve the right to charge on grain that may become heated or otherwise out of condition, while in store, 1 cent per bushel for every five days or part thereof, to take effect five days after public notice shall have been given. This very seldom occurs. The weigh-master elected by the Chamber of Commerce is authorized to charge for supervising the weighing of grain at the rate of 25 cents per car-load from or into railway cars, and 30 cents per 1000 bushels from elevators into vessels.

POLICY VS. PRINCIPLE.

The late decisions of the U. S. Supreme Court in favor of the Millers' National Association as defenders, suggests to the thinking mind a stirring lesson that should prove a profitable one for future reference, they have shown that that Policy which is defined by Webster as "management or administration based on *temporal* or *material interests* rather than on principles of EQUITY and HONOR," is not in the end profitable or desirable.

Individuals or associations conducting their affairs of business upon this doctrine, cannot command the respect, accorded those who stand firmly upon the platform of a sound business "principle," defined by Webster as "correct opinion consistently directing our actions" while there may be occasionly a case in which "discretion-politic may be the better part of valor" it were best to accept it, only as a last resort. We are moved to write upon this subject from hearing an enthusiastic member of the millers' association exclaim, after hearing the decisions in the Denchfield and Downton cases—"what a glorious record the association would have made if they had only fought *all* their suits to the "last ditch" regardless of cost."

It is unfortunate that the fact exists, but as it was a matter between the association and its members only, it seems to have been *nearly* unanimous, and must have been satisfactory, and as much as we might feel like condemning such a policy under ordinary circumstances, in these cases, we feel more like surrounding them with the "mantle of charity" for the provocation to do as they did do, was no doubt in our minds, induced by the policy adopted by those equally interested who were not members, but who would be reaping equal benefits without contributing to the funds necessary to make the defenses that have been made. A policy we believe to be unprofitable in the end no matter how much outsiders may save for the time being. We believe that every miller, large or small, in this country should have been ready at the "sound of the bugle" to "fight the common enemy"—whether directly effected or not.

We believe, if the Miller's Association were disbanded to-day, that individual millers would pay out more money within a year for worthless claims or litigations than all the assessments levied to the present time; this is our opinion, and such a course would be contrary to our principles, were we a miller. It may be "policy" to settle a fraud, if by so doing money is saved—but it's a poor principle to follow. It may be "policy" to make your neighbors pay your obligations—when you are able to pay yourself—to protect himself. A "policy," all things to all men may do in politics, but in the every-day business affairs of life, give us that "policy" founded upon principles of "CORRECT OPINION CONSISTENTLY DIRECTING OUR ACTIONS."

(Translated for THE UNITED STATES MILLER.)

SULPHURIC ACID AS A REMEDY AGAINST RUST IN WHEAT.

The use of sulphate of copper is a well-known and reliable remedy against rust, than which there is no more dangerous enemy to wheat; but there are some diffculties connected with its employment. As such, we note a decrease in the germinating power of the grain, which will be the result if the solution is too concentrated or left too long in contact with the grain. Besides, it takes a long time to dry grain, steeped in this solution.

By employing sulphureous acid, the effect of which upon the grain is just as powerful and the proceedings less difficult, the above mentioned inconveniencies are avoided. The procedure is as follows: From the bung-hole of the empty barrel a burning thread dipped in sulphur is suspended, containing sufficient sulphur to consume all the oxygen in the barrel, its entire consumption being indicated by the extinguishment of the fire. The wheat is then introduced through a funnel, covered with a linen cloth, in order to keep the gas from escaping, until one-half or two-thirds of the barrel is filled, when the barrel is again sulphurated in the same way as before. By rolling the barrel three or four hours, if it contains a smaller quantity of grain, or six hours, if a larger quantity, all of the grain is brought into contact with the sulphureous gas, which, if there is much grain in the barrel must again be introduced into it after three hours manipulation. During the operation the grain is kept in a dry condition, and as nothing is lost in its germinating power this method is more convenient than the old way, where sulphate of copper is used. The sulphureous acid is also an excellent agency for preserving barley from rust and other diseases having their origin in the formation of fungi—*Deutsche Muller Zeitung.*

WIRE AND IRON.

Another Valuable Addition to the Manufacturing Interests of Detroit.

The E.T. Barnum Wire and Iron Works now employ nearly 400 people, and when the new factory is completed they will furnish employment to fully 600. Ground for the new factory was broken on the 15th of November, and so rapidly has the work been pushed that the foundations are now completed. The company expect to occupy their new quarters before the 1st of March next. The new works will cover two half blocks, fronting on Howard street and running back to Marquette street along Wabash avenue. The main buildings will be of brick, three stories high, and basement under all.

The works will be quadrangular in form. The Howard street front will be 140 feet in length. The right wing will extend 300 feet along Wabash avenue, while the left wing will be 250 feet long. Each of the wings is 50 feet wide. In the rear of the right wing will be a large blacksmith shop. At the end of the wing, running twenty feet along Wabash avenue, will be an iron foundry. A switch track from the Michigan Central Railroad will enter the works. Some idea of the extent of the building will be gained when it is stated that they will have more than 130,000 square feet of floor surface.

Into this new factory will be put the most complete machinery for the manufacture of iron work for jails, stable furniture, in fact all descriptions of iron work used for building purposes, as well as wire work and useful and ornamental articles in wire and iron. The trade of this company extends all over this country. In Europe iron work of this description is crude and has not reached the degree of artistic perfection which it has in this country. The E. T. Barnum Wire and Iron Works will soon be the largest and best equipped institution of the kind in the United States, and the firm are building up a large business abroad.—*Post and Tribune.*

SECRETARY SEAMANS SPEAKS.

Editor Northwestern Miller:

I note with interest your comments in regard to the recent favorable decisions given by the U. S. Supreme Court whereby millions of dollars are saved to the millers of the country. These were *great victories.* I think many do not realize the extent, or importance thereof, as they would, had they been upon the "rack" these many years watching every move, contesting every step, of a vigorous and determined adversary. In short, had they enjoyed the pleasures of being a member of that awful "star chamber committee," and danced attendance to the demands upon their time, in season and out of season, for nearly six years; under such circumstances they would appreciate the relief of that committee upon receiving Mr. Harding's message conveying the welcome news: "Supreme Court decided Denchfield case in our favor; orders decree to be reserved and bill dismissed." While our committee have ever been sanguine that the claim would ultimately be defeated, this belief did not prevail generally among those having a knowledge of the case, believing that inasmuch as Judge Blatchford had given a decision in the case, adversely to the defence, the court above would sustain his decree. It would seem that now is the proper time to "make up the score" and "honor the brave," for there are some heroes, and many incidents worthy of special mention.

There can be no doubt that the great Cochrane suit—possibly more so than any other—was the means of bringing to the notice of the Supreme Court a realizing sense of the iniquities that were being perpetrated under rules of the patent office and the law as it now stands. The re-issue of that patent and its ratification by the United States Supreme Court, was the work of experts; its subsequent defeat and setting aside of the decision by which it was affirmed, through the masterly and able effort of Mr. Harding, was a measure that benefitted every branch of trade that uses patent improvements of any kind, and no doubt paved the way to a successful defeat of the Denchfield, and many other patent suits.

The Denchfield suit has been a long, tedious and expensive litigation, pressed with great determination from the outset. Every effort possible was made to induce defendants to compromise or settle in order to break the defence, and collect the royalty claimed upon the strength of such settlements, but without avail.

Amid the "suck of barterers for immunity," we are very proud of our genial friend—the defendant in this case—W. G. Gage, of Fulton, N. Y., who has stood all these years as firm as the "granite hills," refusing all inducements to settle or compromise his case or his brother millers, when he might have done so if he would only "sign" *for the full amount of the claim against him.* Yet, with a judgment against him of nearly $4,000, and interest accumulating daily, he never wavered. My pencil cannot do him justice. He is a hero in the broadest sense. We cannot honor such men too highly. Would that all our millers were like him; what an association we could then boast of. Instead of 3,000 capacity, we would have 30,000, a small assessment, and once in five years would be all that would be necessary to replenish the finances.

Much has been said about the facility with which our Rochester friends could turn out Cartier & Robinson models. In this they were no doubt experts, but, nevertheless, we must not forget that we are indebted to that little band of Rochester millers, who steadily and persistantly refused to settle, or compromise their cases although offered a free license if they "would only sign a contract purporting to pay $100 *per run, royalty.* Rather than do this, they contested the demand at a cost of $60 *per run,* before the National Association relieved them of the burden. Verily they are entitled to a public recognition as *honorable and true men.*

To the attorneys in this case we certainly owe much. From first to last they have predicted success at the court of final resort. To Mr. Harding, for his shrewd and masterly generalship in the management of the case, after defeat had placed us at a disadvantage, to his wise counsel and encouragement, together with his strong faith in a successful termination, which was made more forcible by his offer to contest the claim on a contingent fee, thereby strengthening the faith of our committee in his counsel. In the prosecution of this defense, he has been ably assisted by Mr. Gridley, of Chicago, who has had charge of all the suits in Wisconsin, Minnesota and Illinois, and by Mr. Geo. B. Selden, of Rochester, who has really done the *work.* To Mr. Selden's untiring zeal in the working up of details, collecting of evidence—home and foreign—taking testimony, laboring against great odds, meeting defeat without loosing faith, insisting always "that the court of last resort would do his clients justice." His labors untiring, and his faith in final success never wavered.

There are, no doubt, others that have contributed much toward the success of this long and tedious contest. Certainly the rank and file, who furnished the "sinews of war," maintained their faith in the committee—never questioning, but always responding to the numerous calls for money—are equally entitled to credit with those that "buckled on the armor and stood the brunt of battle."

The same messenger that brought the chering news from Mr. Harding also brought from Messrs. Parkinson & Parkinson: "Downton case settled in our favor by Supreme Court." It was no doubt a suprise to many of our members upon learning that the association had taken a hand in the Downton contest, when they already had a contract with Downton which placed a limit to the liability of members in case Mr. Downton sustained his claim in the courts. This was an "option," *and did not prevent our taking up the defense* if circumstances should make it necessary or our interests required it. It is therefore quite proper to give our reasons for entering into a defense under these circumstances. The reasons and facts are many, but a few will suffice at this writing: Mr. Downton, after concluding his arrangement with the association, immediately secured the services of Mr. Harding to prosecute his claim, which was all right and proper, and to which no one took any exceptions, but was considered a wise move on the part of Downton.

Nevertheless, no member of the committee believed Mr. Downton's claim could possibly be sustained, providing *the case was earnestly defended.* The object the committee had in view was to force the manufacturers of rolls *to make this defense,* and relieve the association from such expense. Mr. Downton brought his case against the Yaeger Milling Co., of St. Louis, and was defeated in the United States District Court by the attorney of the Yaeger Milling Co. and F. W. von Cotzhausen, as the attorney of Fr. Wegmann, Zurich, Switzerland. So far, all seemed "fair and square." Mr. Downton then appealed to the United States Supreme Court. The committee had no idea of making any defense until about July last, when it became apparent that there was to be no defense made before the Supreme Court that could be considered sufficient from the association's standpoint. "There seemed to be too many holes in that skimmer."

1. We knew well the wonderful ability and genius of Mr. Harding. He was also reputed to have a large interest in the ownership of the patent.

2. If the Supreme Court *should* declare it valid, there was millions in it for him, which our millers would have to pay.

3. The Yaeger Milling Co.'s attorney was dropped from the case, the company having failed, consequently they *were making no defense.*

4. Mr. Downton had stated "that the contract with the M. N. A. was of *no account,* and would be contested on the ground that the association members, since the contract was entered into, had bought rolls of other parties and not of his company as the contract contemplated, and was therefore not binding."

5. Mr. Downton repeatedly stated to the writer that his relations with Allis & Co. were of a very unfriendly nature; that he expected to see the time when he would "get even with them," and that under no circumstances would he enter into any future business relations with them. Yet we find about this time (July, 1882), Allis & Co. are advertising the "Cranson-Dawson roll," of which Downton claimed *sole ownership,* and Downton in return advertising the "Gray belt drive." This certainly did not look like "war to the knife, and the knife to the hilt."

6. About this time (July, 1882), an interview by telephone with Mr. Allis in regard to this case elicited the reply that "they were not contesting the claim and *had no interest in it.*" Rather a singular stand for the largest manufacturer of rolls in the United States to take, and not in accordance with the idea that "manufacturers of rolls would defend this suit—*for their own protection.*"

7. At a future interview by telephone with Mr. Allis as to who was his patent attorney?" elicited the reply, "Mr. Rainey of St. Louis." Mr. R. was also attorney for Downton, and reputed part owner of the Downton patent, and also that "Mr. Von Cotzhausen was in the employ of Wegmann, and he (Allis) had nothing to do with him."

8. Mr. Cotzhausen, the attorney for Wegmann, and who made an able argument in his (Wegmann's) behalf, in November last, stated that the Wegmann rolls were *grinding rolls,* with *differential speed* and *characteristically different from Downton's* flattening rolls operated at even speed. Consequently *Wegmann's interest is not directly in question,* and this is the only view that could be entertained; consequently we failed to see wherein the interests of the association were securing any defence. Now in view of these facts and many others that appeared as the investigation progressed, it was deemed for the interest of the association to make a defence, and to that end we invited the Jno. T. Noye Mfg. Co., of Buffalo, to join us, which they very cheerfully did, and have shared equally with us in the expence; they are certainly entitled to our consideration.

Messrs. Parkinson & Parkinson, of Cincinnati, were secured to defend in behalf of the association. It was considered advisable not to make the matter public during the contest, as much could be done that otherwise might have been defeated. In getting in their defence Messrs. Parkinson & Parkinson labored under many difficulties, the time allowed them for argument being wholly inadequate to a complete presentation of the case; however, the time at their disposal was used to great advantage.

There are many other "holes in the skimmer" that "need a plug," but time and space forbid. This much is deemed necessary to answer certain criticisms that have appeared, viz., that the association retained Parkinson & Parkinson to represent their interest *and save their members, if possible, the license fee which they had agreed to pay in case the patent was sustained.* Such criticisms are unwarranted, and not sustained by the facts, and eminate with bad grace, from the quarter which they come. As to Mr. Downton's invention, no member of the committee, or any member of the association ever believed it could possibly stand the tests of the court *if properly defended.* Our agreement contemplated a *vigorous defense;* with it falls many other and similar claims, which the patent office has been prolific in granting.

Our "docket" is now clear for the first time in 7 years. What an interesting spectacle, less than 3,000 capacity have been paying out money doing the work and defending the rights of 20,000 capacity, who stand aloof like the Tories of the revolution, enjoying the fruits of other mens toil without due recompense, and yet they no doubt claim to be honest honorable men. Verily, they see through a glass darkly. Yours truly,

S. H. SEAMANS.

Milwaukee, May 14.

GOOD LEGAL NEWS FOR MILLERS.

The "Downton" and "Denchfield" Patents declaired Void.

The millers of the United States will long remember May 7th, 1883, as being an important one to the entire milling industry. On that day the UNITED STATES SUPREME COURT rendered final decisions in what are generally known as the "Downton" and "Denchfield" suits against millers for infringement of their respective patents.

THE DOWNTON SUIT.

This suit technically styled Robert L. Downton vs. The Yaeger Milling Co., came up for trial and decision therein was rendered in the U. S. Circuit Court for the Eastern District of Missouri in September, 1879. The claim in Downton's patent was as follows: "*The herein described process of manufacturing middlings flour by passing the middlings after their discharge from a purifier, through or between rolls and subsequently bolting and grinding the same, for the purpose set forth.*"

Judge Treat, after an exhaustive hearing of the cause dismissed the bill, deciding that the patent "was void for want of novelty and uncertainty." Downton in this action demanded $50,000 damages from the Yaeger Milling Co. and a perpetual injunction. From this decision Downton appealed to the Supreme Court of the United States where a final decision was made against him as above stated.

In view of the part in the recent defense made by the Millers' National Association it may be well to briefly review the progress of this case. The contract for building the Yaeger Mills in St. Louis, was awarded to Messrs. Edw. P. Allis & Co., of Milwaukee. At that time Downton was in the employ of Allis & Co., and it is alleged that while in their service he placed the rolls in the Yaeger Mill which formed the basis for the Downton's suit against the Yaeger Milling Co.

Not long before this, Frederick Wegmann, of Zurich, Switzerland, had introduced porcelain roller-mills in this country, and the firm of Allis & Co. were his sole agents. When the Downton case was commenced Mr. Wegmann was of the opinion that if he (Downton) should be successful in sustaining his claims that it would interfere with his (Wegmann's) sale of roller-mills in this country, he therefore employed counsel, Mr. F. W. Cotzhausen, of Milwaukee, to defend the cause. Downton was defeated in St. Louis and took his appeal to the Supreme Court. The original defendant, The Yaeger Milling Co., were in bankruptcy, Wegmann's counsel, Mr. Cotzhausen had come to the conclusion that Downton's claims did not conflict with his clients (Wegmann's), and Messrs. Edw. P. Allis & Co. claimed to have an assignment of his (Downton's) patent from Downton, so that if Downton should win, it would be for the benefit of Allis & Co. and in case he lost, they would suffer no material damage.

The defense stood in this condition in April, 1882, at which time Mr. Seamans, Secretary of the Millers' National Association, reviewed the situation carefully and determined that it was of importance that the suit should be vigorously defended in the interests of the Association. After considerable correspondence, the Executive Committee approved of the Secretary's plans, and he was duly authorized to retain Messrs. Parkinson & Parkinson, of Cincinnati, to defend the interests of the Association and to induce some of the manufacturers of roller-mills to assist in the defense. In August, 1882, the JOHN T. NOYE MANUFACTURING CO., of Buffalo, N. Y., agreed to join in the defense with the Association and to defray half of the expense. It is quite possible that the final result in this suit might have been different had it not been for the watchfulness of the Secretary and the prompt action taken by the Executive Committee, which was certainly of material aid to others engaged in the defense.

THE DENCHFIELD SUIT.

In April, 1858, John Denchfield, of Oswego, received a patent for an alleged improvement in cooling or drying meal in process of manufacture. The invention consisted of a combination of the meal-spout and conveyor-box, a suction fan and suction spout, by means of which air is drawn through the curb, meal-spout and conveyor-box and suction-spout, cooling the stone and meal and carrying off moisture, so that the accumulation of dough is prevented, and also the escape of flour-dust into the mill.

Denchfield's patent having been purchased by a syndicate of speculators, suits were commenced in July, 1874, against Gage & Co. and Nelson & Co., of Fulton, N. Y. Hon. H. R. Silden, of Rochester, N. Y., was employed as counsel to defend the cases. After a lengthy trial, Judge Johnson decided in favor of the patentees, and the damages were fixed by Ward Hunt, Master in Chancery, as being equal in value to one barrel of flour out of every 600 made. An appeal was made to the U. S. Supreme Court, and in the meantime many suits were brought in Wisconsin, Illinois and Minnesota. Efforts were also made to compromise with the Millers' National Association. The Association offered to pay $25 per run, but the proposition was declined by the Denchfield party. The final arguments in the U. S. Supreme Court were made by Counsellor Thurston for the Denchfield party, and by Counsellor Harding for the millers. The decision was in favor of the millers, on the grounds that a re-issue must be for the identical claim for which the original patent was granted, and that a broadening of the claim by dropping out some of the essential elements, invalidates and renders the re-issued patent void.

BOOK NOTICES.

Among the many good things found in HARPER'S MAGAZINE for April may be mentioned the following: Faustus—Frontispiece—From a drawing by E. A. Abbey; Lambeth Palace: "Ye Archbishop's Inne"—Zadel Barnes Gustafson—With ten illustrations; The Folding—A Poem—Annie Fields; The Hundred Years' War—T. W. Higginson—With seven illustrations; A Castle in Spain—A Novel Part II—With four illustrations by Abbey; Indian Art in metal and wood—J. L. Kipling—With fourteen illustrations; On the edge of the marsh—A Poem—Miss A. A. Bassett; The Home of Hiawatha—Ernest Ingersoll—With twelve illustrations; Sunlight mysteries—William C. Wyckoff—With nine illustrations; Rus—A Sketch—Charles Reade; Unuttered—A Poem—John B. Tabb; The Romanoffs—Part I—H. Sutherland Edwards—With thirteen portraits; Death in the Sky—A Poem—George Edgar Montgomery; Faustus—A Poem—S. S. Conant; Carlsbad Waters—Titus Munson Coan, M. D.; The mount of Sorrow—Harriet Prescott Spofford; An Esthetic Idea—A Story—A Working Girl.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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[Entered at the Post Office at Milwaukee, Wis., as second class matter.]

MILWAUKEE, JUNE, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California 209; Colorado, 52: Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

MILLERS' NATIONAL ASSOCIATION.

Secretary's Office, Milwaukee, Wis., May 12th, 1883.

Messrs. The Jno. T. Noye Mfg. Co.,
Buffalo, N. Y.

I am in receipt of your draft on the National Shoe and Leather Bank, New York, for the $.....being one-half of retainer fee and expenses of Parkinson & Parkinson, Cincinnati, O., in case Downton vs. Yaeger Milling Company as agreed. The result of this contest equals our most sanguine expectations, and should be a source of mutual satisfaction. Thanking you for the financial aid so freely extended in behalf of the milling interests.

I remain, yours very truly,
S. H. SEAMANS, Sec'y.

FORTY-EIGHT per cent. of all the cleared land in the Province of Ontario, Canada, is used for raising grain, and 26.3 per cent. is sowed to wheat.

SOME of the leading French millers have at last adopted the roller mill system and have found it profitable. It is said by a French correspondent that there is little doubt but that most of the large French mills will be changed into the roller system within a year.

THE *Roller Mill* has come out with another device for a bran-packer and claims that $1,000 prize—It is no use trying to beat our Minnesota man's device as published in our May number—To him belongs the "cake" and—ergo—he must have it. The *Roller Mill's* device is a clear infringement.

THE Case Manufacturing Co., of Columbus, O., informs us that they have just increased their capital stock and broken ground for two new buildings which will add about 30 per cent. to their present capacity. They report business exceedingly good and add, "we are daily making new entries in our order book, many being for full roller mills on our system from neighborhoods in which we already have our mills running."

THE SPENCERIAN BUSINESS COLLEGE in Milwaukee has during the past year had a very large attendance and the work done has been unusually good. There are no vacations and students are admitted at any time for the business course or for special branches, including short-hand and type writing. The advantages afforded during the summer months, including July and August are excellent.

THE Do wnton Manufacturing Co., of St. Louis, are doing a good business and selling roller mills all over the country. Now that the legal matters are out of the way they expect to do a larger business than ever.

THE Missouri Millers' Association met in St. Louis May 18, in the words of the Secretary, "to elect officers for the ensuing year and transact such other business as might be brought before the meeting." The business transacted consisted of the election of officers and a royal boat ride with an elaborate lunch.

OFFICIAL report of the *wheat* and corn production of the United States for 1882, furnished by the U. S. Agricultural Department to S. W. Tallmadge, of Milwaukee.

States and Territories.	WHEAT.		CORN.	
	Bushels.	Acres.	Bushels.	Acres
Maine	512,100	43,700	904,400	30,987
N. Hampshire	148,700	11,500	870,700	37,269
Vermont	378,000	21,150	1,930,300	56,916
Massachusetts	20,100	1,180	1,237,200	57,120
Rhode Island	520	.....	277,900	12,100
Connecticut	43,600	2,150	1,155,800	57,577
New York	12,145,200	772,400	21,187,500	769,115
New Jersey	2,098,700	154,000	9,942,800	343,536
Pennsylvania	20,300,700	1,488,700	43,518,800	1,388,245
Delaware	1,200,600	98,800	3,936,600	208,182
Maryland	8,655,600	620,000	17,904,700	691,542
Virginia	8.311,400	918,900	35,904,000	1,881,568
N. Carolina	5,494,800	710,000	34,260,700	2,446,056
S. Carolina	1,729,000	230,000	16,356,200	1,361,256
Georg'a	3,812,900	510,000	36,617,500	2,747,005
Florida	350	80	3,708,900	392,073
Alabama	1,700,800	285,000	31,982,500	2,300,341
Mississippi	250,100	55,000	30,233,600	1,798,944
Louisiana	7,500	2,200	14,636,400	790,336
Texas	4,173,700	460,000	63,416,300	3,280,329
Arkansas	1,566,100	215,000	24,485,900	1,596,672
Tennessee	9,971,200	1,260,000	75,188,600	3 119,371
West Virginia	4,854,300	430.000	14,927,000	588,233
Kentucky	17,250,000	1,287,000	75,500,900	3,1 3,248
Ohio	43,453,600	2,876,000	93,319,200	2,977,680
Michigan	32.315,400	1,985,000	28,581,600	929,760
Indiana	45,461,800	2,763,000	107,484,300	3,438,332
Illinois	52 302,900	2,956,000	182,336,900	7,914,042
Wisconsin	23,145,400	1,610,000	32,201,600	1,117,240
Minnesota	33,030,500	2,547,000	21,127,600	661,050
Iowa	25,487,200	2,485,000	175,487,600	6.777,302
Missouri	27,538,600	2,335,000	170,037,000	5,763,102
Kansas	31,248,000	1,573,000	144,452,600	4,280,430
Nebraska	18,300,000	1,657,000	82,478,200	2,364,120
California	36,046,600	2,767,000	2,790,900	98,634
Oregon	12,689,300	723,000	130,000	5,450
Nevada	95,000	4,520	18,000	830
Colorado	1,598,200	95,000	422,400	21,076
Arizona	220,000	15,500	57,000	2,709
Dakota	11,460,000	720,000	4,650,000	186,247
Idaho	650,000	40,625	45,000	1,580
Montana	685,000	42,812	18,000	492
New Mexico	767,000	63,917	965,000	45,594
Utah	1,250,000	81,500	275,000	13,208
Washington	2,440,000	148,000	62,000	2,646
Wyoming	25,000	1,560	.....	.....
Indian Terr	.....	.....	.....	.....
Total	504,185,470	37,067,194	1,617,025,100	65.659,546

ABOUT THE DOWNTON CASE.

AN INTERESTING LETTER FROM MESSRS. EDW. P. ALLIS & CO.

MILWAUKEE, WIS., May 28, 1883.

Editor United States Miller.

Although the celebrated suit of Downton vs. The Yaeger Milling Co. is now a thing of the past, in view of the general amount of misinformation regarding it, we think it proper to state a few facts in connection with it in order that your readers may be better enabled to give credit for the successful termination of this suit to the parties who have contributed most largely both in work and money to defeat the Downton patent. There have been so many errors and misstatements in the several milling papers both regarding the suit and our relations thereto that we wish to get matters straight so far as lies in our power and without taking any credit to ourselves, to place it where it actually belongs. In order to do this, we will give a little review of the history of this case in its early stages.

Up to the Vienna International Exposition of 1873 roller milling, although in Germany at an early time extensively practiced, was comparatively little known. The first roller mills did not prove adequate to the general demand. The science of roller milling was fairly understood, but the art practically abandoned. In the United States, prior to 1873, no instance can be traced where rolls were ever used on middlings. Since the Vienna Exhibition and the almost simultaneous invention of the Wegmann Porcelain Rolls, roller milling received a new impetus abroad, and rapidly spread to the American continent. To the vigorous agitation by the famous engineer Oscar Oexle, is due to a very great extent the universal adoption of rolls in milling. It was Oexle who at the Millers' Convention at Buffalo, in 1877, first pronounced the Downton roller patent to be an imposition upon the milling public, and who caused to be published under date July 12, 1877, the following letter:

OFFICE OF EDW. P. ALLIS & CO.
MILWAUKEE, WIS., JULY 12, 1877.

Editor American Miller.

In your July number you publish a card from R. L. Downton and Tom Miller, Jr., wherein they assert the exclusive right to "sell and license rolls of any material to be used in crushing middlings," and threaten to prosecute, as infringers, all who use rolls not procured from or through them.

Now, you will oblige us by bringing to the notice of your readers the following facts, so that millers shall not be misled by the above assertion, which, although broadly made, is utterly without foundation.

What is called the Downton Patent No. 162,157, wherein "he claims to have invented a new and useful improvement in the process of manufacturing the middlings flour, by passing the middlings after they are discharged from a purifier through or between rolls," is nothing more or less than borrowed from standard scientific works, published in Europe, and extensively circulated here. The use of rollers in this connection, being known and resorted to abroad as early as 1835, and to the certain knowledge of the undersigned introduced into this country ever since 1873.

No one ever thought it possible that a process so well known and widely spread would be made a subject of patent right, until Mr. Downton filed his application at Washington on March 29, 1875.

By the Wegmann patent, No. 182,250, applied for on this continent May 21, 1875, and dating back in England to 1874, the use of rolls generally is not covered, the improvement claimed being in the unbroken surface of porcelain or other equivalent silicious substance, and certain other mechanical appliances in the machinery.

Ready to substantiate the above statements by the most overwhelming proof, our attorney, Hon. F. W. Cotzhausen, of the firm of Cotzhausen, Sylvester, Schreiber & Smith, at Milwaukee, by our direction, under date of July 5, 1877, addressed a letter to Mr. Rainey, the attorney of Messrs. Downton & Miller, wherein he said: "If Mr. Downton would file a bill against Mr. Wegnann or Oscar Oexle, to test the validity of his certain patent right, we are authorized to enter their appearance, with a view of bringing the matter to an early and final decision; but it must be apparent to you that the continued writing of letters to third parties, interested in the purchase of rolls, and threatening them with litigation, is anything but fair, especially when we tender the opportunity of testing your clients' rights in a suit against the principal and his agents."

Notwithstanding our said offer, no suit of any kind has as yet been commenced against us. Mr. Downton and his associates well know that we are constantly selling the Wegnann patent rollers and infringing upon his pretended patent right. Now, what we desire is an opportunity in court to expose the piracy of those parties, and we therefore call upon our customers who may be molested by threat of suit, in any way or manner, to immediately notify our attorney, F. W. Cotzhausen, so that we may be permitted to assume and conduct the prosecution or defense of the case.

Please insert the above in your esteemed paper and oblige, Yours, etc.,

FR. WEGMANN,
OSCAR OEXLE.

The suit of Downton against the Yaeger Milling Co. was the result of such challenge. Mr. F. W. Cotzhausen, attorney for Wegmann, took charge of said case and was assissted on the hearing by Geo. M. Stewart, of St. Louis, as local counsel and solicitor of record. A great deal of testimony was taken over all parts of the United States, and all expenses were cheerfully defrayed by Mr. Wegmann. No other person ever contributed thereto. The National Millers' Association was tendered by the attorneys for Wegmann the privelege of assisting in the defense, but did not accept thereof; on the contrary, the Executive Committee, pending such litigation, in May, 1879, gave notice that "on behalf of members satisfactory arrangements had been made for license under said patent," and its action in this behalf seriously embarrassed the efforts of Mr. Cotzhausen and client. To relieve the milling public of a monopoly, which at that time was asserted on all rolls which were used for crushing middlings—see Oexle's letter to *American Miller*, July 18, 1879,—the decision at St. Louis in Mr. Wegmann's favor was an unexpected blow to those in sympathy with the patent. It was the result of hard labor and earnest fighting.

Mr. Downton appealed. The Supreme Court in disposing of the case now adopts almost the identical words of Oexle in his letter of July 12, 1877, where he said that, "the Downton pretended process is nothing more or less than borrowed from standard European scientific works; that the use of rollers for this purpose was known and resorted to abroad as early as 1835."

The suit of Downton vs. The Yaeger Milling Co. was brought just at the time Mr. Fr. Wegmann was first introducing his porcelain roller mills into this country. At first, Mr. Wegmann was of the opinion that the Downton patent, if sustained, would materially interfere with the further sale and use of his machine here, and he therefore retained Hon. F. W. Cotzhausen, of this city, as his attorney, and instructed him to undertake the defense of the suit. Further consideration convinced Mr. Wegmann that the Downton patent would not materially interfere with the sale of his machines, as they were not used in the manner or for the purposes specified in the process patent, but having once undertaken the defense and being convinced that it would cost the millers of the United States much money unless carefully defended, and having too much pride in the matter to allow it to go by default, he instructed Mr. Cotzhausen to continue the defense vigorously and prosecute it to a successful termination. The expense incident to the defense has been most largely borne by Mr. Wegmann and the work by Mr. Cotzhausen, and it is but simple justice to these gentlemen that the facts should be explicitly stated.

Without taking in the least from any credit which can justly be claimed by others, it is but simple justice to Messrs. Wegmann and Cotzhausen to state the fact of their unwearying interest in defending the suit and carrying it to the court of last resort and their unstinted expenditure of time and money to secure a decision which should benefit every miller in this country, whether a member of the National Association or not, and to place the right to use either smooth iron or porcelain rolls beyond a question.

The Secretary of the Millers' National Association has seen fit to make public a few of his many "suspicions" regarding the connection with this case and following the precept of the French law which considers every man guilty until he proves himself innocent, he by implication charges collusion between ourselves and Mr. Downton. His three principal counts in the indictment are:

1. Despite many savage remarks by Downton, it was found that Downton was using the belt drive, and that we were prepared to furnish such of our customers as desired them with rolls under the Dawson-Cranson patent.

2. That we were not actively interested in contesting Downton's claims.

3. That Mr. Rainey, at one time Downton's attorney, was our attorney also.

Without noticing the frivolous character of the first and third counts further than to say that we cannot be held responsible for Mr. Downton's loud talking, and that the arrangement regarding the Grays Belt Drive and the Dawson-Cranson rolls could have no direct or indirect connection with Downton's fight with Wegmann; and further that Mr. Rainey was our attorney in certain cases in which neither the millers' association, the millers outside the association, nor Downton himself were interested, we wish to state in answer to the second count, that we were not interested in the defense of the suit and steadily refused all solicitation to become parties thereto, because we were already contesting Mr. Downton's claim to the ownership of the patent and had appealed our suit in order to be in position should the Downton patent be sustained by the supreme court, to reopen the case and introduce new evidence which we had obtained since the first trial. This we could not have done had we become in any manner implicated in the suit between Downton and the Yaeger Milling Co, which suit was being vigorously defended by Mr. Wegmann and his attorney Mr. Cotzhausen. Our only intention was to keep ourselves in shape to protect our customers and if in doing this we protected millers who were not our customers, we could, were we so disposed, claim the same credit that the association does for protecting others than its own members.

Whatever may have been the motives which led the association into joining the defence, we have no disposition to question them or to detract from any credit which may be due to the association or its attorneys. We do not intimate any suspicion because the attorney for the association in one case was the attorney for Downton in another, nor cry out collusion because the association had previously compromised with Mr. Downton on this same patent. We simply desire to give all credit to the persevering efforts of Messrs. Wegmann and Cotzhausen, which have resulted in saving millions to the Millers of the United States.

Yours truly,
EDW. P. ALLIS & CO.

ED. DURANT, formerly of the City Mills, Milwaukee, is now located at Arvilla, Grand Forks Co., Dakota, where he has charge of a 150,000 bushel elevator, etc. A roller mill is to be erected there this summer.

[The following article which was written for *The Miller*, London, by a milling engineer, contains many points of interest and much information of value to young American millers who have a desire to learn. The publisher of the UNITED STATES MILLER has endeavored to obtain an article something similar to this from a well known American milling engineer, but as he has been unable to do so, he believes he renders a valuable service to his readers by republishing from *The Miller*, London, the article as below. The article was prepared with a view to assisting millers to pass the examination for admission to the ranks of English journeyman millers.]

STUDIES FOR YOUNG MILLERS.

Milling Technology, with Suggested Questions for Examination Therein.

6. *Manufacture.*—Mechanical questions in relation to the manufacture of flour should embrace theoretical as well as applied mechanics. The mechanical principles involved in milling processes are generally of a highly complicated nature, and they very rarely admit an application of elementary rules.

The object of all milling processes is either *reduction* or *separation*. The grain is first *separated* from dirt and foreign admixtures, then it is subjected to various *reductions*, and finally the finished products of each reduction are separated from the unfinished products until a more or less perfect separation of the *digestive* parts from the *indigestive* parts has been attained.

The object of the *reduction of grain* is to overcome its internal resistance, and thereby to destroy the connection of its parts. This can be done either by a *tearing*, *crushing*, *cutting*, or *percussive* action.

A *tearing* action is produced in those reduction machines where the grain is brought between a rotating and a fixed body, or between two rotating bodies having differential velocity. The grain is held back by friction, or by the peculiar construction (furrows, flutes) of the working parts of the machine, while either the moving or fixed part draws the grain forward, thereby tearing it asunder, or at least detaching small parts from the same. This tearing action is the characteristic of all millstones, and most disc mills, except those of the latter, which have been specially constructed with polished surfaces and without cutting edges in such a manner that they work moderately percussive, like the Johnathan Mills reduction machines.

A *crushing* action is produced either by two rotating bodies moving with equal velocity (smooth crushing roller heavy cylindrical body rolling over a fixed plane surface.

A *cutting* and *scraping* action occurs in those reduction machines where the two rotating bodies have a certain number of *sharp* continuous cutting edges, and move with differential velocity (fluted rollers). As soon as the edges are made round (non-cutting) the action becomes more bruising and crushing. If one of the sharp fluted surfaces is standing still while the other moves at a certain speed, the action becomes more or less tearing, like that of fluted rollers with fluted grinding blocks, or that of sharp fluted disc mills.

A *percussive* action finally takes place in those reduction machines where the grain is thrown violently against the projections of a fixed disc by means of the projections of a rapidly revolving disc (disintegrators), or where the grain is impelled by means of a rapidly moving stream of air and is thus thrown against a fixed disc (Chichester's pneumatic reduction machine).

The *separating processes* employed in the manufacture of flour may be divided in two classes. In the one class the reduced material is separated accord... ressing process), and in the other it is separated according to gravity (purifying process).

The mechanical principles relating to these various processes are mostly complicated, and it is therefore evident that only a thorough knowledge of both *applied* and *theoretical* mechanics can give the milling student a perfect idea of the most advantageous mode of operation.

Millers intending to study applied mechanics for the coming milling examinations should first read descriptions of steam and water motors and of milling machines, and they should take special notice of the details of such machinery. Next they should familiarize themselves with the mechanical principles of simple machines like levers, pulleys, and that of the inclined plane. Also screws, the principle of wheel and axle, means for converting motion, like endless bands, toothed wheels, rack and pinion, the crank and connecting rod, &c. They should also study the definitions of energy, work, *vis viva*, &c.; the principles of hydraulics, friction, and the strength of materials. They should, finally, specially notice the mechanical principles of water wheels, turbines, windmills, and steam engines, &c.

7. *Motors.*—The principal sources of energy employed for driving mills are the expansive force of steam, the energy exerted by falling water, or by the *vis viva* of the same, also of air in motion, and finally, muscular energy.

a. The primary source of energy actuating a steam engine is *heat*. The non-expansive water in the steam boiler is converted into steam, that is, an *expansive* fluid, by the heat which is emitted by the burning fuel in the boiler furnace.

When this expansive fluid—the steam—has attained a certain degree of tension, higher than that of the surrounding atmosphere, it is admitted into a suitable cylinder, fitted with a movable piston, in such a manner that the space on one side of the piston is in connection with the boiler, whereas the space on the other side of the piston is in connection with the atmosphere.

The steam, therefore, exerting a greater pressure against the piston than the atmosphere, will be able to overcome the resistance of the latter, and thus move the piston forward. As soon as the piston has thus been moved through a certain distance, the connection between the boiler and cylinder is cut off, and the piston will then be moved by the expansive force of the volume of steam enclosed in the cylinder.

When the piston has arrived at the other side of the cylinder the boiler steam is admitted to that side, whereas the steam which has already expanded, and thereby performed work, is allowed to escape, so that now the piston will be pushed back to its first position. Thus a reciprocating motion is produced, which is in most cases converted into a rotating motion by means of a connecting rod and crank.

In condensing engines, the escaping steam is brought in connection with a vessel in which a low tension and low temperature are kept up. Thereby the tension of the exhaust steam is quickly reduced below that of the outer atmosphere, and thus a greater ratio of expansion can be attained.

b. The purpose of a fly-wheel in connection with a steam engine is to equalize the variations of velocity caused by the crank motion.

The pressure exerted by the steam against the piston is not fully transmitted to the crank pin in all positions of the latter. When crank and connecting rod stand in a straight line, there is no tendency to turn the crank round its centre, whereas the whole piston pressure is transmitted when crank and connecting rod are at right angles. If therefore a uniform resistance has to be overcome by the steam motor, it is necessary that the piston pressure should exceed the resistance of the driven machinery when the crank is at right angles with the connecting rod. This would cause a periodical variation of speed, and the fly-wheel is intended to minimise these variations. Its heavy rotating mass has a certain moment of inertia, that is, a tendency to maintain its velocity. When, therefore, the amount of force working on the crank is in excess of the resistance of the driven machinery (when rod and crank are at right angles), it will prevent a sudden increase of velocity. t will stor e up a certain amount of energy, which will become available when the force working at the crank is less than the resistance (when the crank passes over its dead points).

c. The cost of a steam motor per 280-stone sack of flour depends entirely on local circumstances. It depends, firstly, on the amount of power expended in the production of a sack of flour, that is, on its mode of manufacture; and it depends, secondly, on the cost of this necessary amount of power, that is, on the cost of fuel burned per horse power.

The average consumption of coal of first-class steam engines may be taken at 2 lbs. per hour per indicated horse power.

Supposing a mill with six pair of stones, two pair of porcelain roller mills, and the necessary dressing, purifying, and wheat cleaning machinery, to require a steam motor of 100 indicated horse power to drive it, then the average consumption of fuel in this mill would be 200 lbs. of coal per hour.

Such mill working day and night will turn out about 400 sacks of flour per week of, say, 130 hours, so that 200 x 130=26,000 lbs. of coal would be required to manufacture 400 sacks of flour. The cost of this quantity of coal may be taken at, say, £12, and for cost of attending engine and boiler, cost of oil, &c., another £3 per week may be added; so that, in this case, the manufacture of 400 sacks of flour would cause an expenditure of £15 for the steam motor.

Therefore the cost of the steam motor per 20-stone (280 pounds) sack of flour may be taken at 9d. per sack, if an improved low grinding system is used.

In this case it is supposed that about 55 per cent. of flour is obtained in the first run, leaving about 30 per cent. of middlings and about 12 per cent. of bran, which is finished in a bran duster. The middlings are purified, ground over one pair of middlings stones, then dressed through a centrifugal, and the tailings of the latter are passed over one of the porcelain roller mills, whereas the other porcelain roller mill treats the second quality of middlings coming from the purifier. The products from the two porcelain roller mills are dressed through a second centrifugal, and the whole flour is mixed into one straight grade. Four pair of stones are supposed to work on wheat, one on middlings and one pair is sharpening (being dressed). The first run is supposed to be dressed through two long silk reels.

Of course, not every steam motor has so low a consumption of coal as 2 lbs. per hour per horse power; it often amounts to 3, 4, and 5 lbs. per hour. In that case, of course, the cost of steam power per sack is much greater than 9d. per sack.

A greater number of breaks does not necessarily increase the cost of steam power per sack of flour. Although more machines may be employed, each of them may require less horse power; so that the total amount of power required for manufacturing an equal amount of flour may not be greater in the case of gradual reduction.

As, however, the cost of maintenance may be slightly greater in the latter case on account of a greater number of more elaborate machines, the cost of manufacturing a sack of flour may be a little greater when gradual reduction is employed, taking into account the total expenses of the mill and interest on the capital employed.

d. The immediate source of energy utilized in water motors is the gravity of the water molecules, that is, the force with which these water molecules are attracted towards the centre of the earth.

The water on entering the hydraulic motor may already possess a certain amount of *vis viva*, that is, it may already have attained a certain velocity so as to exert a certain energy by its impact, or it may act through its gravity only, or work may be performed both through the impact and gravity of the water.

e. Overshot and breast wheels are mainly actuated by the gravity of the water, whereas undershot and turbine wheels are impelled chiefly by impact.

f. Water motors are generally a much cheaper source of energy than steam motors, but they are not so reliable and constant as the latter. The very irregular supply of water sometimes causes stoppages of the mill, and often a reserved steam engine has to be provided in order to assist the water motor when the quantity of water decreases during the summer months.

In mills a very uniform velocity of the machinery is required, and therefore an easy regulation of the amount of power exerted by its motor must be possible, so as to allow for putting in work or disengaging different milling machines at certain times.

Water motors actuated mainly by gravity are less liable to variations of speed than those actuated by impact like undershot and turbine wheels. But the first have only a slow motion; they, therefore, require a great amount of powerful gearing in order to get up a suitable speed of the shafting, whereas the latter have a greater velocity, and they allow, therefore, simpler means for transmission of power.

Wind motors were formerly very extensively used for milling purposes, but they are now gradually disappearing. They are too irregular and unreliable, although they utilize a very cheap motive power. It is not advantageous to expend a large amount of capital for a mill which often is unable to work at the very time when there are favorable opportunities for doing profitable business.

Animal motors are too dear. They are only suitable for driving very small mills in out of the way localities.

8. *Machinery.*—The transmission machinery of mills is practically the same as that of other factories. Some special movements have found an application in certain milling machines, but as they are generally characteristic features of the respective milling machines they need not here be specially noticed.

Information on the elements of transmission machinery can be easily obtained from the many text-books on "Machinery and Mill-work," like those of Rankine, Fairbairn and others, which will enable the milling student to gain a clear insight into the principles of the transmission of power. This information will also greatly assist students in the Science and Art Department's Examination on "Machine Construction and Drawing."

9. *Technology.*—The sources of information on milling technology are scarce, at least so far as modern milling is concerned. Much useful material can be found in the milling press.

A rational way of studying milling technology would be to follow the three leading divisions, "*preparation*, *reduction* and *separation*."

First, all available information relating to "*preparation*" should be carefully looked up and studied in such a manner as to take special notice of the principles on which the various preparatory processes are based. In the same manner also, "*reduction*" and "*separation*" may be studied in succession, with special regard to the characteristic features of the various operations.

10. In preparing wheat for grinding, all those admixtures or parts of the grain which would have an injurious effect on the quality or color of the flour are sought to be removed.

The separation of foreign admixtures from wheat is based either on differences of *size*, of *gravity* (heaviness), or of *shape*. The separation of dust, earth, straws, sticks, lumps, stones (either smaller or larger than wheat), small seeds, etc., is based on differences of *size*. The means employed for this purpose are therefore either rotating or vibrating sieves of different fineness.

The separation of chaff, dead grains, and that of lighter or heavier admixtures of about the same size as the wheat, is based on *gravity*. In machines employed for this purpose (aspirators, separators, etc.), the grain is generally made to fall through a certain space, where it is exposed to the influence of moving air. Thereby the lighter parts are diverted further off their perpendicular line of fall than the heavier ones, and the different qualities are separated and collected by means of inclined surfaces.

Stones of about the same size as wheat are separated by passing the grain over a slightly inclined vibrating box of triangular shape, in such a manner that the wheat will pass out at the upper end (the base of the triangle), whereas the stones will move towards the lower part of the box (the point of the triangle), where they are periodically removed.

The separation of such admixtures as cockle seeds, oats, etc., (which have passed through the same meshes with the wheat, and which have nearly equal gravity), is based on the peculiar shape of these admixtures. Cockle seeds are round, and oats are longer than wheat grains. If therefore the grain is passed through a slowly revolving cylinder, the inner surface of which is indented with suitable cavities, the longer grains will slip out of these cavities sooner than the shorter or round grains, which will be lifted to a higher point. Thus these latter may be caught by an inclined surface as they fall out of the cavities, and can be collected in a separate receptacle.

These three preparatory processes may be done in separate machines, or two or three of them may be combined in one machine.

The separation of those iron particles which have passed with the wheat through the same sieves is easily accomplished by means of the attractive force of strong magnets, which will hold them back, and thus allow their removal either periodically by hand or continuously by an automatic arrangement.

Finally, the removal of the beard and all those impurities which *adhere* to the outer coating of the wheat, is affected by means of friction (smutters, brushes and ending stones).

Wheat may also be cleaned by a washing process, and even a separation of chaff, and of stone, sand, etc., may be achieved by washing, but a costly drying apparatus is generally necessary for this wet process.

Wheat is *sized* in order to adapt the working distance of the several first-reduction machines as much as possible to the various sizes of the grain.

a. The object sought to be attained in the preparation of wheat is the removal of all those admixtures and parts of the grain which would have an injurious effect upon the color and quality of the flour, as far as this can be attained without exposing the inner white part of the wheat-berry.

b. The characteristic effect of unremoved smut balls, garlic seeds, cockle seeds, and sprouted grains on the resulting flour, is discoloration of the flour and subsequent injury to its baking quality, by causing chemical changes in the condition of its gluten and starch.

c. The consequences of milling damp wheat are difficulties in dressing the meal, and that the flour resulting from damp wheat does not keep well, because it easily turns sour or becomes musty.

d. The advantages said to be gained by those who advocate heating the wheat previous to reduction are, that the moisture which is contained in the wheat is partly evaporated. The inner flour body of the wheat-berry therefore becomes more dry and friable, it will dress easier when reduced to meal, and keep better. Some advocates say that also the bran is toughened through heating, because the moisture rising from the inner parts will be absorbed by the outer bran coating. Therefore the bran is said to be less liable to pulverization during the succeeding reductions.

e. Lighter grains and similar substances rise to the surface upon a general agitation of a mixed bulk, because the attraction of the earth exerts a comparatively greater force on heavier substances than on lighter ones, or, in other words, they rise because their specific gravity is less. The general agitation gives the heavier grains an opportunity to assume a position nearer the centre of the earth, thereby causing the lighter grains to rise to the surface (float) in the same manner as wood would float on water, because its density (specific gravity) is less than that of the water.

f. The objections to washing wheat are its injurious effect upon the keeping and baking quality of the flour. If the grain is to be properly dried after washing and before grinding, a complicated drying apparatus becomes necessary, and the consumption of a certain amount of fuel increases the cost of production. If the wheat is not thoroughly dried, the same disadvantages in dressing the meal, etc., take place as those mentioned under *c.*

11. *Reduction.*—As mentioned under the subject of *manufacture*, the object of reduction of grain is to overcome its internal resistance, and thereby to destroy the connection of its parts. With reference to the nutritious qualities of the different parts of the grain, however, there are two distinct stages in the reduction process.

In the first stage, the chief aim of the miller is to destroy the connection between the indigestive parts (husk,) and the digestive parts (the flour-kernel,) so as to enable their subsequent separation.

In the second stage, the separated *digestive* parts are reduced to such a condition as to make them suitable for baking or cooking purposes.

The internal resistance of the digestive parts of the grain is much less than that of the indigestive parts; it is therefore possible to treat the grain in such a manner that the digestive parts are subdivided, whereas the stronger indigestive parts remain more or less intact. Thus the latter maintain a larger size, and their original flat shape; whereas the former are reduced to a smaller size, and a more granular shape. These differences of size and shape facilitate their subsequent separation.

The efficiency of reduction machines therefore depends on the proper action of their working surfaces in this respect, that is, whether these latter have such a shape and such a relative motion that they will cause the digestive parts to assume a form which is sufficiently different from that of the indigestive parts to enable their separation.

As stated under the subject of *manufacture*, the action of the working surfaces may either be *tearing*, *crushing*, *cutting* or *percussive*.

Each of these actions has a peculiar effect on the ultimate form of the various parts of the grain, and on their more or less perfect separation into digestive and indigestive products.

a. The principal problem of grinding or reduction in milling consists in the perfect severance of the pure digestive parts from the indigestive and deteriorative parts, in such a manner that the latter can be easily separated.

b. The mechanical action of millstones on wheat during its reduction may be described as a "tearing" or "rasping" action.

As the wheat falls into the eye of the stone it enters into the furrows of the runner stone, and these furrows will draw the wheat forward over the undulating rough surface of the fixed bottom stone.

Each time the wheat grains, or their broken parts, are passed over the high points of the bottom stone (the lands,) it will be pressed firm between the working surfaces.

The fixed surface has a tendency to hold the parts back, while the moving surface will press it forward, and thus some particles will be torn off until the fixed surface loses its hold, when the runner stone will draw the reduced part forward to a *narrower* place, where a further reduction takes place in the same manner as before.

Thus, near the eye of the stone, where the surfaces are wider apart (bosom), the wheat will be broken up into several parts, and as these parts are drawn towards the skirt the white flour-kernel will be gradually rasped off the husk, because the resistance of the latter against such a tearing action is *greater* than that of the softer flour-kernel.

c. Heat is developed in millstones, because the mechanical work which is exerted by them in overcoming the internal resistance of the wheat, is converted into heat. A certain amount of heat is also produced by the friction of the wheat on its broken parts with the working surfaces, or by the friction of the broken parts with each other, and in a very slight degree by the friction of the air with the working surfaces and the wheat.

d. A millstone is in "standing balance" when its working surface assumes a perfectly horizontal position, while the stone is "standing." If it assumes this position while "running" the stone is said to be in "running balance."

e. Any weight which is embedded in a balanced millstone, and which can be adjusted in a vertical direction (parallel to the rotating axis) will affect the "running balance" of the stone, but not its "standing balance." The latter is affected by weights which are adjustable in a horizontal direction.

f. The effect of a displacement of a running stone in running balance, when its point of suspension is at its centre of gravity, is that it will be able to change its horizontal position, without losing its *indifferent equilibrium*. The runner-stone will have a tendency to assume a swinging motion.

If its point of suspension is *above* its centre of gravity, the face of the running-stone will have a strong tendency to regain its horizontal position, after a displacement has occured, in order to regain its *stable equilibrium*.

If the point of suspension is *below* the centre of gravity, a displacement will cause the running-stone to lose its *unstable equilibrium*, the face of the stone will assume an *inclined position*, and the latter will have no tendency to regain its balance.

g. The effect of *more* draft in the furrows is that the feed will pass *quicker* over the grinding surface. The *less* draft there is in the furrows, the *longer* will the feed remain between the grinding surfaces.

h. The forces acting on a particle of feed during its process through the stones are—

1. The force with which the top runner endeavors to move the feed particle over the bed-stone in a direction perpendicular to the furrows of the top-stone.

2. The force with which the fixed bed-stone endeavors to resist this movement in a direction perpendicular to its own furrows.

3. The resultant of these two forces, which endeavors to draw the feed particle towards the circumference of the stones.

In the case of bottom runners there is besides a certain centrifugal force which tends to draw the feed particle towards the skirt, and in both cases the air, which is impelled by the centrifugal force of the running stone towards the skirt, has an accelerating effect on the forward movement of the feed.

i. The principal difference between the mechanical action of smooth rollers and millstones is that the first has a crushing effect and the latter a tearing effect. The *relative* speed of smooth rollers is very small, and their surfaces do not have a rasping effect on the feed. The *relative* speed of stones is great, their surfaces are rough, and they cannot avoid reducing the husk to some extent. The contact of the feed with rolls is of very short duration, whereas the contact of the feed with the stone surfaces lasts much longer.

j. The greater the natural roughness of rollers and the greater their *relative* speed (maximum when one roll is fixed, minimum when both rolls have same speed,) the more does their action upon the feed approximate to that of millstones.

k. The advantages claimed for porcelain rollers are their fine natural sharpness, their porosity, their non-liability to rust. But they do not have so great a resistance against wear as have the chilled iron rollers, which are most durable. It is claimed for the latter that when they have been for some time in use, their surface requires a certain natural dullness, which enables them to act as well as the porcelain rollers. For some purposes, the treatment of husky middlings chilled iron rollers are preferable.

l. The advantages claimed for rollers are —1st, that they do not pulverize the bran, and 2nd, that they enable a removal of the crease, dirt, and the germ, without deteriorating the bulk of the flour; 3rd, they therefore produce a purer, more digestive, and stronger flour than stones.

The advantages claimed for stones are—1st, that the will finish the reduction in one operation; 2nd, that they do not compress the feed, and therefore produce a lively granular flour; 3rd, that stones are simpler machines than roller mills, and require less attention than the latter.

12. *Separation.*—Separation is one of the most delicate and most important processes in milling. The differences of size and density of the products of the various reductions are never so distinct that a *perfect* separation of the digestive from the indigestive portions can be achieved.

Although dressing machines separate chiefly according to *size*, their results are also influenced by *density*, because the lighter particles have the tendency to float, and they are thus, in some cases, carried over meshes which are large enough to admit their passage.

Purifiers also, although separating mainly according to density, are greatly assisted by sieves, in so far as thereby the influence of air in motion, which has either a deviating or floating tendency, may be adjusted according to each size.

Up to the present *air in motion* is used in *all* purifiers, but it may be possible to dispence with it; indeed, it would be advantageous to separate the heavier digestive parts from the lighter indigestive parts, without subjecting them to the influence of air in motion, which causes the loss of many nutritious flour particles.

a. As the meal comes from stones or rollers it is desirable to separate it into there different products, namely—(1) *the finished digestive products;* (2) *the finished indigestible products;* and (3) *the unfinished products.* Thus the meal from stones is divided into (1) flour, (2) bran, and (3) middlings. The latter, being an unfinished product, have generally to undergo a further separation, according to size and density, before they are subjected to a further reduction. The meal from rollers does not in all cases contain the indigestive products in their finished state. The desirable object of separation in their case is only two-fold, namely, the separation of the finished product (flour) from the unfinished products. Generally, these latter products are graded according to size in the same machine which effects the separation of the flour. Thus the meal coming from *break rollers* is divided into flour, one or more grades of middlings, and the larger broken particles of the wheat (generally called "breaks" or "granulations.")

b. Separation in modern processes differs from the simple operation following low grinding chiefly in respect of the unfinished products. Very few, if any, unfinished products are produced by low grinding, whereas in modern processes the many unfinished products require a very careful and elaborate treatment.

In low grinding the separation of the indigestive from the digestive products is based nearly exclusively on *differences of size.*

In modern processes the separation of these two products is based *also on density.*

c. The principle of action of middlings purifiers is based on the different density of equal-sized middlings. In some purifiers the middlings are passed over a vibrating sieve of various degrees of fineness. Air in motion is caused to pass through this vibratory sieve and through the agitated middlings, so that the lighter husky middlings will rise to the top, whereas the heavier whiter middlings will fall through the sieve as soon as the meshes become large enough to allow their passage. The *agitation in bulk* which occurs, on vibratory sieves greatly assists in causing the lighter husky middlings to float, as explained in answer to question *e* under the subject of *preparation.* In other purifiers the middlings are first sized by means of sieves (either rotary or flat vibratory) into various grades, and each of these grades is caused to fall through a stream of air in motion in such a manner that the lighter husky particles will be diverted further from their perpendicular line of fall than the heavier whiter middlings. By means of numerous inclined planes the different qualities are divided and collected into different receptacles. In a third kind of purifier the middlings are fed on a quick revolving plane surface, so that they are subjected to centrifugal force. The heavier middlings are thus thrown out further than the lighter husky ones, and they thus fall into separate resceptacles. A stream of air passing through the falling middlings tends to draw the lighter middlings still further towards the centre line of the rotary disc.

d. Separation, based on size, can take place under the following mechanical conditions:—1. When the unsized product (wheat, meal, middlings, &c.,) is made to pass over *inclined rotary* sieves, so that the influence of gravity will cause the grains, &c., to roll in the sieve towards its lowest point until they can pass through proper, meshes. 2. If the product is passed over *inclined flat* vibratory sieves; or, 3, if the products are conveyed over *horizontal* sieves in such a manner that they are at the same time agitated. Either the *sieve* or the *product* must be set in motion, or *both* may be set in motion at the same time as in centrifugal sifters.

13. *Chemical Composition and Physical Properties of the Wheat Berry.*—Milling chemistry has to answer four main questions:—1. Which are the characteristics of the different chemical constituents of cereals? 2. Which are their quantities? 3. What is their nutritive value? And, 4. In what condition are the digestive parts of cereals most easily assimilated?

The *results* of chemical investigations relating to these four questions, after the have been substantiated by scientific authorities, must be carefully studied by millers in order to enable them to impart to their manufactured products the highest possible value. At the same time, the study of the physical properties of cereals is of the highest importance to millers, in order to find out the best treatment which will cause the various parts of cereals to assume such differences of form that a perfect separation of the indigestive from the digestive parts can be easily accomplished.

a. The wheat berry consists of three main parts—1, the inner white flour kernel; 2, the germ; 3, its hull or husk. The flour kernel or "endosperm" consists of a great number of polygonal cells which are filled with starch-grains and gluten. The central cells contain less gluten than its outer cells. It is enclosed by the so-called embryous membrane, which consists of a single layer of irregular cubic cells. The skin of these cells is much thicker than that of the flour cells. The exact nature of the contents of these cells has not yet been finally ascertained, but it is known that they are mostly albuminoids, although it is uncertain whether they are digestive. The next following membranes, which combined form the tough brown husk of the wheat berry, are the "testa" or, "episperm," the "endocarp," the "epicarp," and lastly, the "epidermis." The latter consists of longitudinal cells, whereas the cells of the endocarp are arranged crosswise. The five membranes of the wheat berry enter its centre in the crease and these divide it in two lobes. The epidermis carries at the pointed end of the berry a number of hairs—the so-called beard. At the other end of the berry, opposite the crease, is situated the germ, a small, yellow oleaginous body, which contains the elements of the future wheat plant. The germ is enclosed by the four outer membranes, surrounded by the embryous membrane, and is separated from the endosperm by a separate cellular tissue.

b. The flour kernel or endosperm is the only portion of the wheat berry which it is desirable to retain in the best flour. The embryous membrane, as well as the germ, may have a certain nutritive value, but their strong fermentative tendency would deteriorate the nutritive value and the color of the flour if they were retained.

c. The organic chemical compounds to which the different structural portions of the wheat berry owe their properties, are starch, gluten, and other albuminoids, water, cellulose, fatty matters, salts, &c.

d. The *endosperm* consists chiefly of starch, gluten, and water. The *germ* consists of starch, albuminoids, fatty matters and water. It also contains minute quantities of sulphur and phosphorus.

The *embryous membrane* consist chiefly of cellular tissue and albuminoids. Its most remarkable albuminous constituent is *cerealine*, a very active ferment.

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The *outer coating* of the wheat berry chiefly consists of cellular tissue, containing several mineral constituents, like lime, magnesia, kali, (potassium) natron, (sodium) phosphoric acid, &c. All parts of the wheat berry contain water.

e. The outer coating having a *strong fibrous structure*, and being comparatively tough, it is not so easily reduced as the more *granular, soft* kernel. It is therefore possible to subject the wheat berry to a treatment which will reduce the endosperm to a granular powder, while its outer coating still remains more or less intact, and maintains such a shape and size that it can be separated by means of sieves or air in motion.

The oleaginous germ being very tough yielding it can be flattened out into cake-form between smooth rollers without falling into pieces, whereas the granular endosperm being subjected to the same crushing pressure will be pulverized, and thus the flattened germ may be separated from the pulverized endosperm.

The outer coating is moreover specifically lighter than the endosperm. If, therefore, the reduced particles of both are mixed up, but of the same size, they may nevertheless be separated by the influence of air in motion.

f. Hard wheats contain comparatively more gluten, less water, and less starch than soft wheats. This difference is chiefly due to influences of climate and soil, but also to the influence of manure.

g. Sprouting alters the chemical composition of wheat by causing a gradual liquefication of the endosperm, and its absorption by the growing wheat plant. During this liquefication the gluten is dissolved, and the starch converted into dextrin and sugar.

h. Those who advocate the use of whole meal bread contend that the embryous membrane is of too great nutritive value to be separated from the flour with the bran. They believe that the bran is rich in nitrogenous and mineral, that is, muscle and bone-forming substances, and that it should, therefore, as far as possible, be retained in our staff of life.

Those who oppose the use of whole-meal bread contend that the digestive organs of the human body are unsuitable for digesting the nitrogenous and mineral substances contained in the bran. They hold it to be more advantageous to convert the bran first into beef, mutton, pork, etc., by feeding the respective domestic animals with a food which is much better digested by their far stronger digestive organs, than to overload the human stomach with a food from which it cannot derive an adequate benefit.

14. *Explosions.*—The subject of explosions in flour mills is daily becoming of greater consequence to millers.

The introduction of a great number of modern machines which is now taking place in mills all over the world, has undoubtedly (however necessary they may be for the production of a better flour) the tendency to increase the liability of modern mills to explosion. It is very often contended that *iron* roller mills are far less liable to cause an explosion than millstones. This may be true so far as the individual risk of both machines are concerned, but if the whole outfit of a modern gradual reduction mill is compared with that of an ordinary low-grinding mill, there can be scarcely any doubt that the first is more liable to explosion than the latter.

Very few mill explosions have been originated through sparks issuing from the stones by the accidental passage of flints with the wheat. Inumerable flints and other spark-producing materials pass daily through millstones in those mills where much *foreign wheats* are ground. There are very many London mills grinding large quantities of Bombay and other similar wheats. In scarcely any of these mills are special precautions taken to effect a perfect separation of those stones which are of the same size as the wheat. It is therefore certain that in these mills many flints pass through the stones, and that most probably sparks do arise; but, nevertheless, one never hears of an explosion having occured in these mills *while the feed is on.*

And this is easily explained from the fact that flour *per se* is not explosive; it requires to be *diffused* in *dry air* in the form of *flour dust*, in order to make an explosion possible. Explosion is nothing but a *sudden combustion.* and such a sudden combustion cannot take place unless each inflammable dust or flour particle is surrounded with a sufficient amount of dry air to secure its quick combustion. Each dust or flour particle must besides be sufficiently near the other particles to cause them to *ignite* each other. A thorough diffusion of the dust *in a certain proportion* in dry atmospheric air is the condition which makes mill explosions possible. In the same manner it is a well-known fact that gas is not *in itself* explosive; it requires to be thoroughly mixed, *in a certain proportion*, with air, in order to become explosive. If too much air is in the mixture, or too much gas, no general explosion would occur. Atmospheric moisture affects the thoroughness of the diffusion, in so far as it causes the dust particles to become heavier and to settle, so that they will not float in the air. This is the reason why explosions are less violent, if they do occur, during wet weather.

Therefore, even if a spark does occur between stones while the feed is on, this does not generally cause an explosion. There may be a small amount of diffused flour dust at the very place where the spark arises, and a few dust particles may ignite, but as they are surrounded by the steam arising from the meal, and as they lack a sufficient quantity of air to continue their combustion, they are immediately extinguished without taking effect. If, however, the stones should run empty, it might occur that air containing *diffused* flour dust passes through the stones, and if at that moment a spark should ignite the mixture an explosion might occur, and might be communicated to the stive room. Such explosions are, however, of rare occurence, probably because as soon as the feed ceases, the air passing through the stones does not contain sufficient diffused flour dust to make it explosive. Most mill explosions are caused by partial explosions of diffused mill dust in any part of the mill. It may be smut dust in the wheat cleaning department, or stive in the stive room, or flour dust in another part of the mill. One partial explosion will at once cause a violent shock throughout the mill, much more dust will be caused to fall from the beams, or from the cealings of the mill, and a second explosion will take place, because a fresh diffusion of inflammable material has been prepared, which may be ignited by the first explosion, or by an open light burning in that part of the mill. This is most conclusively proved by the successive explosion of the large mills in Minneapolis, in May, 1878, where the explosion of one mill caused an immediate explosion in another mill which was many yards distant. It is improbable that the flame was carried through this distance; it is far more likely that the violent concussion of the air by the first explosion, caused in the neighbouring mill a diffusion of flour dust, which was subsequently ignited by the burning lights of the mill. The explosion risk of a mill does not, therefore, depend so much on the occurrence of sparks, as in stone mills it is influenced *in a far greater degree* by its greater or smaller tendency to create diffused flour dust; and this is the reason why, I believe, that at present many roller mills are more liable to explode than stone mills. The far greater number of quick-moving machines, such as centrifugals, purifiers, and roller mills, must each of them cause a corresponding diffusion of flour dust, which will lodge on the top of the machines, on the beams, and in the crevices of the walls, and they are, therefore, undoubtedly a greater source of danger than the few slow-moving reels in low-grinding mills. I do not say this because I depreciate gradual reduction, on the contrary, I am convinced of its superiority, but I am, nevertheless, obliged to admit their greater risk. No doubt there are means to reduce, to a great extent, the diffusion of flour dust in modern mills, and millers who are alive to the advantages of gradual reduction will not forget to adopt such precautions as the employment of *efficient dust-catchers*, the strict exclusion of *open lights* in the mill, *smooth walls* and *smooth ceilings*, which do not allow an accumulation of dust.

There is one other point of great importance with regard to mill explosions, that is, the influence of the moisture of the atmosphere on diffused flour dust. Professor Tobin, in an address delivered to the "Fire Underwriters of the North-West of America," has very clearly explained the great influence of the atmospheric moisture on the combustability of flour dust. He had carefully noted the percentage of humidity in various parts of a Kentucky mill, and he observed that whereas the moisture of the grinding and bolting flour was much greater than that of the outer atmosphere, that of the stive room was much less. He also showed that whereas in a dry atmosphere a violent explosion of flour dust would take place, if sufficient moisture was contained in the air, that the combustion of the flour dust would be greatly retarded thereby. He therefore recommended the periodical charging of dust rooms with vapor or steam, and the use of hygrometers in mills, so as to have a full knowledge of the state of their atmosphere; and, indeed, it is very advisable for millers to keep their stive rooms and smut rooms sufficiently moist by artificial means, and thereby to reduce, if not to exclude, all risks of explosions. Such moisture would not affect the value of the stive or the smut dust, nor would it influence the efficiency of the wheat cleaning department, or the quality of the resulting flour.

a. The inflammability of the flour dust is due to the presence of carbon and hydrogen in the same. Both are burned during combustion with the aid of oxygen derived from the surrounding atmospheric air.

b. During combustion the carbon combines with the oxygen, and is converted into carbonic acid gas; whereas the hydrogen combines with the oxygen, and is converted into water in the form of steam.

c. The combustion of flour dust causes an explosion because the burnt dust particles are suddenly converted into gas under a great evolution of heat, so that they, and the air which allowed their sudden combustion, expand considerably, and require a far greater amount of space, under the same pressure, than they occupied before.

d. The measure of intensity of a flour dust explosion under the most favorably conditions depends on the *proportion* between the amount of space required by the diffused flour dust *before* the explosion, and the amount of space required by the products *after* the explosion under the same pressure. The intensity of the explosion is measured by *the time* during which the sudden expansion of the explosive mixture takes place. This time is greatly influenced by the percentage of moisture contained in the explosive mixture. The less moisture the more violent the explosion.

e. Explosions are more frequent now than formerly, because modern mills contain a far greater number of quick-moving machines than the old mills, while each of them causes a corresponding diffusion of flour dust, and thus tend to produce an explosive mixture of the inflammable dust with the necessary atmospheric air.

(*To be continued.*)

TARIFF LOGIC.

Samuel Peebles is a farmer in Iowa who thinks as he sows, and reads when he rests. In his ruminations upon the tariff question he has settled down to the following conclusions:

A tariff for revenue only, if it means anything, implies the following effect:

A general reduction of the existing duties on imports.

To be followed by a larger importation of foreign-made fabrics.

To be followed by a falling of in the demand for those made at home.

To be followed by the closing of American workshops.

To be followed by a relatively greater number of men engaged in agriculture.

To be followed by an increase in the supply of farm products, with no corresponding increase in the demand.

To be followed by a reduction of the farmer's profits.

I, for one, do not like it.

Perhaps some robust philosopher who raises theories instead of corn will rise in his place, on the call of States, and prove that Samuel Peebles doesn't know what he is talking about. Up to the present time, however, Mr. Peebles appears to have a clear majority in his favor.—*Philadelphia Press.*

One difficulty with tyros in the use of machinery is the wasting of oil by its too profuse use. It often happens that a bearing will heat when supplied with too much oil, that will run cool when supplied with the proper quantity. The reason is that when the lubricator is partly worn it becomes sticky; it resists removal; it remains tenaciously between the shaft and its bearings; whereas too much of it, usually thin and limpid, serves to "wash the bearing," and let the parts into closer contact.

To make rubber packing air and steam tight the packing is brushed over with a solution of powdered rosin in ten times its weight of stronger water of ammonia. At first, this solution is a viscid, sticky mass, which, however, after three or four weeks, becomes thinner and fit for use. The liquid adheres easily to rubber, as well as to wood and metal. It hardens as soon as the ammonia evaporates, and becomes perfectly impervious to liquids.

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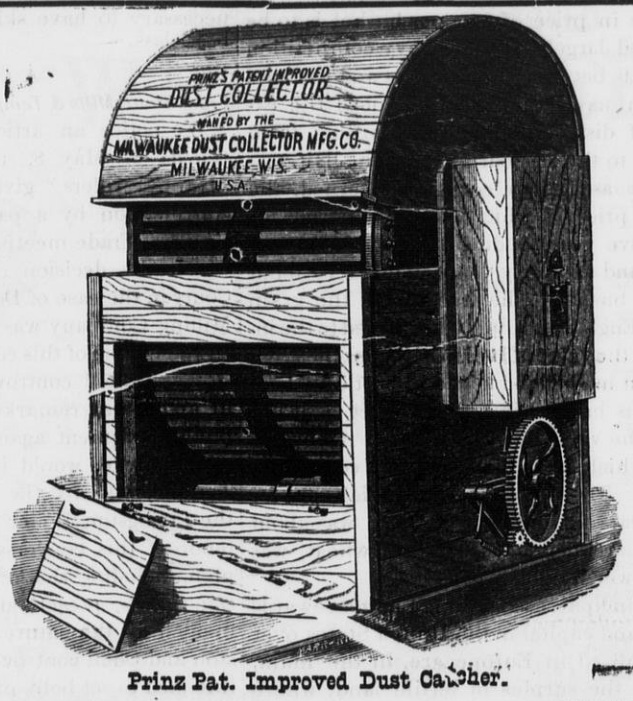

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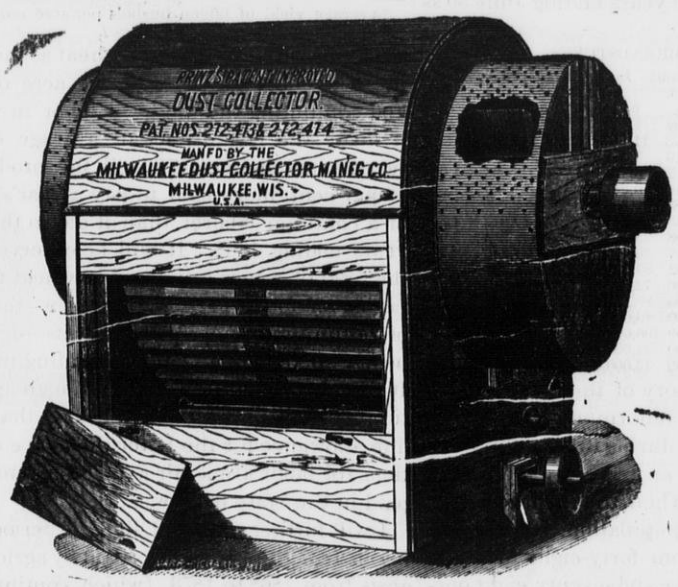

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TESTIMONIALS.

MINNEAPOLIS, MINN., April 2, 1883.

Milwaukee Dust Collector Mfg. Co.

GENTLEMEN: In reply to your request for our opinion of the merits of your dust collector, will say, we are using them on twenty purifiers and they ventilate perfectly and require no attention. We consider it the best dust collector in the market.

Yours truly, J. A. CHRISTIAN & CO.

MINNEAPOLIS, MINN., April 2, 1883.

Milwaukee Dust Collector Mfg. Co.

GENTLEMEN: After a two months' trial of your dust collector we feel prepared to bear testimony to the value of your machine, and will say without exception it is one of the most satisfactory devices we have ever placed in our mill as a purifier and roller exhaust.

Yours truly, CROCKER, FISK & CO.

MINNEAPOLIS, MINN., April 2, 1883.

Milwaukee Dust Collctor Mfg. Co.

GENTLEMEN: Yours of 30th ult. at hand. We say in reply, that we have six of your Prinz dust collectors in our mill, and they are giving best of satisfaction, doing all that you claim for them. We consider them the best dust collector in the market.

Yours truly, D. R. BARBER & SON.

ROCHESTER, N. Y., April 17, 1883.

Milwaukee Dust Collector Mfg. Co.

GENTLEMEN: In reply to yours of the 14th inst., would say that the Prinz dust collectors in use in our A and B mills are giving excellent satisfaction, need very little attention, and do their work remarkably well.

Yours very truly, MOSELY & MOTLEY.

ST. LOUIS, MO., March 7, 1883.

Milwaukee Dust Collector Mfg. Co, Milwaukee,

GENTLEMEN: Yours of date Feb. 24 received, making inquiry as to how your dust collectors are working, would say they are giving us entire satisfaction. We are running twenty of them. * * * They give us no trouble.

Yours truly, KEHLOR MILLING CO.

JAMESTOWN, N. Y., April 27, 1883.

Milwaukee Dust Collector Mfg. Co.

GENTLEMEN: I have the dust collector that you shipped to D. H. Grandin, of this city, at work, and will tell you in this just what I think of it. I consider it the *most perfect* working machine that I ever saw; it has dispensed with the dirty dust room entirely. It takes the dust from 4 purifiers completely, and from 9 sets of single roller mills to a perfection. I cannot say enough in its praise, and feel sure that it has a future unequalled by any mill improvement of the age. I remain very respectfully yours,

J. PHETTIPLACE.

MILWAUKEE DUST COLLECTOR MFG. CO., Milwaukee, Wis., U. S. A.

AMERICAN GRAIN TRADE FROM 1789.

To the Editor of BRADSTREET'S:

SIR—As supplementing my letter of April 21, giving a historical sketch of the British corn trade, I append a history of the grain trade of the United States from the adoption of the Constitution of 1789 to the present time.

The United States have always been, as they were in their colonial time, an exporting country of grain. The only marked exception to this was in 1836, when considerable quantities of wheat were imported. The small importation of 1857 and 1866 are too trivial to take into account. The normal position of this country, whether our crops are abundant or deficient, is that of an exporter of grain. So generally is this fact known that it has been remarked for many years by sea captains that one can purchase a barrel of American flour and pork at any port in the world.

It may be said England is the largest importer of grain and the United States is the largest exporting country. Within the last ten years the United States has completely outranked all other countries, including Russia. Previously to 1878 the latter had been at the head of the list.

Our power of producing grain has increased in a greater ratio than the growth of population during the last forty years. Our exports have been during the years ending June 30 as follows:

EXPORTS BREADSTUFFS.

Annual average of	*Wheat and flour in bushels.*	*Indian corn bushels.*	*Total grain, wheat&corn, bushels.*	*Bus'ls expo'd pr cap.*
5 y'rs ending 1845,	6,864,009	1,827,571	8,691,640	.48
5 y'rs ending 1850,	14,721,773	11,258,131	25,979,904	1.28
5 y'rs ending 1855,	16,438,919	5,914,495	22,353,414	.89
5 y'rs ending 1860,	23,517,982	6,810,521	30,328,503	1.05
5 y'rs ending 1865,	40,691,314	10,341,591	51,032,905	1.52
5 y'rs ending 1870,	27,860,888	10,682,672	38,553,060	1.00
3 y'rs ending 1873,	47,528,193	28,852 719	76,380,912	1.89
Year 1874.....	91,510,398	35,985,831	127,495,232	3.03
Year 1875.....	72.912,817	30,025,036	102,937,843	2.39
Year 1876.....	74,750,682	50,910,532	125.661,214	2.84
Year 1877.....	57,043,936	72,652,611	129,696,547	2.81
Year 1878.....	93,139,296	87,161,000	180,331,196	3.77
Year 1879.....	148,000,000	80,000,000	228,000,000	4.44
Year 1880	183,309,890	106,000,000	289,300,890	5.78
Year 1881.....	184,000.000	91,000,000	275,000,000	5.33
Year 1882.....	118,000,000	43,000,000	161,000,000	3.04

Nothing in the history of the commerce of nations exceeds this enormous increase of exports of breadstuffs during the last forty-two years. It is equal to an aggregate increase of 3,200 per cent., or, when the shipments are compared with the population, it is shown to have increased from forty-eight one-hundreths of a bushel to five and seventy-eight one-hundreths bushels per capita or 1,104 per cent. The causes for this wonderful development of of the export of breadstuffs are not difficult to find. The wonderful improvements made in this country in agricultural implements, in the plow, the cradle, etc., early in the century astonished Europe, and enabled this country to increase the production of grain. These improvements were followed by the opening of the Erie canal, which joined the waters of the ocean with thousands of miles of our great inland lakes. Thus the cost of production was lessened by labor-saving machines, and the cost of distribution was decreased by extended and cheapened waterways.

Greatly as the above increased the productive and distributive power of this country, it was a mere beginning. The steam railways which were begun about 1830 really did not make much progress until after 1850. Now they are extended over an immense extent of country, and carry the produce of the farmer to the seaboard summer and winter, unlike canal navigation which is closed five months in the year. To this must be added the improved reaper, the steam thresher and binder, and lastly the great improvements which have lessened ocean freights, the introduction of ocean steamers using the double-acting steam-engine. To all of these causes must be added the prosperity of England, our best customer, for the British empire is the purchaser of two-thirds of all our exports.

The following will show the increase of crops of wheat and Indian corn:

	Bushels—	
	Wheat.	*Indian corn.*
Census 1840, crop 1839.....	84,823,272	377,531,875
Census 1850, crop 1849.....	100,485,944	592,071,104
Census 1860, crop 1859	173,104,924	838,792,740
Census 1870, crop 1869.....	260,146,900	874,320,000
Census 1880, crop 1879	448,756,630	1,754,861,535
Estimated crop of 1882.....	505,000,000	1,624,847,800

The increase of the crops of wheat and Indian corn since 1839 was 501 per cent. of the former, and 330 per cent. of the latter. The population has increased in a less degree since 1840, or about 212 per cent. This clearly accounts for the extraordinary exporting power of the country in cereals.

Here let us for a moment stop. Facts like these invite a consideration of the causes that have led to so great an increase in the cultivation of cereals during the last decade. Admitting that the leading interest of the country is agriculture, yet it must be allowed that our commercial and manufacturing interests are also of great importance. The latter pursuits being of a more speculative nature, apt to suit an enterprising and speculative people better than agriculture, yet it happens that in speculative times that the latter is neglected for the former. This has undoubtedly happened three times within fifty years—in 1837, 1857 and in 1873—and it may happen again when similar causes again appear. These causes are speculation and abuse of credit. In 1837 it was principally the abuse of credit in the shape of paper money; in 1857 it was bank discounts, or making credits in bankers' ledgers, falsely called deposits; in 1873 it was the increase of government and bank paper money beyond the amount of metallic money that would have been in circulation if government or bank notes had not been printed.

The sure sign of, and naturally one of the causes of agriculture being neglected, is the price of labor being above what the farmer can afford to pay his employes. The following table illustrative of this shows the price of white wheat in New York May 1, day wages of labor in gold, and its equivalent in bushels of wheat:

Annual average of	*White wheat per bush. gold.*	*Wages common laborer, daily, gold.*	*Equivalent bush. wheat for day's work.*	*Produce of acres wheat.**
9 years end'g May 1, '68...	$1.61	$0.96	0.598	12.54
7 years end'g May 1, '75 ...	1.48	1.63	1.117	23 04
4 years end'g May 1, '79 ..	1 51	0.97	0.676	13.69
2 years end'g May 1, '81..	1.22	1.10	0.897	18.65
Year end'g April 1, '83...	1 25	1.50	1.200	24.00

*Average yield of fifteen bushels per acre required to pay one year's wages of a laborer.

Taking fifteen bushels of wheat as the yield in an average of years of one acre of land and computing the wages of labor in wheat, it made the farmer, at an average during seven years ending 1875, sell the produce of 83 per cent. more land to pay a year's wages of a common laborer than it did in the nine years ending 1868. It will be observed that the total of wages estimated in wheat for the period of four years ending 1879—the year of resumption of specie payments—declined nearly to that of the period ending in 1868. It will also be noticed that although agricultural labor is partly paid in board, that after due allowance for the latter the above quotations for labor are a fair average of what was paid in the State of New York.

I will further state that, like the period ending in 1837 the high wages paid by agriculturalists from 1868 to 1873, (which continued to 1875,) were the fruits of the abuse of credit and general inflation, causing the diversion of too much labor and capital from agriculture to speculative industries and railways—and that this was the sole cause of the commercial, manufacturing and railway collapse of 1873. It was the low price of labor and the numbers that were unemployed that forced the latter back to the cultivation of the soil during the six years ending 1879, together with a succession of good crops and with good demand for our cereals, owing to four deficient harvests in Europe. This caused the immense surplus of cereals and provisions to be taken at high prices. In other words, redundant labor from 1873 to 1879 caused the area of cultivation to extend at an unprecedented rate, which with the causes already stated, influenced foreign exchanges in our favor. This enabled the country to retain the produce of its mines of precious metals for six years, say to the amount of $200,000,000, and import a like amount of specie from Europe. There cannot be a doubt that our agricultural progress during the last decade repeated the story told just after 1837, that is, restored the prosperity of the country.

The question to be considered at present is whether we are not traveling the same road over again as during the five years preceding 1873. The fact that farm labor is high is evident, it requiring the produce of twenty-four acres of wheat to pay a common laborer for one year. This should cause people to reflect whether speculation in city buildings and railways is not drawing off too many hands from the land, as in 1837 and 1873. It is to be hoped that this rise in wages is due to material causes, such as good crops and labor-saving machines. The country is free of a redundant currency at present. Our paper money for three years has been stationary, thanks to the credit of the government enabling it to reduce the interest on its bonds, and making it unprofitable for banks to issue paper money against them. The issue of $75,000,000 of silver certificates against silver held by the government is only inflation to the extent that that silver is overvalued as coin 15 per cent., or about $11,000,000. I consider the silver bill, compelling the executive to coin not less than $2,000,000 of silver per month, dangerous, and sure, if long persisted in, to land us on a single silver standard. It is a stupid bill, for if it had never been enacted we would have shipped the $135,000,000 of silver as merchandise, and exchanges would have been in our favor to a like amount (less the overvaluation of silver as coin), and instead of that amount of silver dollars, we would have to-day about $115,000,000 more gold. It is therefore to be hoped that bankers and others will check speculation, and prevent too much capital being transferred from movable to permanent investments, and thereby prevent labor from being transferred unwisely from agriculture to a more speculative employment.

With respect to the price of wheat, I find for the twenty-five years ending 1845 the average price of wheat was about $1 per bushel. During this period the probibitory corn laws of the United Kingdom of Great Britain and Ireland were in full force. During the thirty years ending 1875 the average price of wheat for export was $1.33 per bushel. This advance of one-third in the value of wheat was undoubtedly owing primarily to the freedom of the corn trade inaugurated in England by Sir Robert Peel in 1846. When we consider the great improvement in labor-saving agricultural implements and cheapening of freights by the competition and extension of railways during this period, the great prosperity of our farmers is easily accounted for. The average price of wheat for seven years ending June 30, 1882, was about $1.19 per bushel. This decrease in price of 14c. per bushel is to be attributed largely to the heavy competition in freights between the railways and the lake and canal navigation. This reduced the expense of distribution and forwarding from the west to the seaboard nearly one-half.

As far as Indian corn is concerned, the average price at which it was exported for twenty-five years ending 1845 was 60½c. per bushel, and for thirty years ending 1875 about 75c. per bushel. The freedom of the grain trade in England not only contributed to the increase in the value of Indian corn, but the great reduction in England in the import duties on provisions had an important effect, as it improved the value of salt and fresh American meats, which is Indian corn in a concentrated state. The export value of Indian corn for seven years ending June 30, 1882, was about 60c.; this reduction, as stated of wheat, was due to lower freights.

The principal reasons for the larger rewards to labor and capital in the United States over those realized in Europe are, in the main, owing to the surplus of fertile land, where none but that which is first-rate is cultivated. Land may be considered as a gift by our Creator of so many natural machines for production of food, but land being of different degrees of fertility, may be classed as instruments of first, second, third and fourth rate power of production. The nations therefore which have a surplus of land will only cultivate the best, while nations densely populated will be compelled to use inferior lands. As a natural result, the wages of labor and profits of capital will be less among the latter nations. Hence in this country, land being redundant, is cheap, and labor dear, while land being limited in proportion to the population in Europe, is dear, and the wages of labor and the profits of capital low. To deny this would be to deny that labor and capital have continually gravitated from Europe to North America for about three hundred years.

It is therefore quite clear that it is our rich inheritance of a superabundance of fertile lands which causes labor to be remunerated better here than in Europe, and it is erroneous to think, as many do, that our prosperity is to be attributed to a high tariff. On the contrary, I think the latter acts in many instances as a bounty to transfer capital and labor from greater to less productive industries. I will therefore conclude by stating that if it is desired that our farmers shall sell their surplus to Europe to advantage, the duties on the goods we import from Europe must be modified, so as to better enable foreigners to purchase our cereals in return.

HENRY KEMP.

41 S. William St., New York, May 3.

THE ADVANTAGES OF TECHNICAL SCHOOLS.—The *United States Economist* opines that the active interest now being taken in England in developing technical education, must have an important bearing upon the future of manufactures elsewhere. This is a subject which should commend itself strongly to the attention and support of our people, because it will not do to be late in taking advantage of the leading element in the great problem of superiority in the higher branches of manufacturing industries. The practical education of the young in all the details that enter into the manipulation of raw materials must be of the greatest service, as it will develop a class of thoroughly trained experts, and lead to new and novel methods of treatment in the processes of manufacture. As wealth increases there will be a growing demand for new artistic productions, and of a class where excellence will be the controlling question, as far as price and fashion are concerned. For this reason no pains should be spared in providing technical schools in every section of our country, so as to popularize the study of a most useful and necessary science—for such it really is—and which is, at the same time, both practical and useful. Technical schools undoubtedly develop a fondness for the manipulation of the various raw materials coming under attention, and this must lead to a feeling of content among those who finally, from choice, choose to earn a livelihood amid the clashing machinery of the mill. The question of fixity of labor, combined with educated skill in the use of materials, is one of great interest to American manufacturers. In England, the development of this system of education appears to have been rapid of late, and will, unquestionably, make great progress in the future. Anything that tends to raise the standard of manufactures at this time has a special value, for the reason that the best products command the best prices; being in increasing demand, and to secure fine manufactures, it is necessary to have skilled operatives of the best class.

A CARD.

From Stout, Mills & Temple—Livingston vs Odell.

We notice an article in the *Commercial Gazette* of May 8, under the heading of "Happy Millers," giving the substance of a conversation by a party of millers at the Board of Trade meeting, the day previous, in which the decision of the U. S. Supreme Court in the case of Downton vs. The Yaeger Milling Company was a topic of discussion. In the course of this conversation, the Livingston and Odell controversy was also alluded to, and it was remarked that Odell had obtained judgment against Livingston, which, were it true, would involve Stout, Mills & Temple, who are the sole manufacturers of the Livingston Roller Mill. We saw by the tenor of this conversation, that the gentlemen, including the reporter of the *Commercial Gazette*, present at said meeting, did not understand the nature or scope of the Livingston and Odell controversy, and this reply is intended to set both of them and all others interested aright on the subject. A false impression has been made in the minds of the millers of the country, all of which has grown out of an interference before the Commissioners of Patents in regard to the priority of invention of two minor points, both of which were claimed by both Livingston and Odell. These disputed points have, for several months, been discarded by Stout, Mills & Temple, and different and better ones substituted. It is not our purpose to go into the details of this subject, but only to correct a false impression which has unquestionably been made to prevent, as far as possible, the sale of Livingston mills. A great deal of coloring has been given to this interference case, and we here say for the information of all concerned that no one need have any fears of the Odell party, as we are not using any device on the Livingston Roller Mills, which is the property or patent of the said party. Further, no judgment has been rendered against us, and none can be. There is not a device in connection with the Odell mill that we want or would use if offered to us as a gift. The manufacture and sale of gradual reduction roller mills is part of our business, and we believe we shall get a fair proportion of business done in this line of mill machinery and can obtain it by fair and legitimate means, instead of frightening millers into purchasing by threats of suits if they purchase any other. We prefer to sell upon the merits of our own production rather than upon the demerits of others. In conclusion, we would say to any and all mill-owners using the Livingston roller-mills to pay no attention to threats and pay no royalty to any one for the use of the Livingston Roller Mills. WE STAND BY OUR FRIENDS.

STOUT, MILLS & TEMPLE, Dayton, O.

No reflection whatever is cast upon the millers or reporter, as they have been misinformed.—*Cinncinnati Commercial*, May 15.

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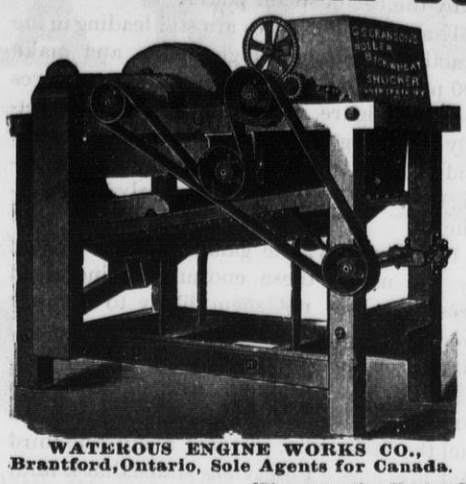

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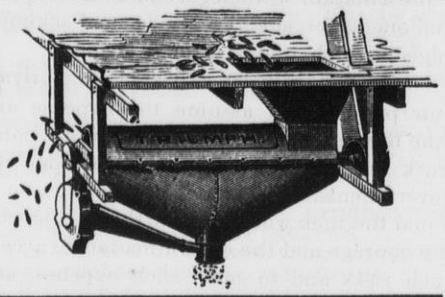

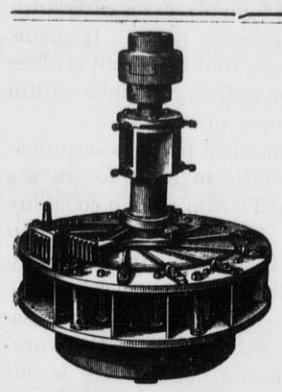

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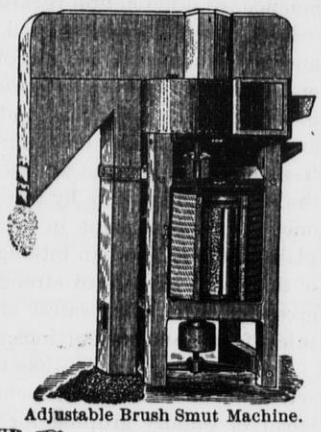

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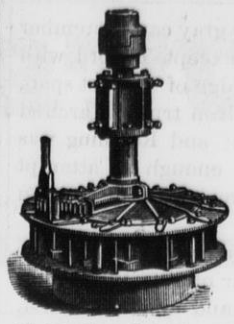

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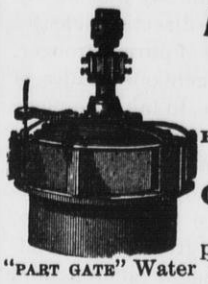

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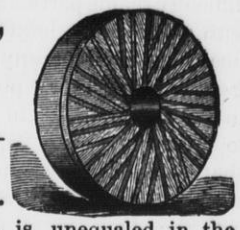

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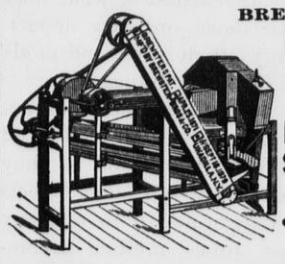

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ENGINEERING.

BY R. H. THURSTON, C. E.

In the address before the American Society of Mechanical Engineers, Prof. R. H. Thurston, of the Stevens Institute, Hoboken, N. J., and President of the Society, gave a *resume* of the progress which mechanical engineering is making in this country, from which we take the principal points.

In the handling of metal, said President Thurston, we have still much to learn. The weakness of the large sections of metals necessarily used in our heavier work still remains a serious evil, and our inability, especially when using steel, to secure the highest tenacity of the metal is a standing reproach to our profession. I have had occasion to test hundreds, yes, thousands, of samples of iron and steel during the last few years, and have never yet found a maker able to give equal tenacity in large and small sizes. This difficulty seems particularly serious in dealing with forged iron built up of scrap, and with heavy sections of any kind of steel. I find iron carrying 75,000 pounds per square inch in No. 8 wire, 55,000 in inch bars, and falling to 40,000, or even 35,000, in heavy engine-shafts and beam straps. Steel varies still more seriously. It is to be hoped that, with the more general use of ingot metal, the introduction of hydraulic forging, and of improved methods of heating and handling, so as to avoid the introduction of many small parts in building up large masses, or frequent exposure to high temperatures in the process, this element of cost and danger may, in a measure at least, disappear.

The great testing machine at Watertown Arsenal is constantly at work, under the direction of Colonel Daidley, sometimes for private and sometimes for public benefit, and has already done some extremely valuable work in that important and unexplored field, the investigation of the strength of large sections and parts of structures. Its most valuable work is done intermittently, and its usefulness is far less than it should be and would have been had its original purpose been adhered to. There seems no immediate prospect of the resumption of the great work organized in 1875, and planned and commenced by the Government Board.

The petitions of this society, of the Society of Civil Engineers, of the Institute of Mining Engineers, of the Iron and Steel Association, of the faculties of the leading technical schools and colleges of the United States, and of business men and other private individuals of all classes, with all the influence that they could command, separately or collectively, have been inadequate to secure the restoration of that Board, or the creation of a similar organization, or the resumption of the great work barely planned and begun by the old Board.

This fact is as suggestive of the necessity of a movement on the part of the business men of the country for the purpose of securing some influence in its government as it is remarkable as illustrating their utter impotence to-day. Meantime, the Ordnance Bureau of the Army has a small appropriation for use in this direction, and we shall look with hopeful interest for results.

But "Iron, tough and true, the weapon, the tool, and the engine of all civilization," as Theodore Winthrop calls it, is now fairly displaced by its younger rival, "mild steel," or more exactly, "ingot" or "homogeneous" iron.

For all shapes that can be rolled this revolution is accomplished, and, in forged work of small size, the change is hardly less complete. This is especially true of railroad work, and not only rails, tires, and axles, bolts, rivets and boiler plate are becoming common in steel, but piston and connecting rods, all forged parts of the valve gear and minor parts of the engine, are now made in this tougher, stronger, and more uniform and reliable metal.

The introduction of the basic process—tardy as it is—by cheapening the stock of the steel-maker, and the steadily increased familiarity of makers and users with the characteristics of the new metal and with the requisites for the successful manufacture of demanded grades and better qualities, will undoubtedly, before many years, make its use so general that puddled and forged iron will become almost or quite unknown in our art. The growth of pneumatic steel manufacture in this country during the past ten years has been most remarkable. In 1870 we were making somewhere about 20,000 tons, in 1873 about 160,000 tons, and to-day are turning out 1,750,000 tons; while the price has fallen below the finer brands of iron.

A few years ago—even those among us whose hair has hardly begun to gray can remember the time—no engineer except Telford with his proposed cast-iron bridge of 600 feet span, dared present plans of iron truss or arched bridges of 300 feet span; and Roebling was the only engineer bold enough to attempt much greater spans even with suspension bridges.

To-day with improved material and the better knowledge of their quality that comes of intelligent inspection and systematic test, we think little of trusses of 500 feet span or suspension bridges of 1,000 feet and more; and it is even proposed to bridge the Forth at its expansion into the Frith with a steel truss bridge a mile long, containing two main spans of 1,700 feet each. Not the least remarkable and—to those who pay taxes in New York or Brooklyn to defray the cost of the "East River" bridge—interesting fact in connection with this scheme is that it is expected to cost but about $7,500,000. Who shall say that we are not making progress in this direction at least?

The reduction in the cost of purer, stronger, tougher, and more homogeneous grades of so-called "steel" which are to take the place of iron in the near future, and of those which are made by the "open hearth process" especially, will depend principally upon the introduction of the regenerative type of furnace, the great invention of that greatest of metallurgical engineers, our colleague Siemens, and of the lesser inventors who have followed his lead. With this furnace supplying a means of attaining any desired temperature with a pure mild flame and at a wonderfully low cost of production, we are able to produce the boiler steels and similar metals with an economy that permits competition in this field with even the product of the Bessemer process. With the closed furnace, the attainable temperature is only limited by the temperature of fusion of the materials of the furnace. Could a new and sufficiently refractory furnace material be found, it might possibly be able to compete with the electric furnace of Siemens, or with the electric arc with which our colleague Farmer, that Nestor among our electricians, claims long ago to have produced the diamond. The melting of platinum in considerable quantities by Ricketts is now a familiar fact, and is an earnest of what may be expected in the more ordinary departments of metallurgy when such enormous temperatures shall be found manageable.

We are not yet absolutely free from annoyance by the presence of air cells and minor defects in these "ingot irons" as they are properly called; although such defects have ceased to be dangerous or in any way very serious. Capt. Jones' method of compressing the solidifying ingot by steam pressure, and other devices in imitation of his are giving us a very homogeneous metal.

Singularly enough, our people, enterprising as we are accustomed to consider ourselves, have not yet made use of the Whitworth system of compression of steel, notwithstanding the fact that its value has been known so many years, and through the wonderful strength, uniformity, and toughness conferred by it have made "Whitworth compressed steel" famous throughout the world. Abroad, its use is extending, and guns, screw shafts, and other heavy "uses" are often made of it. The venerable inventor informs me that he is preparing plans that will enable even large castings of peculiar shapes, as screw propellers to be made of this material. Some dozen years ago, studying this method and its results, partly for my own satisfaction, and partly to obtain material for a report to the Navy Department, I was greatly impressed with its efficiency as even then developed, and its work has since been wonderfully extended and its value correspondingly increased.

Our system of inspection and test of materials, of parts and of structures are steadily assuming satisfactory shape, and are becoming very generally, almost universally, adopted in all important work, whether public or private, and it will soon be the exception rather than the rule that supplied material or constructions of whatever kind are purchased without a careful determination of their fitness for their intended purpose.

In my last address, I referred very briefly to the modern method of manufacturing machinery in quantity for the market as distinguished from the old system, or lack of system, of making machines. This method compels the adaptation of special tools to the making of special parts of the machines and the appropriation of a certain portion of the establishment to the production of each of these pieces, while the assembling of the parts to make the complete machine takes place in a place set apart for that purpose.

This requirement, in turn, makes it necessary that every piece, and every face and angle, and every hole and every pin in every piece shall be made precisely of this standard size, without comparison with the part with which it is to be paired, and this last condition compels the construction of gauges giving the exact size to which the workman or the machine must bring each dimension.

Finally, in order that this same system, which has introduced such wonderful economy into the gun manufacture, into sewing machine construction, and into so many other branches of mechanical business, may become more general, and in order to secure that very important result, a universal standard for gauges and for general measurement, we need an acknowledged standard for our whole country, one that shall be an exact representation of the legal standard measure, and one which shall be known and acknowledged as such, and as exactly such.

It could hardly be expected that private enterprise would assume the expense and take the risk involved in this last work. Such work has heretofore only been done by governments. Yet among our colleagues are found the men who have had the intelligence, the courage and the determination to accept such risks and to meet such expense, and the men who have the knowledge and the skill needed in doing this great work. I think that report of our committee on gauges, and the paper of our colleague, Mr. Bond, will show that this great task has been accomplished, and we shall find that we are indebted to the Pratt & Whitney Co., to Prof. Rogers, and to Mr. Bond, for a system of measurement and a foundation system of gauges that will supply our tool makers and other builders with a thoroughly satisfactory basis for exact measurement and for accurate gauging.

It is encouraging to observe that this subject is attracting the attention of men of science, and that so distinguished a body as the British Association for Advancement of Science is taking action regarding it.

Design is to-day conducted systematically and with scientific adaptation of means to ends. The day of the *soi distant* inventor by profession has gone by, and the educated and trained designer has usurped his place. Reuleaux's kinematic synthesis determines the form to be taken by the machine when once the object sought in its construction is plainly defined, and an intelligent application of the laws and data of strength of materials gives its parts their safest and most economical forms and proportions.

The process of invention thus becomes a scientific one, and the inventor himself, instead of blindly groping for or guessing at results, is seen intelligently creating new and useful forms, and is now entitled to claim the higher credit and the nobler distinction that we gladly accord to him who performs so high an order of intellectual work, and to none more cheerfully than to him who applies the grand science of engineering to production of new forms of mechanism.

As in the fine arts the great painter is known by his success in composition and in form rather than in color, so in our own art the best work is that which is distinguished by excellence and of general design, of arrangement of detail and of proportion, while aimless ornamentation has no place. This characteristic of true art will become more fully illustrated as the scientific method of invention and design gains ground. The most direct and simple adaption of means to end will always be the object sought by the engineer, and the labors of one of our honorary members, Dr. Reuleaux, have led to the development of a scientific method of discovering those means.

In the steam engine practice, we are now advancing rapidly. The introduction of the "drop cut off," in 1841, by Sickles; of the now standard type of automatic valve gear, in 1849, by Corliss; of the high-speed engine twelve years later, by Allen and Porter; of the combined advantages of jacketing, superheating and reheating; and the definite acceptance of the compound engine in later years, still constitute the complete history of modern steam engineering; but we are, nevertheless, continually gaining a knowledge of the best methods of handling higher steam; of attaining higher piston speed; of securing greater immunity from cylinder condensation and leakage; and of providing against other causes of waste. We are just beginning to perceive what principles must govern us in the endeavor to secure maximum commercial efficiency, and how economy in that direction is affected by the behavior of steam in the cylinder, and by the mutual relations of all the various expenditures that accompany the use of steam power.

The young Perkinses are still leading in the practice of carrying high steam, and make 400 pounds per square inch—27 atmospheres—a usual figure, while they are experimentally repeating the work of the elder Perkins, and of Dr. Albans, of forty years ago, working steam at 1,000 pounds or nearly 70 atmospheres.

Unfortunately, the gain to be anticipated by the use of these enormously increased pressures does not seem likely to be very great, unless some decidedly less wasteful kind of engine can be devised in which to work it. The Anthracite, with steam at 300 pounds and upward, was less economical in fuel than the Lelia, carrying about one-third that pressure. Emery has stated that a limit seems to be found at about 100 pounds to economical increase of pressure; and Stevens finds a limit, due to the character of the indicator diagram, inside of 250.

One of the most interesting and curious as well as important deductions from the rational theory of engine efficiency is the existence of an "absolute limit to economical expansion—lying far within the previous accepted limit—due to the fact of increase of cylinder condensation and waste with increase in the ratio of expansion, which places an early limit to the gain due expansion *per se*. It seems possible, if not certain, that this point is often actually reached in ordinary engines within the range of customary practice.

All these facts combined point to a probability that we have little to hope for in the direction of increased steam engine economy with our standard machinery. Change in the directions that I have already so often indicated are evidently to be our sole reliance—changes limiting loss by cylinder condensation. Probably the surrounding of the working fluid by non-transferring surfaces is our only resource, in addition to, or in substitution for, the now well understood expedients of high piston speed and superheating. Until that is done, steam jacketing remains a necessary and unsatisfactory method of reducing losses. With a non-conducting cylinder, were it procurable, we might secure very nearly the efficiency of the ideal engine, friction aside, as it would be a "perfect engine," and no natural limit would then exist to increasing economy. Were this accomplished, we might at once reduce the cost of steam power by about one-half in our best engines, and to probably one-fourth or one-fifth of the present in ordinary machines.

In steam engineering, both physicists and engineers are more than ever attracted to the study of those phenomena which produce the familiar and enormous differences, even in the best practice, between the thermodynamic and the actual efficiencies of engines. The subject lies in that "marchland" territory between science and practice, which few of the profession can explore from both sides, and it has remained less known than it would otherwise be were it either a matter of purely physical science or of practical experience. Fortunately, we are likely soon to see it thoroughly studied. The debate which arose not long since between Zeuner, the distinguished physicist, as a representative of pure science, and Hirn, the no less distinguished engineer, as an experienced practitioner and skillful experimentalist, in which the differences, to which I have so often called attention, of fifty per cent. or more between the "theoretical" efficiency and the actual performance of the best steam engines seem for the first time to have been given prominence in Europe, has led to much closer study of the matter than could possibly otherwise have been brought about.

On this side the Atlantic, the discussion of steam engineering efficiencies has been carried on earnestly, if not always with that knowledge that should precede criticism, and it is to be hoped and anticipated that the engineer may ere long be put in possession of possible facts and real knowledge that may aid him in so designing and so applying this greatest of modern inventions as to attain the *maximum maximorum* of economy.

Ten years ago, nearly, I took occasion to state, in a report to the President of the United States on the exhibited machinery of the Vienna exhibition of 1873, printed later with the other reports of the United Scientific Commission, that "The changes of design recently observed in marine engines, and less strikingly in stationary steam engines, have been compelled by purely mechanical and practical considerations. The increase noted in economy of expenditure of steam and of fuel is, as has been stated, due to increased steam-pressure, greater expansion and higher

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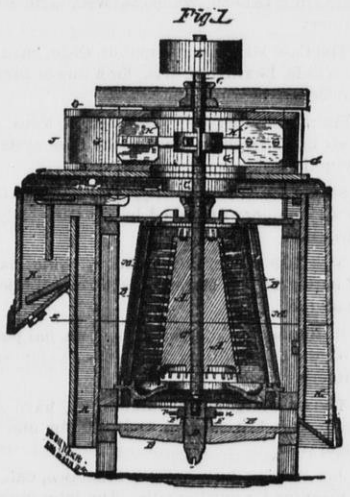

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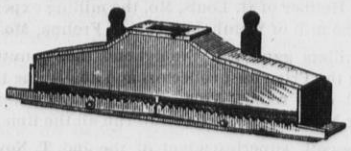

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piston-speeds, with improved methods of construction and finer workmanship. These several directions of change occur simultaneously, and are all requisite. To secure maximum economy for any given steam-pressure, it is necessarry to adopt a certain degree of expansion which gives maximum economy for that pressure under the existing conditions.

'This point of cut-off for maximum efficiency lies nearer the beginning of the stroke as steam-pressure rises. For low pressure a much greater expansion is allowable in condensing than in non-condensing engines; but, as pressure rises, this difference gradually lessens. For example, with steam at 25 pounds by gauge, the best economical results are obtained when expanding about three times in good condensing engines and about one and a half times in non-condensing engines. With steam at 50 pounds, these figures become five and two and a half, respectively; and at 75 pounds, the highest efficiency is secured in condensing engines, cutting off at one-fifth, and in non-condensing engines with cut off at one-third stroke.

'Owing to the decreasing proportional losses due to back-pressure and to retarding influences, the departure from the economical result indicated for the perfect engine becomes greater and greater, until, at a pressure of between 200 and 250 pounds, the proper point of cut-off becomes about one-sixth or one-seventh, and very nearly the same for both classes of engines, and the increase of efficiency by increase of pressure and greater expansion becomes so slight as to indicate that it is very doubtful whether progress in the direction of higher pressure will be carried beyond this limit.'

These conclusions were derived from careful observation of the performance of unjacketed "single cylinder" engines, and a comparison of the ratios of expansion of those exhibiting greatest economy. It is interesting to note that later and probably more reliable methods of comparison than were then familiar go far in confirmation of the opinion then expressed. I think that I have been able to prove the existence, as just stated, of an 'absolute limit of economical expansion,' which, whatever the ratio of steam pressure to back pressure, in all ordinary heat, engines probably fall within the range of familiar practice. Advance beyond the best efficency of to-day in ordinary engines seems likely to be very slow and not at all likely ever to be very great.

Extended experiments will be needed to secure all the facts demanded by the designing engineer, and to furnish constants for the approximate theory of the efficiency, which only is, as yet, his sole guide. An exact theory is one of those things for which he hopes, but which he does not expect soon to see. Some experiments have already been made, but they contribute only the first step. Those made by order of the Navy Department, and principally by Isherwood, and those of Hirn have hitherto been our sole guide, but a new line of more direct investigation of the laws governing internal, or cylinder, condensation has been inaugurated by Escher, of Zurich, and we are able to see a fair prospect of obtaining definite information in this direction.

Escher finds, in the case taken by him, that this waste varies nearly as the square root of the period of revolution and of the pressure, and is nearly independent of the back pressure—conclusious which are especially interesting to me as corroborating assumptions, based on general observation and non-experimental practice, made by me previously in developing an empirical system of design.

In steam boiler engineering, the only observable change seems to be the slow but steady gain made in the introduction of water-tube coil boilers and sectional boilers, and in the extension of a rational system of inspection and test while in operation. To-day, the intelligent owner of boilers secures inspection and test, with insurance, by intelligent engineers and responsible underwriters, as invariably as he obtains inspection and insurance of his building. Under this system, steam boiler design, construction, and management is becoming a distinct art, based upon real knowledge. The system of forced circulation proposed by Trowbridge, and, perhaps, others, seem to me likely to prove useful in the solution of the problem to-day presented.

Work on the Halliday mill at Cairo, Ill., is rapidly progressing under the superintendence of Mr. J. M. Patrick. Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis, are furnishing forty pairs of rolls in Gray's noiseless belt frames, together with other special machinery, and are doing all the iron work. Messrs. Haliday Bro's do nothing by halves, and the mill, when completed, will be first class in every respect.

NEWS.

B. F. Boorman, miller, at Waukesha, Wis, has failed and made an assignement.

B. Savage & Son, Alton, Iowa, have lately started up their mill on the Case system.

The John T. Noye Mfg. Co., of Buffalo, N. Y., is putting in another machine for corrugating rolls.

James Duttons flour mill at Vermillion, Ill., burned May 19. Loss $12,000. Insurance $6,000.

O. Lewis, Auburn, N. Y., has just placed his order with Stout, Mills & Temple for Livingston roller mills.

Stout, Mills & Temple of Dayton, O., shipped to S. W. Morrison, Evans, Col, 2 pairs of Livingston rolls.

Henry Temple, St. Louis, Mo., is just in receipt of Livingston rolls from Stout, Mills & Temple, Dayton, O.

The Case Mfg. Co., Columbus, O., have the order of S. T. Gibson, Wakeman, O., for one Case centrifugal reel.

Stout, Mills & Temple have just shipped D. Keefer Milling Co., Covington, Ky., Livingston rolls, 9 x24, smooth.

W. J. Patterson, New Philadelphia, O., has left his order with Stout Mills & Temple for 1 double Livingston mill.

Greaves & Ruff of Kingsville, Mo., have an order with Stout, Mills & Temple of Dayton, O., for Livingston rolls.

J. W. Emison & Co., New London, Mo., are now running their mill on the Case system of gradual reduction.

The Case Mf'g. Co., Columbus, Ohio, are furnishing Geo. Hyatt, Washington, Ind., with some new machinery.

Moore & Rayburn of Kansas City, Mo., have an order for Livingston rolls with Stout, Mills & Temple of Dayton, Ohio.

The Case Mf'g. Co., Columbus, Ohio, are furnishing J. M. Piazzek, Valley Falls, Kans., with a line of breaks and rolls.

The Eureka Manf'g. Co., of Rock Falls, Ill., have placed in the Alton Roller Mill Co, of Alton, Ill., a Becker wheat brush.

The Eureka Manf'g. Co., of Rock Falls, Ills., have lately shipped a Becker wheat brush to Steel & Harris, of Albion, Ill.

The Case Mnf'g Co., Columbus, Ohio, are furnishing Wm. Sharaga & Co., Pomona, Ill., with some new machinery.

The Case Mf'g. Co., Columbus, Ohio, are furnishing Courtney & Wood, Kiosisville, Ohio, with some new machinery.

The Case Mnf'g. Co., Columbus, Ohio, are furnishing Baldwin & Osborn, Waupaca, Wis., with some new machinery.

The Case Mf'g. Co., Columbus, Ohio, have the order of G. Wilkie, Lexington, Wis., for a line of breaks, rolls and purifiers.

Smith, Lawther & Co., Nickerson, Kans., will start up their mill in a short time on the Case system of gradual reduction.

Scott & Buel, Union City, Mich., are putting in some new machinery furnished by the Case Mf'g. Co., Columbus, Ohio.

The Case Mnf'g. Co., Columbus, Ohio, have the order of Bailey & Rush, Marengo, Ia., for one "Little Giant" break machine.

R. Hannon & Co., Wall Lake, Iowa, has placed his order with the Case Mfg. Co., Columbus, O., for some new machinery.

The Case Mfg. Co., Columbus, O., have an additional order from J. A. Noggle, Lodi, O., for one "Case centrifugal reel.

Jas. Wagner & Co., of San Francisco, Cal., is putting in a machine for cutting rolls. The John T. Noye Mfg. Co, will furnish it.

Stout, Mills & Temple of Dayton, O., have just placed in the mills of Simon Gebhart & Son, Dayton, O., 6 pairs of Livingston rolls.

P. C. McGammon, Mt. Vernon, Ind., will use 2 double Livingston mills, from Stout, Mills & Temple, Globe Iron Works, Dayton, O.

Badger & Henry, Sharpsburg, Ky., have lately started up their mill on the Case system of gradual reduction with the best of results.

C. F. Beaumetz, Berea, O., has placed his order with the Case Mfg. Co., Columbus, O., for break machine, scalper, centrifugal, &c.

Chas. Pigler, of Sumpter, Minn., has instructed The John T. Noye Mfg. Co., of Buffalo, N. Y. to ship him a single Stevens' roller mill.

Ballard & Ballard, Louisville, Ky., have placed an order with The John T. Noye Mfg. Co., Buffalo, N. Y., for a double Stevens' roller mill.

J. N. Shanwholger, Manito, Ill., has filed and order with The John T. Noye Mfg. Co., Buffalo, N. Y., for a double Stevens' roller mill.

Hardesty Bros., Columbus, Ohio, are putting in a double Stevens' roller mill to be furnished by The John T. Noye Mfg. Co., of Buffalo, N. Y.

Fred. Schumacher, of Akron, Ohio, has sent in an order to The John T. Noye Mfg. Co., of Buffalo, N. Y. for a double Stevens' roller mill.

P. L. & J. B. Shusse of Stoners Pa., have placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for a double Stevens roller mill.

Stout, Mills & Temple, Dayton, O., will furnish Wm. Huckaby, Paola, Ks., Livingston roller mills and machinery for remodeling their mill.

Gratiot Mf'g Co. Chicago, Ill., have placed their order with Stout, Mills & Temple, Dayton, O., for three double sets Livingston roller mills.

Geo. Millbank Chillicothe, Mo., has salted an order for an additional Stevens roller mill (9x30) with the Jno. T. Noye Mfg. Co., Buffalo, N. Y.

Stout, Mills & Temple of Dayton, O., have the contract for the rolls to be used by James McMillen & Son, Jamestown, O., in their new mill.

Louis Emery, Jr., Three Rivers, Mich., has lodged an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for a double Stevens' roller mill.

Jno. G. Schaupp, Grand Island, Neb., has filed an order with The John T. Noye Mfg. Co., Buffalo, N. Y., for a four break Rounds' sectional roller mill.

Neevins & Padawiltz, Grand Rapids, Wis., have placed an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for twelve pairs of Stevens' rolls.

G.F. Arvedson, Carpentersville, Ill., has lodged an order for ten pairs Stevens' rolls and other machinery with The John T. Noye Mfg. Co., of Buffalo, N Y.

Leach & Reasner, Halstead, Kans., want to be among the prospering millers, and have decided that they can be by changing their mill to the Case system of gradual reduction. They have placed their order with the Case Mf'g. Co., Columbus, Ohio, for a full line of breaks, rolls, purifiers, centrifugals, scalpers, etc., for a complete gradual reduction mill.

Sprague & Perfect, Marysville, O., are putting in the gradual reduction system, using five double sets Livingston belted mills.

A Becker brush, made by the Eureka Manf'g. Co., of Rock Falls, Ill., has been placed in J. A. Vernon's mill, at Hamburg, Penn.

The Case Mf'g. Co., Columbus, Ohio, have been ordered to send J. R. Sechler, Sechlerville, Wis., one "Little Giant" break machine.

Roots & Co., Cincinnati, Ohio, have ordered two more 9x18 double break machines from the Case Mf'g. Co., Columbus, Ohio.

Thos. Hamilton, Union Mills, Ind., has just placed his order with Stout, Mills & Temple, Dayton, O., for two pairs of Livingston rolls.

Schoelkopf & Mathews of Buffalo, N. Y., has placed an order for a large sized dust collector with the Milwaukee Dust Collector Mfg. Co.

The Case Mnf'g. Co., Columbus, Ohio, have the order of J. F Katterjohn, Boonville, Ind., for two pairs Case rolls, with automatic feed.

The Case Mnf'g. Co., Columbus, Ohio, have the order of Hugh Sproul & Co., Boyers, Pa., for one pair bran rolls with patent automatic feed.

The Case Mnf'g. Co., Columbus, Ohio, have an order from D. Shepp, Tamaqua, Pa., for one reducer and scalper, making three separations.

W. H. Hamond, Springfield, Mo., has just placed an order with Stout, Mills & Temple of Dayton, O., for 3 double sets of Livingston rolls.

The Case Mf'g. Co., Columbus, Ohio, are furnishing I. G. Stembenner, Platteville, with one pair smooth rolls, with patent automatic feed.

Stout, Mills & Temple, Dayton, O., are furnishing W. C. Mansfield, Cleveland, Tenn., Livingston roller mills and machinery to remodel his mill.

The Jewell Milling Co. of Brooklyn, N. Y., are putting in the Prinz Dust Collectors as fast as time allows. They intend abolishing the dust room.

Bottkoll Bro's of Brussels, Wis., will use Livingston rolls in their new mill at Ahnapee, Wis., from the works of Stout, Mils & Temple, Dayton, O.

Thos. Moses, Sharon, Pa., will change his mill to the gradual reduction system using Livingston roller mills, from Stout, Mills & Temple, Dayton, O.

Knollenburg & Wavering, of Quincy, Ill., wishing to do first-class work, have bought a Becker brush from the Eureka Manf'g. Co. of Rock Falls, Ill.

J. M. Shirk, of Mt. Carroll, says he wants the best brush made, and accordingly, orders a Becker brush, made by the Eureka Manf'g Co., of Rock Falls, Ills.

F. & H. Fries of Salem, N. C., has placed an order with The Jno. T. Noye Mfg. Co., of Buffalo, for a Rounds sectional and a double 9x15 Stevens roller mill.

Stout, Mills & Temple, Dayton, O., have received orders from Phœnix F'dry & Mach. Co. of Terre Haute, Ind., for four double sets of Livingston finishing rolls.

Cooper Mf'g Co., Mt. Vernon Ohio, have recently placed orders with Stout, Mills & Temple of Dayton, O, for two full lines of Livingston mills, 10 double sets.

Wehrman & Koelling, of Truxton, Mo., have lately overhauled their mill and put in a Becker brush, made by the Eureka Manf'g. Co., of Rock Falls, Ill.

W. T. Pyne, of Louisville, Ky., has placed an order with The John T. Noye Mfg. Co, of Buffalo, N. Y., for a double Stevens' roller mill for J. E. Mills, Greenville, Ky.

Mast, Troyer & Co., of Buena Vista, Ohio, not wishing to be behind the time, have put in a Becker wheat brush, made by the Eureka Manf'g. Co. of Rock Falls, Ill.

A single Stevens roller mill will go to Toledo, O., to be furnished by The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., upon the order of Barney & Kilby of Sandusky, O.

The Case Mfg. Co., Columbus, O., have the order of J. Blank, Sycamore, Ill., for breaks, rolls, purifiers, scalping reels, etc., for a reduction mill on the Case system.

J. A. Blythe, Orleans, N. Y., has just placed his order with Stout, Mills & Temple, Dayton, O., through their agent, Chas. Rakes, for two pairs of Livingston rolls.

H. S. Challis, of Wetmore, Kans, has improved his cleaning machinery by putting in a Becker wheat brush, made by the Eureka Manf'g. Co., of Rock Falls, Ill.

The Case Mf'g. Co., Columbus, Ohio, have the order of John Spencer, Barrington, Wis., for one "Little Giant" break machine and scalper, making three separations.

Mark Evans has ordered three pairs of the celebrated Stevens' rolls for a mill in Fort Worth, Texas. The John T. Noye Mfg. Co, of Buffalo, N. Y. will fill the same.

The Case Mf'g. Co., Columbus, Ohio, have the order of Michael Kennedy, Des Moines, Iowa, for break machine and smooth and corrugated rolls, for germ and bran.

The Case Mnf'g. Co., Columbus, Ohio, have an additional order from G. W. Nicewanner, Piqua, Ohio, for one four-roller, "Bismarck" mill, with patent automatic feed.

A. M. Hull, Ithaca, N. Y., has placed an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for a Rounds' sectional roller mill and two double Stevens' roller mills.

J. & S. Emison, Vincennes, Ind., has filed an order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., through Jno. Webster, Detroit, Mich., for six pairs of Stevens rolls.

Jesse Barlou of Phelp, N. Y., will place in his mill a Rounds sectional and a double Stevens roller mill all to be furnished by the Jno. T. Noye Mfg. Co., Buffalo, N. Y.

A. W. Martins, of Goodville P. O., Pa., has planted an order with The John T. Noye Mfg. Co., Buffalo, N. Y., for a Rounds' sectional roller mill and a single Stevens' roller mill.

Capt. E. W. Pride, of Neenah, Wis., has forwarded to The Jno. T. Noye Mfg. Co., Buffalo, N. Y., an order for nine Stevens roller mills for Frank Koenig, Watertown, Wis.

Bailey & Rush, Marengo, Iowa, are putting one 9x18 double "Bismarck" Roll, with patent automatic feed for bran and tailings, from The Case Mf'g. Co., Columbus Ohio.

Stout, Mills and Temple of Dayton, O., have just contracted with Wood & Co., Harvard, Ill., for a complete roller mill, using Livingston rolls and S., M. & T. bolting chests.

A. Dehuer & Co., the well known millfurnishing house of St. Louis, are placing a large number of orders with the Milwaukee Dust Collector Mfg Co., for Prinz dust collector.

James Mc. Grew, Kankakee, Ill., has contracted with Stout, Mills & Temple of Dayton, O., for one six-break Gilbert combined mill, 9 x 24 inch rolls and Livingston finishing rolls.

Messrs. Warwick & Justus of Massilon, O., have let the entire contract for rebuilding their mill to a complete roller mill to The Jno. T. Noye Mfg. Co, of Buffalo N. Y. Eighteen pairs of Stevens rolls as well as other first class machinery will be employed, all under the direction of J. S. Karns.

The new mill now building at Grand Rapids, Mich., by Messrs. C. G. A. Voigt & Co., will have a complete outfit of Allis rolls in Gray's noiseless belt frames—twenty-six pairs in all.

Stout, Mills & Temple of Dayton, O., have the contract for remodelling D. Scott's mill, Macomb, Ill., using the Gilbert combined mill for breaks, and Livingston finishing rolls.

Holliday Bros., of Cairo, who have the largest and best mill in the State, are putting in one of the largest size Becker brushes, made by the Eureka Manf'g. Co., of Rock Falls, Ill.

W. N. Hoorver, of Oskaloosa, Iowa, after looking into the merits of all the brush machines, concludes he wants a Becker brush, made by the Eureka Manf'g Co., of Rock Falls, Ill.

The Case Mf'g. Co., Columbus, Ohio, have the order of M. J. Bowley, Fort Worth, Texas, for one "Little Giant" break machine and scalper combined, making three separations.

Among other exhibits in the great R. R. Exposition, opened at Chicago, May 24th, was an 18 x 48 Reynolds-Corliss engine from Edw. P. Allis & Co's Reliance Works Milwaukee.

L. W. Rathbun of Rochester, N. Y., has sent in an order to The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for a Rounds sectional and a double Stevens roller mill for a mill at Clyde, N. Y.

When finished and fully equipped with its housing, pulleys, etc., it assumed such huge proportions that the men who put it up dubbed it "Jumbo," after Barnum's big elephant.

Jones & Co. of New York are operating the Prinz Dust Collectors on their purifiers rollers exhaust and grain cleaners. They require only a few more machines to do away with the dust room.

Jno. Webster, the irrepressible John, has gobbled an order from F. Goodnow & Co., Salina, Kas., for nineteen pairs of Stevens rolls to be furnished by the Jno. T. Noy Mfg. Co., of Buffalo, N. Y.

The Case Mnf'g. Co., Columbus, Ohio, have been ordered to ship the Odessa Mill Co., Odessa, Mo., one four-roller "Bismarck" mill for bran and tailings, and one Little Giant Break Machine.

Chas. Heuber of St. Louis, Mo., has sent in an order to The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for ten pairs of Stevens rolls to be furnished for the mill of Estel & Weinbold, at Wittenburg, Mo.

N. L. Walker, Nicholson, Pa., is putting in his mill a Rounds' sectional roller mill and a single detached mill all with Stevens' dress, and to be furnished by The John T. Noye Mfg. Co, of Buffalo, N. Y.

Jac. Amos & Sons who own and operate the splendid mill at Syracuse, N. Y., have ordered an additiona double Stevens roller mill, to be furnished by the Jno. T. Noye Mfg. Co., Buffalo, N. Y.

The Atlas Milling Co. of Buffalo, N. Y., are giving their mill a general over-hauling under the skillful hands of Ed. Brown, Jr., and The John T. Noye Mfg. Co. Ten pairs of Stevens' rolls will be used.

The Case Mf'g. Co., Columbus, Ohio, have been ordered to ship Kloose & Bradford, Creston, Iowa, one "Little Giant" break machine and scalper, making three separations, to go in front of their burrs.

Jno. Webster, of Detroit, Mich., has scooped an order from Newton, Miller & Emmons, Robinson, Ill., for thirteen pairs of Stevens rolls to be furnished by The Jno. T. Noye Mfg., Co, of Buffalo, N. Y.

Again Pyne, (W. T.) of Louisville, Ky. is heard from This time he places an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for a double Stevens' roller mill for J. T. McKenzie, of Louisville, Ky.

The Newport Oil Mf'g Co., of Newport, Ark., have placed their order with Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for a 16 x 42 Reynolds-Corliss engine, for their works at that place.

Pray Mf'g Co of Minneapolis, Minn., have just placed their order with Stout, Mills & Temple, Dayton, O, for three car loads (21 double sets) of Livingston roller mills for their many customers in the Northwest.

The Case Mfg. Co. have been awarded the contract of Fisk & Silliman, Ashtabula, O., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc., for a full gradual reduction mill on the Case system.

Wood, Morrell & Co., Johnstown, Pa., are about to change to rolls, and have sent The John T. Noye Mfg. Co. of Buffalo, an order for fifteen pairs of the celebrated Stevens' rolls, mounted in the improved frames.

The Spaulding Elevator and Construction Co., will build a 30,000 bushel elevator at Eau Claire, Wis., this summer. The Randall elevator has been purchased by parties who will immediately turn it into a flouring mill.

Nine pairs of 18 and 30 inch Stevens rolls furnished by The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., upon the order of Chas. Heuber of St. Louis, Mo, the milling expert, will go into the mill of Weinhold & Son, at Frohna, Mo.

The millers generally throughout the country are adopting the Prinz dust collectors and abolishing the old fashionel dust room. This keeps the Milwaukee Dust Collector Mfg. Co,s shops on a full run all the time.

Ira Wescott, superintendent of the Jno. T. Noye Mfg. Co., of Buffalo, N, Y., has secured an order and is making plans for an all roller mill for James Lawson at Thorold, Ont, sixteen pairs of the celebrated rolls will be used.

L. V. Rathbull, Gen'l agent for the sale of Stevens' roller mill has placed an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for another Rounds' sectional roller mill and two single mills all with Stevens' corrugations.

The Case Mfg. Co., Columbus, O., have taken the contract of Dennis & Slough, Westerville, O., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc., for a full gradual reduction mill on the Case system.

The Case Mnf'g. Co., Columbus, Ohio, have been awarded the contract of Woods, & Dunlap, O'Fallen, Mo., for a full line of breaks, rolls, purifiers, centrifngal reels, etc., for a full gradual reduction mill, on the Case system

Charles Huber, the St. Louis, Mo. Hungarian milling engineer has secured an order from Moening & Wettin, of Quincey, Ill., for three double Stevens' roller mills to be furnished by The John T. Noye Mfg. Co., of Buffalo, N.Y.

At White Pigeon, Mich., the mill of David P. Hamliton will soon undergo a rapid transformation from a stone to a full grown roller mill, by the hands of The John T. Noye Mfg. Co., Buffalo, N. Y., the veteran mill builders.

Messrs. Barton, McCortle & Co., of Cumberland, O., have determined to adopt the roller system and for that purpose have placed an order with The John T. Noye Mfg. Co., of Buffalo, N. Y., for five pairs of Stevens' rolls with latest devised frame.

W. F. Kerdolf, Esq., Lexington, Mo., recently gave Messrs. Edw. P. Allis & Co. of Milwaukee, Wis., an order for a Gray's noiseless belt roller mill.

Messrs. Turner & Reynolds, Stanton, Mich., recently ordered a Gray's noiseless belt roller mill from Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.

Messrs, Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.' recently received an order for a Gray's noiseless belt roller mill from Mr. W. S. Hall, Steele City, Neb.

Messrs. Richards & Butler, Indianapolis, Ind., are rebuilding the mill of C. F. Moore, Waveland, Ind., and are putting in a full outfit of Allis rolls in Gray's noiseless frames.

Messrs. Yoe & Clark, La Crosse, Wis., lately ordered 4 pairs of Allis rolls in Gray's noiseless belt frames from Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.

The Gratiot Mf'g Co. of Chicago, Ill., recently ordered four pairs of Allis rolls in Gray's noiseless belt frames from Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for Mr. R. Bishop, McHenry, Ill.

Messrs. Chisholm Bro's & Gunn, Minneapolis, minn., recently ordered of Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., 15 pairs of Allis rolls, all in Gray's noiseless belt frames.

The Lacroix Middlings Purifier Co. of Indianapolis, Ind., are remodeling the mill of Messrs. Long & Co., Russellville, Ky., and are putting in a full line of Allis rolls in Gray's noiseless belt frames.

Messrs. Wilford & Northway, mill furnishers, Minneapolis, Minn., are remodeling the mill of Messrs. Moenning Bro's, Quincy, Ill., and are putting in 14 pairs of Allis rolls in Gray's noiseless belt frames.

Messrs. H. B. Phillips & Co., Lebanon, Ky , lately placed their order with Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for 14 pairs of Allis rolls all in Gray's noiseless belt frames.

Messrs. Hiestand & Cowman of Hillsboro, Ohio, have contracted with Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for the outfit of roller mills and machinery for their new mill.

Messrs. Zimmerman & Harter, Sedalia, M o., are improving their mill, and have placed an order with Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., or a Gray's noiseless belt roller mill.

Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., recently received an order from Silas Barkley, Hulmeville, Pa , for 7 pairs of the celebrated Allis rolls in Gray's noiseless belt frames.

Mr. J. Klingersmith, Kittanning, Pa., is remodeling his mill, and has placed his order with Messrs. Edw. P. Allis & Co. of the Reliance Works Milwaukee, Wis., for 6 pairs of Allis Rolls inGray's noiseless belt frames.

The La Croix M. P. Co. of Indianapolis, Ind., have placed an order with Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller outfit for Messrs. Carroll & Neily.

Another Rounds' sectional roller mill for Penn. has been ordered for the mill of Jos. Oberholzer, at Spring Grove mills. The John T. Noye Mfg. Co., of Buffalo, N. Y. will fill the order, a single smooth roller mill will accompany it.

The Case Mnf'g. Co., Columbus, Ohio, have been awarded the contract of A. L. Jacobs, Pana, Ill , for a full gradual reduction mill, on the Case system, [illegible] line of their breaks, rolls, purifiers, sclaping reels, etc., etc.

The Case Mf'g. Co., Columbus, Ohio, have been awarded the contract of Geo. A. Klinglar, St. Charles, Mo., for a full line of breaks, rolls, purifiers, scalping reels, centrifugals, etc., for a full gradual reduction mill on the Case system.

Messrs. Sooy, Brinkman & Roberts, Great Bend, Kas., are putting in a 16 x 42 Reynolds-Corliss engine to take the place of a 12 x 36 Reynolds-Corliss, in order to give additional power for a proposed increase in the capacity of their mill.

R. J. Patton is building a new gradual reduction mill on the Case system at Meers, Ohio, he has placed his order with the Case Mf'g. Co., Columbus, Ohio, for a full outfit of breaks, rolls, purifiers, centrifugal reels, scalping reels, etc.

Messrs. Chisholm Bro's & Gunn, Minneapolis, Minn., recently placed an order with Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, for a 14 x 42 Reynolds-Corliss engine for the new mill they are building at Aberdeen, D. T.

The Case Mf'g. Co., Columbus, Ohio, are furnishing Patterson & Donleary, New Philadelphia, Ohio, whith a full line of breaks, rolls, purifiers, scalping reels, centrifugals, etc , etc., for a full gradual reduction mill on the Case system.

Jas. Wagner & Co., of San Francisco, Cal., the largest mill furnishing establishment on the Pacific coast has ordered of the John T. Noye Mfg. Co., Buffalo, N. Y., two Rounds' sectional roller mills, both with the celebrated Stevens' corrugations.

Messrs. W. Bell & Co., Millbrig, Ill., and T. Cottingham of Benton, Wis., have contracted with the Iowa Iron Works Mill Building Co. of Dubuque, Iowa, for remodeling their mills; they will each use a full line of Allis rolls in Gray's noiseless belt frames.

Messrs. Goold & Shaw have just completed building their new 100 barrel, steam power flour mill at Aledo, Ill. It is on the Case system of gradual reduction and gives great satisfaction. E. M. Warfel is head miller and Andrew Olsen, engineer.

P. J. Snyder, of Williamsville, N. Y., has determined to put in break rolls and has placed an order for a Rounds' sectional roller mill having Stevens' corrugations, scalpers and elevators complete. The John T. Noye Mfg. Co., of Buffalo, have the order.

Dayton, O., May 24, 1883.—Stout, Mills & Temple of Dayton, O , have an order from Bennett Smith & Co., Emlenton, Pa., for one 9 x 18 six-break Gilbert mill, and two pairs of Livingston finishing rolls, through their agent, Chas. Rakes of Lockport, N. Y.

Stout, Mills & Temple of Dayton, O., received the contract for rebuilding Kirk & Kirk's mill, Port Clinton, O., on the gradual reduction system. They will use 1 six-break Gilbert mill and Livingston finishing rolls, with S. M. & T.'s bolting chests, etc.

Messrs. E.F. Schatzer & Co. are doing quite an extensive business in the mill furnishing line at present, and recently ordered a Gray's noiseless belt roller outfit from Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for a job they have in construction.

F.S. Nichols, at Newark, N.Y., has determined to yield to the roller boom and has filed an order with The John T. Noye Mfg. Co., Buffalo, N. Y., for a Rounds' sectional roller mill and a double detached mill with the necessary machinery to alter his mill to a roller mill.

Mr. Ed. Zahn, Burlington, Wis., visited Milwaukee recently, and after a careful investigation, placed his order with Messrs. Edw. P. Allis & Co. of the Reliance Works, for one of their new four-break reduction machines and 4 pairs of Allis rolls in Gray's noiseless belt frames.

Messrs. Commings & Allen, Akron, Ohio, have taken out the last run of stone in their mill and substituted therefor a double 9 x 18 porcelain roller mill, in Gray's noiseless belt frame. The same was furnished by Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.

W. T. Pyne of Louisville, Ky., has his hands full of work and reports a large increasing trade. He has recently taken a contract for putting a Rounds' sectional roller mill in the mill of Wm. Cuddick, Grand View, Ind. The John T. Noye Mfg. Co., Buffalo, N. Y. will furnish same.

R. G. Shuler & Co., of Minneapolis, Minn., have in structed The John T. Noye Mfg. Co., of Buffalo, N. Y., to ship them to Lisbon, D. T., for a mill they are building at that point a Rounds' sectional roller mill and four pairs rolls in separate frames, all with the Stevens' corrugations.

Mathias Blumer, La Crosse, Wis., after personally investigating the different systems of gradual reduction, left his order with the Case Mf'g. Co., Columbus, Ohio, for a full line of breaks, rolls, purifiers, scalping reels, centrifugals, etc., for a full gradual reduction mill, on the Case system.

The Garden City Mill Furnishing Co. of Chicago, recently placed orders with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller mill for J. M. Hadley, De Soto, Kas. Also a Gray's noiseless belt roller mill for Henry Colstein, Raselle, Ill.

Messrs. Seiberling Bro's of Akron, O., have contracted with Messrs. Edw. P. Allis & Co., Milwaukee, for a 26 x 48 Reynolds-Corliss engine to drive their new flouring mill, This engine, with the pair of 22 x 48 in the new Schumacher mill, will give the Reynolds-Corliss a good representation in Akron.

Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis , are building a 32 x 60 Reynolds-Corliss engine, to furnish motive power for the Southern Exposition at Louisville, Ky. Visitors to the Exposition who are interested in steam power, will find much about this engine to interest them.

Messrs. Edw. P. Allis & Co., Reliance Works, Milwaukee, Wis., are furnishing the roller mills, centrifugal reels, Gray purifiers, etc., for the addition to the Camp Springs mills at St. Louis, Mo., and are putting in thirty pairs of rolls in Gray's noiseless belt frames, making fifty-six pairs in all, in their complete mill.

W.F. Snook, formerly head miller for Messrs. Commings & Allen at Akron, Ohio, has entered into partnership with the National Mill and Elevator Co. at Parsons, Ka's, and is remodeling their mill to the roller system. Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., are furnishing the entire outfit of rolls and machinery.

The new mill now building by Messrs. J. K. Mullen & Co., Denver, Col., will be driven by a 26 x 48 Reynolds Corliss engine, condensing; from the Reliance Works of Messrs. Edw. P. Allis & Co. of Milwaukee, Wis. Messrs. Allis & Co. also have contract for all of the roller mills, special machinery and Iron work for this mill.

There will be used six double and one single Stevens' roller mill, two Martin centrifugals, Richmond brand[illegible] ters and brush machines, two flour packers, three [illegible]th purifiers, Moline separators, suitable scalpers and bolting arrangements to constitute a first-class mill. Mr Hamilton has long been an enterprizing citizen of that place and never fails to respond to the demands of human progress.

The following well known mill furnishers have lately sent in their orders for the Becker wheat brush, made by the Eureka Manf'g. Co. of Rock Falls, Ill.:

E. P. Allis & Co., Milwaukee, Wis,; Nordyke & Marmon, Indianapolis, Ind.; B. F. Gump, Chicago, Ill.; Todd & Stanley Mill Fur. Co., St. Louis, Mo.; Great Western Mfg. Co., Leavenworth, Kans., A. Dehner & Co., St. Louis, Mo.; Whitmore & Binyon, London, England; Oscar Oexle & Co., Augsburg, Germany.

Stout, Mills & Temple of Dayton, O., now have their Gilbert combined mills working successfully in the following mills: Haskell, Cornell & Co., Toledo, O.; Willey & Moore, Lockport, N. Y.; H. L. Wetherald & Son, Connersville, Ind.; Bennett Smith & Co., Emlenton, Pa.; Jost Durst & Son, Dayton, O.; Kisser&Pierson, Ottumwa, Iowa; and are now placing them in the mills of Cuyahoga Forge & Iron Co., Cuyahoga Falls, O ; Schwarting & Co., Wolcott, Iowa; James McGraw, Kankakee, Ill.

The Goshen Ind. Milling Co. have quite recently consumated a contract with The John T. Noye Mfg. Co , of Buffalo, N. Y., to re-build and re-furnish their mill at that place, giving it a capacity of two-hundred barrels in twenty-four hours. Eight double Stevens' roller mills will be employed, as well as five Smith purifiers, suitable and sufficient cleaning machinery, bolting capacity, &c., to constitute an A 1 mill. The work will be under the charge of N. W. Holt, the milling engineer connected with the above Co.

Stout, Mills & Temple, Dayton, O., have just received an order from Tho's Tyson of Melbourne, Australia, for 1 of their 36-inches American Turbines. They also have orders for their celebrated wheels from Union Mill Co., Waterloo, Iowa; E. P. Allis & Co., Milwaukee, Wis.; Ja's Rutherford, Bristol, Tenn.; Herr & Cissel, Georgetown, D. C.; Cha's Rakes, Lockport, N. Y.; Rock River Paper Co., Beloit, Wis.; Kimberly, Clark & Co., Neenah, Wis.; Minneapolis Mill Co., Minneapolis, Minn.; Bullard & March, Chagrin Falls, O.; Eau Clair Brush Electric Co., Eau Clair, Wis.; O. E. Merrill & Co., Beloit, Wis., Stormont Silver Mining Co., Silver Reef, Utah.

A Large Four Roller Mill. The Case Manufacturing Co., of Columbus, O., have just shipped to Geo. O. Baker & Co., Selma, Ala., a 4-roller corrugated reduction mill of unusual dimension and capacity. The purpose to which it is to be put being out of the usual order required that the mill be of more than ordinary strength and weight. The rolls were 9x30 inches and corrugated for the purpose intended ; the frame of the mill was solid iron, tight rigid and very strong; the bearing for the rolls were 10 inches in width and the journals ¾ inch steel and 10½ inches long; the pulleys were 19 inches in diameter and 8 inch face. The mill was built throughout with the greatest care and in the most thorough manner, it was an enlargement of the "Bismarck" pattern built by the Case Company and was of course furnished with their famous Automatic feed.

Stout, Mills & Temple of Dayton, O., have recently finished 3 complete gradual reduction roller mills situated as follows: A 150 bbl. mill (24 hours,) owned and operated by J. W. Harsteman, Harstemanville, O., about three miles northeast of Dayton. It has been in successful operation for three weeks, giving the very best results. The power is furnished by three American turbines under 10 feet head, regulated by a Fruen governor. There are 12 pairs of Livingston rolls; 2 flour packers; and one wheat separator on the first floor. The cleaning machinery is in the basement and can be stopped and started by a friction clutch. Above the grinding floor there are 11 flouring reels; 8 scalping reels; two centrifugals; 5 purifiers; and 1 bran duster. The mill was planned and programed by Mr. Jno. Livingston, and the millwright work was done by Frank Peffer both with Stout, Mills & Temple. All the machinery and furnishings were from the works of the same firm. This is a model mill, both in plan and workmanship, and well worth the attention of enquiring millers in that section of the country. Another model mill, but using a different plant, also built by Stout, Mills & Temple, or rather remodelled, is that of H. L. Wetherald & Son, Connersville, Ind. It is a merchant mill, of 150 bbl. capacity. The wheat breaks and separations between the same are made, and bran finished for duster by a six-break Gilbert combined mill 24 rolls. The reduction of middlings and finishing is done on four pairs of Livingston rolls. They have 13 flouring reels; 2 centrifugals; and 5 purifiers with packers; and cleaning machinery. They have been running up to full capacity ever since starting, and getting highest prices for their flour in eastern markets, in competition with the best mills in the country. This mill was programmed by Mr. Livingston also. The third mill referred to is that of Kiser & Pierson, Ottumwa, Iowa. It has just been completed, and started up and is now running up to full capacity, 125 bbls. 24 hours. They use a Garden City break machine for first break. The next four reductions, including scalping and aspirating after each, are made by a four-break Gilbert combined mill—18-inch rolls. The bran is finished (sixth break) and middlings reduced on Livingston rolls. They use 12 bolting reels, 2 centrifugals and 5 purifiers, with necessary cleaning machinery, packers and furnishings. The mill was planned and built and machinery and machines furnished (except first-break machine) by Stout, Mills & Temple, and promises to be another monument to commemorate their skill as mill builders. This firm is now building three more mills complete, viz : Schwarting & Co., Wolcott, Iowa; Wood & Co., Harvard, Ill.; Kirk & Kirk, Port Clinton, O. The first 125 bbl. capacity and the two latter 100 bbl.

THE OPENING OF THE GREAT BRIDGE.

The great suspension bridge between New York and her chief suburb, Brooklyn, has been formally opened for traffic, thus signalizing the completion of one of the most remarkable engineering works undertaken in this country. This great work has been for so many years in course of construction, having been frequently delayed and postponed for financial and other reasons, that residents of the metropolis have for years past been accustomed to speak of its completion as an event that might happen some time in the indefinite future. But there must be an end to all things, and the great bridge, that has been the innocent cause of any amount of municipal discord, and that has cost many millions more than was originally contemplated, is finished at last. The formal ceremonies of the opening of the bridge for traffic on May 24th, were highly impressive.

As a matter of record, we present herewith, in condensed form, a history of this remarkable structure: The East River bridge has been constructed by the cities of New York and Brooklyn, through a commission appoint[illegible] the purpose by the authorities of the two cities. It originated, however, in private enterprise, a company having been organized in 1867 under the authority of an act of the Legislature to construct a bridge between the two cities. After the work, however, had been fairly started the company resigned its enterprise to the two cities, as above stated.

The great structure, which may be ranked with the greatest engineering works of the world, was designed by the late John A. Roebling (who unfortunately lost his life through an accident while engaged in the work of fixing the location of the Brooklyn tower), and was constructed under the direction of his son, Washington A. Roebling, as chief engineer. In May, 1869, a commission of three United States engineers was appointed by the War Department to report on the plans of Mr. Roebling, and especially to determine the question as to whether or not the bridge would be an obstruction to navigation. The government engineers approved the plan, but recommended an increase of five feet in hight.

Operations were actually undertaken on January 3d, 1870, when the work of preparing the site of the foundation of the Brooklyn tower was commenced. From that time the work, notwithstanding many vexatious delays, was steadily prosecuted until its completion—a period of about thirteen years.

The actual cost of the bridge, including the cost of the site, will be about $15,500,000, an amount considerably greater than the original estimates. The Brooklyn terminus is near the junction of Fulton and Main streets, and the New York terminus is on Chatham street near the City Hall. The total length of the bridge, including approaches, is 5,989 feet. The towers are 276⅜ feet in hight, and the clear span between them is 1,595½ feet. The bottom of the bridge at the center is 135 feet above high-water mark. The supporting cables, four in number, and composed of a number of steel strands, are 15¾ inches in diameter, and are anchored inland at a distance of 930 feet back from the towers on each side. The anchorages are solid cubical structures of stone masonry, measuring 119 by 132 feet at the base and rising some 90 feet above high-water mark. Their weight is about 60,000 tons each.

The roadway of the bridge rises from the towers at an elevation of 118 feet above high-water mark, in an easy curve to the center of the span, where it meets the cables at an elevation of 135 feet. The frame-work of the bridge floor consists essentially of two systems of steel girders at right angles. The roadway is 85 feet wide, and is divided into five parallel avenues. The two outside avenues, which are devoted to vehicles, are each nearly 19 feet wide. The central avenue, which is intended for pedestrians, is 15½ feet wide, and is elevated 12 feet above the others. The two intermediate avenues between the wagon-ways and central pathway, and separated therefrom by vertical trussing, are to be occupied by a tramway, on which cars will be run in opposite directions. The motive power employed will be a stationary engine located on the Brooklyn side, operating an endless wire rope.

These details will give our readers who have had no opportunity of seeing it, a general idea of this masterpiece of engineering skill, which will be ranked among the great engineering works of the world.

Minneapolis stands first, St. Louis second, and Milwaukee third, in the manufacture of flour in the United States.

The United States MILLER

Published by F. HARRISON CAWKER. { Vol. 15, No. 3. } MILWAUKEE, JULY, 1883. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

ODELL'S "8-ROLL" ROLLER MILL.

A very large proportion of the flour mills in this country are small ones, having a capacity of from 25 to 75 barrels per day of 24 hours. Many of them are owned and operated by intelligent and enterprising men who desire to keep up with the march of improvement, but a large and expensive mill is neither adapted to their means nor the requirements of their trade, and if they adopt the gradual reduction roller system at all (and they must adopt it or lose their trade) it must be in some simple and cheap form and yet be capable of producing good results. Thousands of such millers are anxiously inquiring for such a system, and we are now prepared to respond to their requirements with a line of rolls and system of milling which, in respect of quality of flour, yield, power required, and cost, will meet all reasonable expectations.

We herewith illustrate a new Roller Mill, designed by U. H. Odell, expressly for mills of small capacity, and which is called the "8-Roll" Machine, to distinguish it from Odell's Standard Machine. In describing this machine the manufacturers say: "It contains four pairs of 7 inch by 14 inch rolls, all of which are driven with one belt from the power shaft, each pair provided with an independent hopper and feed mechanism, all combined in one neat and substantial iron frame. Each pair of rolls is provided with suitable adjustments for setting and tramming them, and all four pairs may be simultaneously spread apart and the feed cut off by one movement of a hand lever—a feature of great practical value broadly covered by Odell's patents, and used only on his roller mills.

By means of one adjustable tightener pulley the machine can be instantly stopped or started without disturbing the driving belt, another feature of great practical value and importance, and which is peculiar to Odell's Machines.

All of the rolls are of the celebrated "Ansonia" make, and are the same in all respects, except in size, as those used in the Standard Machines. Either pair, or all of these rolls may be corrugated or smooth, as desired. One of these machines (8 rolls) will make the "breaks" and finish the bran for a capacity of 40 to 50 barrels per 24 hours, using millstones for reducing the middlings, and two of these machines (16 rolls) will, without the aid of millstones, do all the work for a mill of that capacity and finish up in good shape.

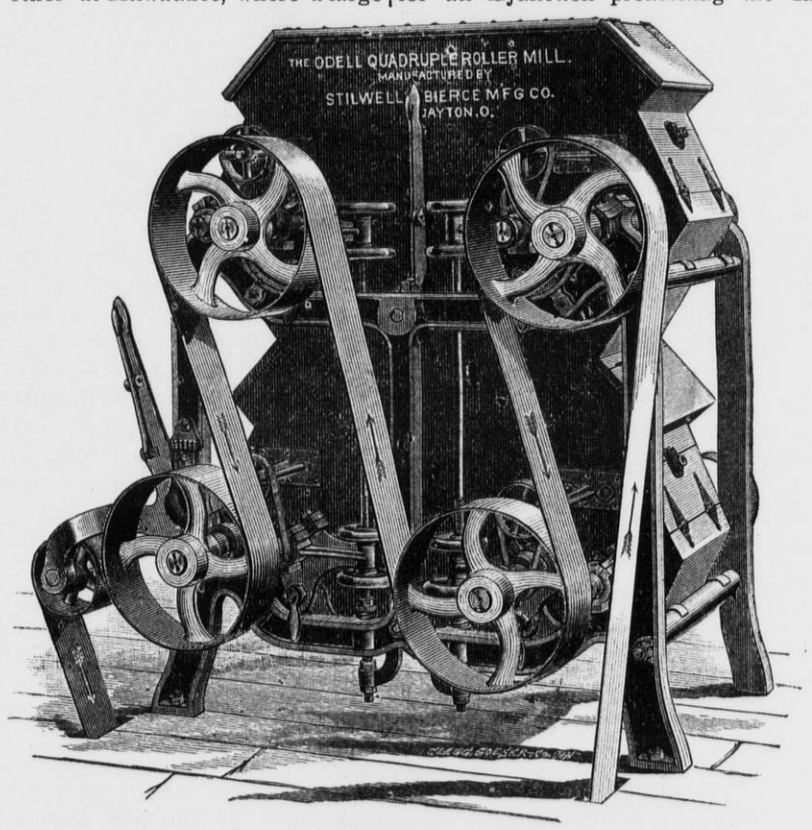
The view shown in the engraving is the driving side of the machine, and shows how the fast-speeded rolls are driven from the power shaft. On the reverse side, the slow-speeded rolls are driven with belts of sufficient length to insure good results, and provided with suitable tighteners, running from pulleys on the ends of the fast-roll shafts, which project far enough for that purpose.

DIMENSIONS OF ODELL'S "8-ROLL" MILL.

Extreme Length over All.	Extreme Width over All.	Height from Floor to Top of Hopper.
4 ft. 6 in.	4 ft. 2 in.	5 ft. 5 in.

In the chase after something "cheap" for small mills, some machines have been brought out which are cheap in first cost, but will prove dear enough in the long run to the miller adopting them, owing to their cheap, faulty mechanism, and disregard of principles which are essential in the successful reduction of wheat. In striking contrast to all such cheap and comparatively worthless machines, Odell's "8-Roll" Mill possesses all the requisites for first-class work. Each reduction is made with a pair of rolls, *adapted to it, and entirely separate and distinct in its bearings, drive, and adjustments* from the rolls on which the other reductions are made, and will do just as good work up to its capacity, and does it in the same manner, as on his full-sized double-roller mill, now everywhere regarded as the standard machine of its class. The quality of material and workmanship is up to the high standard for which all of our products are noted, and this "8-Roll" machine is in all respects a first-class roller mill of small capacity, and is just what thousands of millers have been waiting for.

Prices and further particulars furnished on application to the sole manufacturers, STILWELL & BIERCE MF'G Co., Dayton, Ohio.



ODELL'S "8-ROLL" MILL.

DRIVEN-WELL PATENTS.

The Federal Court of Des Moines, Iowa, on May 19th, rendered an opinion on the question of the validity of Nelson W. Green's driven-well patent, a case that has been pending for some time. The court holds that there are two well-established instances of prior use of the principle involved in this patent, one of them being at Independence, Iowa, where a well was sunk in the early summer of 1861, and the other at Milwaukee, where a large number of them were put down as early as 1849, the patent to Green not having been issued till 1868, and the application of the principle not having been discovered and put into use by him until after the well at Independence was proved a success. The court holds, that Colonel Green made no effort to prevent the use of his discovery by the public for about seven years, and it is upon this showing, more than the fact that the Iowa and Wisconsin wells antedated Colonel Green's discovery and application of the principle, that the patent is held void. The court also held that the issue was void for the reason that it set out a broader claim than was contained in the original patent. Over three hundred actions, principally against farmers, for damages, were pending in this court on this patent. Many more had confessed judgment and settled at heavy costs, and still others had paid the royalty exacted by the drive-well agents, who, a few years ago, swarmed over the Iowa prairies hunting up causes for action. So annoying had these persecutions become that a defensive alliance of farmers was formed, and many defended their premises with shot-guns against the incursions of drive-well agents, and in several instances mob law was threatened. The result was an appeal to the courts, with the result as announced. If sustained by the Supreme Court, the farmers of the Northwest will have gained a signal victory over a hitherto most exacting monopoly.

At the recent hearing in Iowa, Judge Nelson, of the United States Circuit Court of Minnesota, and Judge Love, of the United States Circuit Court for the Northern District of Iowa, sat with Judge Shiras. Judge Love concurred in Judge Shiras's decision and Judge Nelson dissented. The appeal will not bring these cases before the Supreme Court of the United States for the first time. When the hearing in Iowa began, an appeal taken by the farmers from a decision made by Judge Gresham, of Indiana (now Postmaster-General,) was pending in Washington, the case being that of Whal *against* Hine. Only eight of the Supreme Court justices sat at the hearing of that appeal. The court was equally divided, four justices being on one side and four on the other, so that the Supreme Court must try again. An appeal from the New Jersey District will probably be reached before the appeal which will go up from Iowa. In the mean time, the patentee's application for an injunction prohibiting the Indiana farmers from using their wells has been denied. The conclusions of fact found by Judge Shiras are these: That Colonel Green, in 1861, being then in command of the Seventy-sixth Regiment of New York Infantry, put his method of driving wells into public use, for the benefit of his regiment, thereby abandoning his invention to the public; and that this invention was in open and public use, with his knowledge and acquiescence, for more than four years before he applied for a patent thereon. In these four years the public acquired rights through the open and uninterrupted use of the discovery. Judge Shiras holds that it necessarily follows from these conclusions of fact that both the original and reissued letters patent are invalid and void.

WINNIPEG GRAIN STORAGE.

The question of a system of grain elevators in Winnipeg for the storage of North-western grain, which has been on several occasions during the past six months advocated by *The Commercial*, seems at last to have forced its importance upon the daily press of this city. *The Times* of last Tuesday contains the following article on the subject: If Winnipeg is ever to be made a great city, elevators must be built. At present wheat is sold here in the market or at the mill in the primitive fashion. Two years hence the yield of wheat in the North-west will have reached formidable proportions. During the season of navigation it will find its way to the seaboard via Port Arthur, but for at least six months in the year there can be no outlet there. It must then be stored somewhere for shipment to Chicago, and Winnipeg is the natural point. An elevator of the capacity of a million bushels could be erected for, at the outside, $200,000. Wheat is generally higher at Chicago during the winter than during the summer months, and in that season Winnipeg could do a good trade. If wheat were worth a dollar per bushel, the storage of a million bushels here would represent a million dollars. It is not money locked up. When a grain-buyer buys the farmer's load and puts it in the elevator, the banks are quite willing to advance him 75 per cent. of its value on the warehouse receipt, and with this he is enabled to keep on purchasing. His purchases, in fact, become the security for further advances and other purchases. In this way an enormous sum of money is kept in circulation, the good effects of which are felt in every branch of trade. When the grain-buyer sells, say to Chicago, he draws for the full amount on the strength of the bill of lading, the draft being credited in the bank against the amount advanced him on the warehouse receipt. Then he goes to work again. Storage costs a cent per bushel per month, or, including insurance, a cent and an eighth. This soon pays for the elevator. No. 1 hard, the Fyfe wheat grown in the Northwest, is worth five cents per bushel more than No. 2 Chicago.

In a few years every station along the C. P. R. will have either a warehouse or an elevator, and Winnipeg should lose no time in making itself the great reservoir of so much wealth.

The *Free Press* of the same date also contains a well-reasoned article on the same subject, which appeals strongly to the financial and commercial classes generally. On the question of profit from such an investment the article concludes with the following paragraph: From the capitalist's standpoint the investment of money in such an enterprise as this seems to promise exceedingly well. His object is, of course, to secure a fair return for his capital invested, and no other scheme affords a better prospect now than the building of elevators. If the profits from storage are not likely to yield a handsome dividend, then there can be no money whatever in the Northwest grain trade, and consequently not a good prospect for the North-west itself. The enterprise, in short, is just as sure of success as the country itself, and this cannot be said of every enterprise in which capital is embarked. Since the community and the capitalists who build the elevators are sure to profit by their establishment, there should be no hesitation in at once commencing their construction.

It may be added that in Chicago, Milwaukee, St. Louis and all other grain centres of the Western United States, storage elevators have proved remunerative investments, and some railway companies who own and operate their own find them a great source of profit, while others can rent them to reliable parties to operate, and secure in rental a heavy return on the money invested.—*The Commercial* (Winnipeg).

THE Minneapolis people feel very jubilant over the condition of their flour and grain trade, and recently sent out the following dispatch:

MINNEAPOLIS, June 7.—Milwaukee received during the year 1882, from Jan. 1 to Dec. 31, 7,816,471 bushels of wheat. Minneapolis for the same period received 18,927,500 bushels, the excess in favor of Minneapolis being 11,111,027 bushels. Every one in any way connected with the Minneapolis wheat trade has been complaining of small wheat receipts since the 1st of January, By looking up the figures, however, it is found, that up to May 31, the receipts for five months were 6,155,418 bushels, only a little more than 1.000,000 bushels less than Milwaukee gets in the whole year.

The Minneapolis Chamber of Commerce has recently elected Kenzie Maxfield, the present inspector for the Millers' Association, chief grain inspector of Minneapolis.

UNITED STATES MILLER.

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MILWAUKEE, JULY, 1883.

ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & Co., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞ *The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

A SYNDICATE of Jackson, (Mich.) capitalists, with large capital, has bought the Case purifier patents. It is inferred that lively war will be carried on.

LATE dispatches say that the affairs of the "Queen Bee Mill," at Sioux Falls, Dak., will be all adjusted soon, so that the mill can start up as soon as the new crop is harvested.

THE Breaking out of Cholera in Egypt will doubtless cause the closing of the Suez Canal for some months. This will cut off European supplies of Indian and Australian wheat to a great extent.

THE UNITED STATES MILLER lately received calls from Mr. W. Thayer, the inventor of the pneumatic middlings purifier, of Westerville, O.; Geo. T. Smith, of the Smith Purifier Co., of Jackson, Mich.; Mr. Beardslee, inventor of the Beardslee grain cleaner, and Mr. Crowell, of Sillwater, Minn.

WAUKESHA water from the MINERAL ROCK SPRING is becoming a favorite water in Milwaukee. It possesses all the virtues of any Waukesha water, and is fast becoming popular with the thousands annually visiting Milwaukee and Waukesha for health. Large quantities are being exported anually.

THE Supreme Court of the Dominion of Canada, at Toronto, in the suit of the Geo. T. Smith Middlings Purifier Co. against Goldie & McCollough, decided in favor of the Smith Co., establishing the validity of the Smith claim, declaring Geo. T. Smith to be the inventor, sustaining the decision of the commissioner and directing a decree for an injunction, with costs, etc. This is a decision of the court of last resort in Canada, and the Smith Co. are greatly elated thereat. The Consolidated Purifier Co., of Toronto, Canada, represent the Smith interests there.

THE number of flour mills that have been destroyed by fire during the past three months is large. Mutual insurance companies have not been so fortunate as in times past. The Wisconsin Millers' Mutual Insurance Co., have met with three losses, amounting in all to $10,000, and the Millers' National, of Chicago, has suffered to a much greater extent. It appears to be a well established fact that there are more mill-fires when milling business is dull and many mills are shut down, than at any other time. The principal causes assigned as the origin of fires in idle mills is "spontaneous combustion." Fires of such origin occur when the mills are in operation, but employes are always about and generally extinguish them before much damage is done. A competent and trustworth watchman should always be on guard in a flouring-mill when it is idle. If the mill-owner does not put one there, the insurance agent should.

DURING the month of May, there arrived in the United States 110,148 passengers—of whom 99,601 were immigrants, 5,467 citizens of the United States returned from abroad, and 5,080 aliens not intending to remain in the United States.

Of this total number of immigrants, there arrived from England and Wales, 13,443; Ireland, 15,160; Scotland, 4,383; Austria, 1,668; Belgium, 373; Bohemia, 1,404; Denmark, 1,743; France, 455; Germany, 29,787; Hungary, 856; Italy, 7,276; Netherlands, 1,068; Norway, 4,898; Russia, 382; Poland, 183; Sweden, 6,801; Switzerland, 2,080; Dominion of Canada, 6,922; and from all other countries, 710.

MINNEAPOLIS millers have had occasion during the past few months to learn that there were too many mills in that city. The lesson has been an expensive one. We think that the present milling capacity of the Minneapolis mills will not be increased for a long time to come, and do not believe that the owners today could begin to realize the actual cost of their mills if they should try to. The milling capacity of Minneapolis alone is sufficient to turn all the wheat raised in Minnesota into flour, and it is well known that there are at least a hundred millers of large capacity in Minnesota outside of Minneapolis. There are, to-day, in Minnesota between 400 and 500 flour mills. Under this condition of affairs, many millers must be idle during a large portion of the year.

WE thankfully acknowledge the receipt of five samples of wheat from Mr. John Dunn, of Adelaide, South Australia, also a copy of their latest trade circular, dated April 27th, from which we make the following extract:

The publication of the Government returns of our agricultural statistics, showing the total production of wheat to be about 20,000 tons less than last year, has no appreciable effect upon prices, but holders of grain continue very firm in their demands, anticipating that the remainder of our available surplus will not suffice to meet the ordinary demands of our regular customers. The area under wheat is shown as 1,746,864 acres, producing 7,356,117 bushels, equal to an average of 4 13-60 bushels per acre, which is the smallest average ever reaped in this colony. After deducting for seed and home consumption, only 100,000 tons remains for export, of which 48,483 tons has already been shipped. No wonder that our agriculturists complain that wheat-growing does not pay, and unless we have a return of more prosperous seasons the same remark will soon be applicable to the milling trade. Our own mills are capable of grinding more than the half of this year's surplus, and those of the Adelaide Milling Company the remainder, consequently great difficulty will be found in obtaining continued work for the numerous smaller mills that are scattered throughout the colony, and it is evident that many of them must remain idle for more than half the year.

A WORD FROM THE CONSOLIDATED M. P. CO.

Editor Milling World:

We are exceedingly disinclined to try our litigated cases in the newspapers, and have avoided doing so resolutely in the past. It is entirely legitimate for the Case Co. to make what they can, truly, out of their late deliverance in Columbus. But the public should not be misled. The same order of the court dismissing our bill contains an allowance of an appeal to the Supreme Court of the U. S., so that the cause is still pending, and stands just as it did a month ago—a cause pending and awaiting its call in regular order, only it is now in another court.

This suit contained only a small part of one case against that company. We did not care to submit all our case to Judge Baxter, whose peculiarities were not unknown to our attorneys. Other suits on other patents are pending in other circuits, and these will come forward in due time. The public may be assured that all the questions between this and the Case Company will be disposed of in the future, but none of them have yet been settled.

There is no need that any miller should make a mistake. Every practical miller can judge better than this judge can, who knows nothing about milling. His opinion, as declared, was that the Case machine was as great an improvement upon Smith's, as Smith's was upon Stoll's machine, and therefore there was no infringement of Smith's patent. Now if, on inspection of the three machines, a miller concludes that this opinion of the judge is manifestly wrong, it follows that the conclusion deduced is erroneous. No miller need go to a judge for an opinion on the comparative merits of milling machines, and to that tribunal of intelligent men we appeal, and will stand on their judgment whether the Case machine is not inferior, as a whole, to the Smith machine, and further, whether every feature which enables it to perform as a middlings purifier was not adopted from the Smith machine, with only such modifications of form as would make it seem different, so as to mislead judges who are called upon to try whether or not it is an infringement.

We give all the world fair notice that we propose to carry on the prosecution of our rights against the Case Co. to the end, and whoever chooses to involve himself in the consequences of their final defeat does so with full warning and at his own hazard.

Yours,
THE CONSOLIDATED M. P. CO.
Jackson, Mich.

COMMUNICATION FROM THE STILWELL & BIERCE MFG. CO.

DAYTON, OHIO, June 27, '83.

Editor United States Miller:

Dear Sir—Our attention has been called to a letter of recent date, from Stout, Mills & Temple, which has been going the rounds of the papers, referring to the recent interference suit between Odell and Livingston, and which was decided in Odell's favor at every point, both on the first hearing, and on the appeal, and stating they were not using, on the Livingston rolls, any of Odell's adjustments, and furthermore would not use them as a gift, &c., &c.

We are not disposed to enter into any newspaper controversy with these gentlemen, but will simply state that we claim that all the adjustments of any value on the Livingston Roller Mill, are plain infringements on Odell's patents, and we have brought suit for the same, and will have the question, as to whether the Livingston Roller Mill does infringe Odell's patents or not, determined by the U. S. Courts at the earliest possible day.

Yours truly,
STILWELL & BIERCE M'F'G Co.

THE CASE COMPANY'S OPINION OF THE RECENT DECISION.

Editor Milling World:

From your editorial "An Important Decision" in *The Milling World* of the 14th ult., we extract the following: "This (the Smith) company advises us that in the suit at Columbus, Ohio, it put in issue and argued only one claim in the Geo. T. Smith patent, No. 164,050 and claims 2 and 5 in his patent No. 236,901; while it holds that the Case purifier clearly infringed more than one hundred different claims of Smith's and other patents which it owns. We shall make every possible effort to induce the Case Co. to submit the suit appealed at Columbus to the Supreme Court without arguing, in order that the questions of so much importance to the millers may have an early settlement." This is a new, but very shadowy dodge, on the part of this grasping monopoly, to continue the old plan of intimidation.

The facts in relation to the suit just decided upon in our favor are as follows:

They sued us on 43 separate and distinct claims, and spent two years in gathering their testimony. They employed the best talent in this country. They counseled and retained lawyers of the greatest note, including Harding and Thurston, the two great lawyers in middlings purifier cases. Col. Rodney Mason has given a vast amount of time to the case. He employed Renwick, who is regarded the best expert witness in the United States on the scope and validity of patents. Clark, of the Smith Co., was a constant attendant and adviser, and gave to the case ninety-one solid pages of testimony. These experts in patent litigation connived and labored upon every conceivable theory by which they might influence a court, who is not expected to be an expert in the principle of purifying middlings. They built upon unnatural and strained theories, the shallowness and inconsistency of which would be apparent to any miller, but might mystify and deceive a judge. But undertaking to build up a defense upon a basis which did not have a foundation in fact, it was an easy matter for our attorneys and our witnesses to show the inconsistency of their position.

We will not occupy space in this article to illustrate the ingenious methods taken by this Company to sustain their case, but shall do so soon, in an illustrated pamphlet, prepared expressly to enlighten the millers upon this subject.

When Col. Mason opened his argument he stated that all the recent decisions of the courts were adverse to re-issued patents, and that he could not hope to get an injunction or judgment against us on them, and that he would therefore not occupy the time of the court in arguing these patents, but wished to concentrate his whole time upon such claims as he hoped to sustain.

He had taken a vast amount of testimony upon these re-issued patents and forced us to the necessity of defending ourselves, and we did not propose that the case should go by, without a hearing upon those points.

Another ingenious step taken by this illustrious lawyer, was to undertake to lay aside one of the important claims, that is the one relating to the patent in which the Smith Co. claimed the tubular air discharge at the mouth of the fan, stating that he wished this to go to the higher courts without argument or without being passed upon at this trial. This was a thin but ingenious dodge on the part of the complainants. They well knew that they would be defeated, and undertook to reserve a part of their defeat to some future time, that their unscrupulous, bulldozing Co. might continue their unhallowed work of intimidating the millers, under the pretext that their strongest patents had not been tried or passed upon, and warning the millers that unquestionably we infringed these untried patents, and that they would get judgment against us in the upper courts. But their ingenious dodge did not work.

Our attorneys demanded that, inasmuch as they had sued us upon 43 claims, that the case must be heard upon all the allegations of the complainant, and they carried their point. The case was heard upon all the testimony, and upon all the patents offered in evidence by the Consolidated Co., and judgment was rendered in our favor, and it covers the whole ground, as the decision was that we infringed none of these claims.

Their statement, "We shall make every possible effort to induce the Case Co. to submit the suit appealed at Columbus, to the Supreme Court without arguing, in order that the questions of so much importance to millers might have an early settlement," looks rather thin. They have never made us any such a proposition, and probably never will. We are ready for any legitimate action and we propose that this case shall be argued in order that we may show clearly the lame, the halt, strained and unnatural position to which they have been driven to make even a show of a case.

So far we have not attacked the validity of the Smith patents, as we felt perfectly safe in the legitimate defense of our own, but they must let us and our customers alone. A hint to the foolish who have recently learned a little wisdom, ought to be sufficient.

Yours truly, CASE MANUF'G. CO.
Columbus, Ohio, June 16, 1883.

MILLERS' NATIONAL ASSOCIATION.

Proceedings at its Meeting at the Grand Pacific Hotel, Chicago, Ill., June 26 and 27, 1883.

At noon, June 26, about 100 millers from all parts of the United States, members of the Millers' National Association, met in the Appellate Court Room in the Grand Pacific Hotel. Mr. J. A. Christian, of Minneapolis, Vice-President, in the absence of the President, Geo. Bain, called the meeting to order. On motion Mr. Edward Sanderson, of Milwaukee, was elected President *pro tem.* In taking the chair, Mr. Sanderson thanked the convention for the honor conferred. He spoke of the causes which led to the organization of the Association, the principal one of which was the bringing of suits for infringements of patents which in every case so far had been decided to be invalid. He said, that had it not been for the Association, he believed, that every miller would have been ruined in business by the demands of patent owners. The State and National Associations were now stronger than ever, and the future looked extremely favorable to the trade.

Upon motion of Mr. Seybt, of Illinois, a committee of five was appointed on credentials and permanent organization. This committee consisted of Homer Baldwin, of Youngstown, O., John Ames, Northfield, Minn., D. R. Sparks, Alton, Ill., J. R. Canaday, of Vincennes, Ind., and J. J. Snouffer, Cedar Rapids, Iowa. The convention then adjourned until 2 P. M.

AFTERNOON.—At 2 P. M. the convention was called to order by President Sanderson. Mr. Seybt introduced a resolution of thanks to Mr. F. Wegmann, of Zurich, Switzerland, for the valuable servcies he had rendered to the millers of the United States by his persistent defense of the suit brought by Downton against The Yaeger Milling Co. The resolution was unanimously adopted.

A resolution of thanks to the officers of the Association and to the members of the sub-executive committee for their untiring zeal and skill in watching and defeating all schemes against the interests of the trade, was unanimously adopted.

Mr. Seybt was then called upon to inform the convention of the progress made in the matter of obtaining a suitable bran-packer. Mr. Seybt made quite a lengthy address stating the importance to millers for obtaining a suitable machine for use in mills having a capacity of 100 barrels of flour per day or more. He said there was now a machine in operation in Chicago, which did the work effectually, but it was only suitable for mills of great capacity, as it was capable of packing six tons of bran per hour. He had exibited a sample of bran packed by this machine in the markets of London, Liverpool and Glasgow, and it was received with high favor. If the packing of bran for export was generally adopted in this country, there would be a decrease in wheat exports and an immense increase in flour exports, which was exactly what our millers desired. The large export of packed bran would be the means of closing thousands of the smaller mills in Great Britain.

The sub-executive committee asked until Wednesday morning to report, which was granted.

A member of the Chicago Board of Trade announced that there was to be a game of base ball played at White Stocking Park between a picked nine of St. Louis Flour Dealers and Chicago Flour Dealers, and extended an invitation to the millers to go and see the game. No further business being ready the convention adjourned until Wednesday morning, and many of the millers went to see the base ball match.

WEDNESDAY MORNING, JUNE 27th.

The convention was called to order at 11 o'clock A. M., and the report of the sub-executive committee was read and approved. It reported the satisfactory condition of all patent litigation, and also stated that considerable progress had been made toward securing the invention of a suitable bran-packer. All the leading trade journals and many others had published the specifications and offer of a $1,000 prize to the invention of a suitable machine. It was desired that inventors should distinctly understand that the $1,000 offered was not to *buy* the invention, but was offered to stimulate inventors to make efforts to produce a suitable machine. The invention of a bran-packing machine which would meet all the requirements, would be in great demand, and would undoubtly make a fortune for the inventor. The report was adopted as read.

Mr. Seybt said that the John T. Noye Manufacturing Co., of Buffalo, N. Y., had paid $750, which was one-half of the fee charged by Messrs. Parkinson & Parkinson, of Cincinnati, who, on behalf of the Millers' National Association, assisted Hon. F. W. Cotzhausen, of Milwaukee, in defending the suit of Downton *vs.* Yaeger Milling Co., and were deserving the credit therefor and the thanks of the Association.

The matters of bills of lading and transportation came up for discussion, and the letter of Messrs. E. Sanderson & Co. to the Wisconsin and Minnesota Associations (published in UNITED STATES MILLER for April, 1883) was read, and after discussion a committee of three was appointed to inquire thoroughly into the matter and take such action as they deemed for the interests of the Association.

President Sanderson said that, as Mr. Seybt had just returned from Europe, he thought he might give the convention some valuable information of interest to the trade.

Mr. Seybt said, that there were now very large stocks of both American wheat and flour in the hands of foreign dealers, that the crop prospects were better now than they had been for seven years and consequently our millers and grain dealers had no reason to expect high prices for this year's crop.

In answer to the request of the president for crop reports from members from different sections of the country, the following was obtained. The spring wheat crop in Wisconsin, Minnesota, Dakota and Northern Iowa was reported to be in excellent condition; Illinois, condition poor; Indiana, half a crop; Missouri, half of 1882 crop; Kansas, good crop; New York, Maryland, Delaware and Virginia, average crop. Mr. Halliday estimates Illinois crop at 25,000,000 bushels. Dakota crop was estimated at 20,000,000.

Mr. Nicholas Ellis, of Evansville, Ind., chairman of the committee on nomination of officers reported as follows: For President, J. A Christian, Minneapolis, Minn.; 1st Vice-President, C. H. Seybt, of Highland, Ill.; 2nd Vice-President, Homer Baldwin, Youngstown, O.; Secretary and Treasurer, S. H. Seamans, Milwaukee, Wis.

The report of the committee was adopted. Mr. Christian, the President elect, took the chair. He thanked the convention for the honor conferred upon him and said, that he would serve the interests of the Millers' National Association to the best of his ability.

No further business being before the convention, it adjourned *sine die*.

[Compiled for the UNITED STATES MILLER.]

INDIAN CORN

is a plant indigenous to America, having been found under partial cultivation by the Indians on the discovery of the new world. It is extensively cultivated both in North and South America, and forms an article of food as important to the inhabitants of those regions as rice does in the eastern countries. There is only one ascertained species of Indian corn, although several varieties seem to arise in consequence of differences of soil, culture and climate. The plant consists of a strong, jointed stalk, provided with large alternate leaves, almost like flags, springing from every joint. The top produces a bunch of male flowers of various colors, which is called the *tassel*. Each plant bears, likewise, one or more spikes or *ears*, seldom so few as one, and rarely more than four or five, the most usual number being three; as many as seven have been seen occasionally on one stalk. These ears proceed from the stalk at various distances from the ground, and are closely enveloped by several thin leaves, forming a sheath, which is called the *husk*. The ears consist of a cylindrical substance of the nature of pith, which is called the *cob*, over the entire surface of which the seeds are ranged, and fixed in eight or more straight rows, each row having generally as many as thirty or more seeds. The eyes or germs of the seeds are in nearly radial lines from the centre of the cylinder; from these eyes proceed individual filaments of a silky appearance, and of a bright green color, the aggregate of these hang out from the point of the husk, in a thick cluster, and in this state are called the *silk*. It is the office of the filaments, which are the stigmata, to receive the farina, which drops from the flowers on the top, or tassel, and without which the ears would produce no seed—a fact which has been established by cutting off the top previous to the development of its flowers, when the ears proved wholly barren. So soon as their office has been thus performed, both the tassel and the silk dry up and put on a withered appearance. The grains of Indian corn are of different colors, the prevailing hue being yellow, of various shades, sometimes approaching to white, and at other times deepening to red. Some are of a deep chocolate color, others greenish or olive-colored and even the same ears will sometimes contain grains of different colors. Indian corn is said to contain no gluten, and little if any ready-formed saccharine matter, whence it has been asserted to have but a very small nutritive power; on the other hand, it is seen that domestic animals which are fed with it very speedily become fat, their flesh being at the same time remarkably firm. Horses which consume this corn are enabled to perform their full portion of labor, are exceedingly hardy and require but little care, and the common people of countries where Indian corn forms the ordinary food, are for the most part strong and hardy races. The produce of corn, on a given extent of cultivation, is greater than that of any other grain, and the proportional return for the quantity of seed committed to the ground is equally advantageous. American Indian corn is found growing wild in many of the West Indian islands, as well as in the central parts of America, and there can be no doubt of its being a native of those regions. In favorable situations it has a very considerable growth, attaining to the height of from seven to ten feet, in some cases it has acquired the gigantic height of fourteen feet, without in any way impairing its productive power. Its spike or ear is eight or ten inches in length, and five or six inches in circumference. The plant generally sends out one, two or more suckers from the bottom of the stalk, but these it is advisable to remove, not only as they draw away part of the nourishment, which should go to support the main stalk, but because the ears which the suckers bear ripen at later periods than the others, and the harvest could not all be simultaneously secured in the most proper state of maturity. This variety will rarely come to maturity in northern climates. In the Mexican States there are few parts of either the lower districts or of the table-land, whereon it is not succesfully cultivated. In the former districts its growth is naturally more luxuriant than in the latter, but even at an elevation of six or seven thousand feet above the level of the sea, its productiveness is calculated to excite wonder. Some particularly favored spots have been known to yield an increase of eight hundred for one, and it is perfectly common to gather from three hundred and fifty to four hundred measures of grain for every one measure that has been sown. In other places where reliance is placed only on the natural supply of moisture to the soil from the periodical rains, such an abundant return is not expected, but even then, and in the least fertile spots, it is rare for the cultivator to realize less than from forty to sixty bushels for each one sown.

Humboldt states, that in some warm and humid regions of Mexico, three harvests of corn may be annually gathered, but that it is not usual to take more than one. The seed-time is from the middle of June to near the end of August. A great part of the internal commerce of Mexico consists in the transmission of this grain, the price of which varies considerably in not very distant stations, owing to the imperfect state of the roads and the insufficient means of transport. As an instance of this, *Humboldt* mentions the fact, that during his stay in the intendency of Guanaxuato, the *fanega* (five bushels) of corn cost at Salamanca nine, at Queretaro twelve, and at San Luiz Potosi twenty-two livres. It is a fortunate circumstance, and one which should be mentioned as adding materially to the natural value of corn in warm climates, that it will remain in store uninjured for periods varying from three to five years, according to the mean temperature of the district.

This kind of corn is generally planted in the United States, about the middle of May, so as to avoid mischance of its experiencing frost after it is once out of the ground. The Indians who inhabited the country previously to the formation of any settlement upon its shores by Europeans, having no calendar or other means of calculating the efflux of time, were guided by certain natural indications in their choice of periods for agricultural operations. The time for their sowing of corn was governed by the budding of some particular tree, and by the visits of a certain fish to their waters—both which events observation had proved to be such regular indicators of the season, as fully to warrant the faith, which was placed on their recurrence. These simple and untaught people discovered and practiced a method of preserving their grain after harvest, which afforded a certain protection against the ravages of insects, and which might be advantageously adopted in other situations and in climates where this evil is very prevalent. Their method was to separate the corn from the cob as soon as the harvest was finished; to dry it thoroughly by exposure to the sun, and to a current of air; and then to deposit it in holes with mats of dried grass, and covering them with earth, so as completely to prevent the access of air. The second variety of corn has white grains. This kind, which is cultivated in Spain, Portugal, and Lombardy, is altogether a smaller plant than the variety just described, seldom exceeding six or seven feet in height; the leaves are narrower and the tops hang downwards. The ears or spikes are not more than six or seven inches long. The third variety has both yellow and white seeds. It is even smaller than the last mentioned, seldom rising to a greater height than four feet. The ears do not often exceed four or five inches in length. In ordinary seasons it will ripen its grain perfectly in England; and one reason why it has been presumed that its cultivation would prove advantageous to that country is the shortness of time required for its growth whereby the late frosts that sometimes occur in the spring, and the early frosts of autumn, would be alike avoided. This particular variety is cultivated in some parts of North America, from which it is understood to have its origin, as well as in some of the middle regions of the European continent. It is also partially cultivated in Germany, not as a bread-corn, but that it may be malted, and used in the preparation of a kind of beer, or made to yield an ardent spirit. The use chiefly made of it, however, is that of fattening swine, and poultry. In cultivation of Indian corn in northern climates, it is proper to make choice of warm spots, and particularly to avoid shady situations. In order to admit the sun as much as possible to the plants and probably also with the view of affording more nutriment to the grain, it is usual to remove the blades, together with the top and tassel, as soon as its office of dropping its fecundating farina upon the ears has been fully accomplished. This process is very easy of performance. When the blades and tops are perfectly dry, they are stacked and thatched, and form an excellent substitute for hay and chaff in the spring, both for cattle and horses, as well as for sheep; all these animals being attracted by its sweetness. It may generally be known when the corn is ripened, by the dry and white appearance put on by the husk; a more intimate inspection is, however, accomplished without difficulty. The ears must then be plucked off together with the husks, and conveyed at once in carts to the barn. Here in America, the stalks are usually left standing for some time longer. Being then cut near to the ground, tied into bundles, and stacked in a dry place, they will prove useful as food for horned cattle, which, from the saccharine quantity of the plants, will thrive upon them. The grain forms one-half the measure of the ear, that is to say, two bushels of ears will yield one bushel of shelled corn. Captain Lyon, in the narrative of his travels in Mexico, has given an amusing account of the mode of preparing *tortillas*, a species of cake made with the crushed grains of corn, which is eaten hot at the meals of all classes of people, the more wealthy using the cakes in the way we are accustomed to use wheaten bread—as an auxiliary to more nourishing aliments—and the peasants being fain to enjoy them as a substantial food, seasoning them, when they have the opportunity, by the addition of chilies stewed into a kind of sauce, wherein the tortillas are dipped. Simple as the art may appear of thus making an unleavened cake with moistened flour, some persons are found to acquire a greater degree of expertness in it than others; and so great is the necessity for their preparation, and the desire of having them well concocted, that, according to Capt. Lyon, "in the house of respectable people, a woman called from her office *Tortillera*, is kept for the express purpose, and it sounds very oddly to the ear of a stranger during mealtimes, to hear the rapid patting and clapping which goes forward in the cooking place until all demands are satisfied."

It is remarked in America, that the emigrant farmers, when they first arrive there, finding a soil and climate proper for the husbandry they have been accustomed to, and particularly suitable for raising wheat, despise and neglect the culture of Indian corn; but observing the advantage it affords their neighbors, the older inhabitants, they by degrees get more and more into the practice of raising it; and the face of the country shows from time to time that the culture of that grain goes on visibly augmenting. Humboldt acquaints us that the Mexican Indians, previous to the conquest of their country, were accustomed not only to press the sweet juice from corn-stalks for the purpose of fermenting it into an intoxicating liquor, but they boiled down this juice to the consistency of syrup, giving it likewise as his opinion that they were able even to make sugar from this inspissitated juice. In confirmation of this opinion, he recites a letter written by Cortez, who in describing to the Emperor Charles V., the various productions in both a natural and manufactured state which he found in the new country, asserts, that among these were seen "honey of bees and wax, honey from the stalks of maize, which are as sweet as sugar cane, and honey from a shrub. The natives make sugar from these plants, and this sugar they also sell." There is no question that the productions here enumerated will yield saccharine matter; but crystallized sugar, properly so called, is a different preparation, and, from our present knowledge, it is difficult to believe that any such substance could have been so prepared. The Indians, at the period above alluded to, evinced considerable skill in the preparation of fermented liquors, which is by no means lost by the Mexicans of the present day. "A chemist," says Humboldt, would have some difficulty in preparing the innumerable variety of spirituous, acid, or saccharine beverages which the Indians display a peculiar address in making, by infusing the grain of Indian corn, in which the saccharine begins to develop itself by germination. These beverages, generally known by the name of *chicha*, have some of them a resemblance to beer, and others to cider. The spirituous liquor called *pulque de mahis*, or *tlaouili*, which is prepared from juice expressed from the stalk of the corn, forms in some parts of the republic, a very important article of commerce.

Ten sets of the Odell roller mill have been ordered by the Richmond City Mill Works, for the mill of Kenedy & Brown, Shelbyville, Indiana. This mill is to be built on the Odell system. The Richmond City Mill Works have the entire contract.

The Stilwell & Bierce Mfg. Co. are furnishng two Victor water wheels for R. C. Shuler & Co., Minneapolis, Minn.

The Stilwell & Bierce Mfg. Co have just received orders from E. E P. McCornack, of Salem, Oregon, for a Victor turbine water wheel.

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MILWAUKEE, JULY, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California 209; Colorado, 52: Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; 'Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

THE Minneapolis Millers had a jolly excursion on Lake Minnetonka, June 16th. We acknowledge with thanks complimentaries to the excursion, and regret that we could not have been with the party.

IT is claimed that the abolition of tolls on the Erie Canal has not revived the canal traffic to the extent that was expected. A greater business was transacted on the Canal during May and June 1880 than in those months this year.

CONGRESS has appropriated $50,000 for the purpose of building a fish-way in the Potomac river at Great Falls. There are certain engineering difficulties to be overcome, due to the rocky nature of the river bed and ice accumulations in the winter.

WE are under obligations to William Dunham, Esq., publisher of *The Miller*, London, for advanced proofs of the recent meeting of the British and Irish Millers' Association. The report entire appears in this number of of the UNITED STATES MILLER, which is the only paper in this country publishing the proceedings in full.

EVERY milling journal published in the United States was represented at the Millers' Convention in Chicago. The press representatives held a short meeting of a *purely business* nature, after the adjournment of the Millers' Convention. The *business* was rapidly transacted, and all shook hands and proceeded to scatter towards their respective homes.

THE UNITED STATES MILLER recently received a cablegram from Mr. Adolph Keller of Elberfeld, Germany, stating that Andreas Mechwart, owner of the "bed-rock" roller mill patents, sailed for this country by the steamer Rhinelander, June 16th. Mr. Mechwart is the inventor of what he calls "New process rollers." His invention is patented in the United States. We hope to be able to give more information concerning this matter in our next number.

IT has become quite fashionable of late for English syndicates to buy large tracts of land in this country, especially in the South. An English company has recently bought 311,000 acres of land in the Panhandle of Texas; another company has bought 1,300,000 acres of bottom land in the Yazoo district of Mississippi which will be drained and made serviceable. Another company has bought 2,000,000 acres in Florida which is to be thoroughly drained and divided up into 20-acre tracts, and a house built on each ready for immediate occupation by immigrants. Many large tracts have also been purchased in Kansas and Colorado. Many Englishmen evidently believe that the only place where money may be invested with safety and profit is America.

WE have received the first number of "*Grain*," the title of a new paper published at Indianapolis, Ind., by Richards & Butler, Mill Builders and Furnishers, and edited by Mr. H. C. Williams. It is announced to be "A monthly journal devoted to flour and grain and the mechanics of their production and manufacture." The subscription price is one dollar per year. The first number promises well for the future of the new paper. Welcome.

THE suit of the Consolidated Middlings Purifier Co. against the Case Manufacturing Co., for infringement, in which the United States Circuit Court decides there is no infringement, was one of more than unusual interest to manufacturers generally.

The very best of legal talent was employed on both sides and a very large amount of testimony was taken. The examination of witnesses was conducted entirely for the Consolidated Purifier Co. by Col. Rodney Mason, of Washington City, and for the Case Co., by Col. James Watson, of Columbus, O. Several volumes of testimony were taken. The arguments occupied three days, Col. Mason and Mr. Geo. Harding, of Philadelphia, appearing for the complainants, and Col. Watson and Gen. M. D. Leggett for the defense.

The case was argued from every conceivable standpoint and listened to with untiring attention and patience by the two judges who constituted the Court. A correspondent writes us that Col. Watson, especially, did himself great credit in his argument of three and a half hours for the defense. He had made a thorough study of the case and was entirely familiar with all the patents bearing on the case, as well as all the law and facts, and when his strong and forcible argument was ended there seemed nothing left to be said in addition, and from that moment it was believed by all that the "die was cast." Mr. Watson has placed himself in the very front rank of patent lawyers.

SUMMER BUSINESS FOR YOUNG PEOPLE.

The Spencerian Business College, Milwaukee, has no vacations, and admits students of both sexes at any time. This gives young people the most profitable employment during the summer months as well as at other times, in obtaining a business education. The value of such an education is apparent to every thinking person. Of the character of the Spencerian Business College for thoroughness and reliability it is unnecessary to say anything. Give the young people a chance to improve their business qualifications. For circulars or information, address R.C. Spencer, Milwaukee, Wis.

WHAT DID THE APOSTLES DO?

In one of the churches in Milwaukee, a couple of Sundays ago, the infant class of the Sunday school, owing to the sickness of the Superintendent, was put in charge of a young man to whom such a position was entirely novel. He saw that the lesson was from the "Acts of the Apostles," and asked the class about them. Next question was "Well, what did the apostles do?" There was silence for a few moments, when the teacher asked "Can none of you tell what the apostles did?" At last a little fellow snapped his raised fingers saying "I know." "Well, what did they do?" The little fellow replied, "They went about doing errands for Jesus." No more questions were asked.

A BAD YEAR FOR RE-ISSUED PATENTS.

The barbed wire patent has at last come to grief, and the granger rejoiceth throughout the length and breadth of the land.

In the United States Circuit Court at St. Louis, on the 4th ult., Judge Treat handed down decisions in two series of cases which practically settle the barbed-wire controversy, concerning which such a wide-spread interest has been excited in the West. The suits were brought by the Washburn & Moen Manufacturing Company and Isaac Ellwood against Henry Fuchs and others. The first series of cases involved the validity of the patents on the invention; the second the validity of the patents on the machinery for making the wire. The earliest barbed-wire patent was issued in 1867, since which time a great number of issues and re issues have been had. Most of those have been acquired by the Washburn & Moen Manufacturing Company, and Ellwood, the plaintiffs in the cases just decided. Injunctions were sought against the defendants on the ground that they had infringed the patents held by plaintiffs. These injunctions were refused by the court, who held the re-issued Kelly & Gidden patents void on the ground that a re-issue cannot be upheld under an original patent where devices not suggested in the original are imported into the re-issue, making thereby a combination distinct from the original. The second series of cases involving the validity of the patents on machinery, were also decided against the company. The effect of the decisions is to release all restrictions on the manufacture of barbed wire, and to save to the farmers what has hitherto been paid in royalty.

ABOUT BILLS OF LADING.

The objectionable features of the bills of lading issued by the steamship lines plying to the port of New York were recently discussed before the Chamber of Commerce of New York. A special committee appointed to consider the subject reported that in nearly all cases the risks excepted and the conditions imposed are such that the merchant who insures his goods finds, upon examination, that he is not insured against the exceptions and conditions of the bill of lading he receives. Until a reform could be effected shippers were advised to protect themselves by accepting these objectionable bills of lading only under protest, and were told that they might refuse to receive bills of lading containing improper conditions, and according to decisions of American jurists, might hold the ships liable for refusing to issue at their request such bills of lading as custom and the law in this country dictate. The Chamber of Commerce of New York is doing good service in endeavoring to clear up a matter not very generally understood. It is well that the law and the commercial usage in relation to mercantile documents of such importance as bills of lading should be thoroughly discussed, and with a view of bringing about remedies for existing abuses, to be followed if possible, by the adoption of a uniform international system.

ANOTHER PATENT DECISION.

During the past month, another patent case has been decided. The Consolidated Middlings Purifier Co., under whose license the Geo. T. Smith middlings purifiers are manufactured, brought suit in the United States Circuit Court for the Southern District of Ohio, against the Case Manufacturing Co., of Columbus, O., for infringing their patents No. 164,050, and claims 2 and 5 in patent No. 236,101. The Court decided that the middlings purifier manufactured by the Case Mfg. Co., did not infringe on the patents above named, and dismissed the bill of complaint at plaintiff's cost. From this decision the Consolidated Purifier Co. immediately appealed.

This is one of a number of cases which have been commenced in Pennsylvania, Indiana, and elsewhere, against various parties for infringing some of the eighty or more middlings purifier patents owned by the Consolidated Co., evidently to obtain a final decision of the Supreme Court sustaining their claims. It has been said that the Consolidated Co. desired, and had connived at securing the purchase by millers of purifiers that infringed on patents owned by them. It seems to us, that if such was the case they would not have brought suits, at least, for sometime to come, against anyone for infringement. Their action evidently indicates that they believe their position to be impregnable, and that they will finally have their claims sustained by the United States Supreme Court, in which event the collection of royalty from purchasers of infringing machines would prove a rich harvest.

The millers have been remarkably fortunate in regard to patent cases so far and it is to be hoped by the trade that this good fortune may not change.

There is one thing that millers can do, however, to protect themselves in any event, and that is, when buying any patented milling machinery about which there is any question as to infringement, to demand a good and sufficient bond from the seller to protect purchasers from all loss or damage by reason of suits for infringement, *i. e.*: The seller must agree to assume the miller's defense and pay all costs, charges and damages thereby incurred.

This plan came near being adopted in the matter of dust collectors, in fact the Milwaukee Dust Collector Co. had made out a bond to protect all the r customers, to Sub-Executive Committee of the Millers' National Association, but before it was filed all the owners of dust-collector patents made a compromise so that all machines now sold by the Milwaukee Dust Collector Co., so far as we know, are fully licensed under all patents.

Millers will do well to consider this matter thoroughly and hereafter refuse to buy patented machinery of any kind about which there is any chance of litigation without first obtaining a protecting bond. As the Millers' National Association has the confidence and respect of the entire milling trade, as well as of the inventors and manufacturers, we would further suggest that with the Sub-Executive Committee of that Association would be the proper place to deposit general protective bonds.

FLOUR AND IRON MILLS.

The *New York Shipping List* remarks that it has been until recently a suppressed fact in connection with American manufactures that the second in importance as to the value of products is the grist mill, which it is actually first in the value of material used. The iron and steel makers produce annually $551,543,109 of manufactured products and use $319,594,000 of raw material, while the grist mills produce $505,185,000, and use $441,545,000 of raw material—that is, grain. There is of course a great difference in the number of hands employed and amount of wages paid. The iron and steel men employ 306,598 hands, and pay $17,422,000 a year in wages, while the millers employ but 58,400 hands, and pay $17,422,000 a year in wages. The capital invested in mills is $178,000,000, against $405,636,000 in iron and steel works. The value of the milling raw material, subtracted from the value of the manufactured products, leaves $64,000,000; deducting from the $17,422,000 paid for wages, we have left $46,578,000, which represents the yearly profits on $178,000,000 capital invested, less, interest insurance, wear and tear. It is over 26 per cent., while the profits of iron and steel manufacturers, whose operating expenses are much greater in proportion, and who are besides liberally protected, are less than 25 per cent., interest, insurance, etc., deducted from this. Hardly any other manufactures pay as well as those of the millers. The iron and steel men take cheap raw material and expend a great deal of labor upon it.

RECENT MILLING PATENTS.

The following patents were issued May 1, 1883.

Combined pneumatic grain elevator, conveyor and cleaner—Mahlon Randolph, Brooklyn, N. Y.
Grain Scourer—Barnard & Lowe Mf'g Co., Moline, Ill.
Grain Shovel—Michael W. Hanley, Chicago, Ill.
Grinding-mill—Geo. W. Doolittle, Kansas City, Mo.
Drop-lift for machinery—Lawrence B. Kuhle and William B. Hamilton, Lima, Ohio.
Machine for mixing flour and other substances—Philip Thorpe, New York, N. Y.
Sprocket for rope and similar belts—Jonathan Mills, Chicago, Ill.

The following patents were issued May 8, 1883:

Mill-stuff recovering machine—Drew H. Lord, Northfield, Minn.
Millstone balance—William C. Hale, Austin's Springs, Tenn.
Automatic paper-bag filler—Thos. H. Hill, Philadelphia, Pa.
Roller-mill—Nordyke & Marmon Co., Indianapolis, Ind.
Wheat and Flour Scale—Geo. M. Knight, Adrian, Mich.

The following patents were issued May 15, 1883:

Belt bucket elevator—Peter Okell, F't Madison, Ia.
Grain-car unloader—John H. Chase, Rochester, N. Y.
Conveyor for flour bolts, etc.—Charles B. Slater, Blanchester, O.
Flour-packer—Howes, Babcock & Ewell, SilverCreek, N.Y.
Apparatus for reducing grain—Henry F. St. Requier, Asnieres, France.
Grain-drying and cooling shelf—Henry Cutler, North Wilbraham, Mass.
Millstone-driver—John Dempster, Knoxville, Tenn.
Roller-mill—Jesse Warrington, assignor to Nordyke & Marmon Co., Indianapolis, Ind.
Cut-off for screening devices for middlings, flour, etc.—George Cottreal, San Francisco, Cal.
Turbine water-wheel—Cyrus M. Baker, West Waterville, Me.

Patents issued May 22, 1883:

Flour-dressing machine—Edwin R Stilwell, Dayton, O.
Flour-packer—John Handy and D. H. Lord, Northfield, Minn.
Grain-decorticator—Silas Dodson, Rochester, N. Y.
Grain-scourer and polisher—Jacob J. Souder, Washington, D. C.
Middlings-purifier—Andrew Hunter, Chicago, Ill.
" " Joseph W. Wilson, Wyandotte, Ks.
Rice-huller and polisher—Latimer S. Seaver, Boston, Ms.
Roller-mill—Sherman B. Rickerson, Grand Rapids, Mich., (three patents.)
Grain-weigher—William H. Ernst, Chase, Ks.
" " John Stevens, Neenah, Wis (two patents.)
Wheat-huller—Thomas T. Kneeland, Tecumseh, Mich.

Patents is ued May 29, 1883:

Manufacture of flour from grain—Louis Gathmann, Chicago, Ill.
Millstone dressing machine—Lewis S. Hoyt, Stamford, Ct.

Patents issued Juue, 5, 1883:

Flour-sifting machine—Hermann E. L. Bauermeister, Hamburg, Germany.
Grinding-mill—Edwin G. Hastings, Nevada, Ia.
Grist or flouring mill—Abel Mariotte, Vereaux, France.
Grain-shovel mechanism—John S. Metcalf, Indianapolis, Ind.
Pneumatic and automatic grain transfer apparatus—Lyman Smith, Kansas City, Mo.
Grinding-mill—A. N. Wolff, Allentown, Pa.

NATIONAL ASSOCIATION OF BRITISH AND IRISH MILLERS.

The annual meeting of the members of this Association was held on Wednesday, May 23d, at the Guildhall tavern in the city of London, when Mr. Samuel Smith, President, occupied the chair. There was a large attendance of members.

There were seventy present, the visitors being Major Craigie, of the Central and Associated Chambers of Agriculture; the Hon. Geo. Bain, President of the American Millers' Association, and Mr. John Ross, late President of the London Corn Trade Association; and amongst those present were:

Samuel Smith, Victoria Mills, Sheffield, President of the Association:
R. H. Appleton, Cleveland Mills, Stockton-on-Tees, President elect;
Seth Taylor. Waterloo Mills, London;
Henry Robinson, (Messrs. J. & H. Robinson), Deptford Bridge Mills, London;
George Pimm, Wandsworth Mills, London;
Peter Mumford, Royal Mills, Vauxhall, London;
W. R. Neave, (Messrs. Neave & Co.,) Fordingbridge;
S. M. Soundy (Messrs. Eisdell & Soundy), Reading;
R. Harvey Daw (Messrs. Daw & Serpell), Plymouth;
Joseph Westley (Messrs. Westley & Sons) Blisworth, Northampton;
W. E. Westrupp, Imperial Mills, London;
Jeremiah Stannard, Nayland, Colchester;
John Aizlewood, Crown Mills, Sheffield;
Henry Ibbotson (Messrs. W. & H. Ibbotson), Britannia Mills, Sheffield;
Richard Wigfull (Messrs. J. Wigfull & Son), Sheaf Mills, Sheffield;
T. W. Hibbard (Messrs. Reynolds & Co.) Gloucester;
J. A. Ingleby, Tadcaster;
Arthur Watson, Edgbaston, Birmingham;
John Heatley, Eaton Market, Drayton;
James Horsfall, Perseverance Mills, Leeds;
T. C. Greensmith, Hilton Mills, near Derby;
F. B. Nettlingham, Gravesend;
John Biggs, Bromham Mills, Bedford;
George Webster, Broxbourne;
Russell Harris, Tavistock;
Thomas Lewis, Bangor;
J. W. Rush, *The Millers' Gazette and Corn Trade Journal;*
W. C. Hepburn, *The Miller;*

The PRESIDENT, in opening the proceedings, said: Gentlemen, I am very pleased to meet so many old faces that have met together on so many former occasions, and to see my friends in such good health and with such radiant countenances, from which indications we may conclude that they have had a good and prosperous year. [Laughter.] Another year has been added to the life of our Association, I do not know that anything very extraordinary has been done in it to characterize it, but I think, on the whole, that we may congratulate each other on a fair year's work having been done by the Council as the representative of the Association. Our Secretary has prepared a report which I will now call upon him to read.

MR. CHATTERTON then read the annual report as follows:

The Council deeply regret to have to record the death of their esteemed colleague, Mr. Frederick Richardson, of the Bishopwearmouth Steam Flour Mills, Sunderland, which took place on the 24th January last. Mr. Richardson was one of the earliest promoters of the National Association, and was unanimously elected to the post of President on the 11th May, 1881. Although residing at a greater distance than any other member of the Council from the headquarters of the Association, Mr. Richardson rarely failed to attend the meetings, and his loss has been felt by all the members as that of a personal friend.

NEW MEMBERS.—The Council have pleasure in stating that the number of members has slightly increased, and, as will be seen by the accounts furnished by the Treasurer, the revenue has been sufficient to meet the year's expenditure.

BRANCH ASSOCIATIONS.—No new branches have been added to the Association during the past year. The millers of Birmingham have, however, formed a local Association in that town, which it is to be hoped will, if successfuly carried on, see the desirability of affiliation to the National.

TECHNICAL EXAMINATIONS.—Recognizing the importance of the milling industry, the City and Guilds of London Institute for the Advancement of Technical Education have acceded to the request of your Council, and have added milling (flour manufacture) to the list of trades in which they will hold examinations, and to the successful candidates they offer certificates, medals and prizes. Your Council have also, together with the assistance of a few of the leading millers and engineers, established a prize fund, now amounting to £70 16s. 6d., from which they will reward those candidates who, in addition to passing the technical examinations in milling, will also show their proficiency in science by passing certain other examinations, conducted by the South Kensington Department of Science and Art. Nearly 60 millers, foremen and Apprentices have been studying with a view to this competition

GERM MILLING COMPANY'S CLAIM.—Your Council have paid considerable attention to this claim, and can only repeat their recommendation of last year at Leeds, "That in their opinion the claim need not be regarded." Should any action be commenced by the patentees, your Council will immediately call a special meeting for the purpose of forming a defense fund to resist the claim. Many members of the Association and other millers have expressed their desire to join in such defense.

BILLS IN PARLIAMENT.—Of these three only affect the interests of millers. First—The Bankruptcy Bill; This has been considered by your Council and thought to be unobjectionable, and one that might be fairly left to be dealt with by the associated traders who more especially devote their attention to this subject. Second—The Rivers Conservancy and Floods Prevention Bill; No complaints having been made by millers as to the probable working of this Bill, if passed, your Council have not made it a subject for special consideration. Third—The "Corn Sales Bill, 1883"; This bill having been drawn up by Mr. Rankin to meet the views expressed by the various chambers of agriculture and commerce, which have discussed this subject for many years past, as well as by the milling and corn trades in 1878, has received the cordial support of your Council, and your Secretary was directed to prepare a memorandum thereon, which has been sent to every member. This Bill has been opposed by the London Flour Millers' Association (which seems to have changed in its view during the past four years) and by the proprietary of the London Corn Exchange, and a memorial has been presented to the Board of Trade. In view, however, of the declaration that no Government support will be afforded, and the congested state of public business, it is likely that the important subject of one uniform weight for the corn trade will yet be the subject of much friendly discussion before a final decision can be arrived at To assist in arriving at this conclusion, an important work, which has received the Highland Society's gold medal, is now in the press, entitled: "What is a Bushel of Corn?" wherein the writer, after examining the subject in every possible light, shows that the cental is the most desirable unit for the sale of all grain.

CORN RETURNS ACT, 1882.—This Act, although materially altering the position of millers, by dispensing with the required declaration before a magistrate, of the miller's intention to make returns of all British corn bought by him before he could be proceeded against, was passed through Parliament unobserved by any one connected with the trade, and only on its becoming law was the attention of your Council directed to it. This being a question that affects the British farmer, and all tithe payers, as well as the milling trade, your Secretary drew attention to it at the annual meeting of the Northamptonshire millers, who passed a resolution, and at the following Council meeting another resolution was passed, and forwarded to the Board of Trade. The answer thereto, and a letter prepared by your Secretary, has been communicated to the milling and farming journals, and a resolution will later on at this meeting be presented for your acceptance. Communications have been received from a leading member of the Central Chamber of Agriculture, thanking the National Association for the noble way in which they have raised the question, and at a meeting of the Council of the Central and Associated Chambers of Agriculture, on May 8, the following resolution was passed by that body:

> "This Council, while recognizing a great improvement in the re-arrangement of returning markets, and the verification of sales by weight, think the opposition by the Association of Millers to the return of re-sales justifiable, and also wish again to record their opinion that only the first sale from the producer should be returned for the purposes of the Tithe Rent Charge."

CORN TRADE CONTRACTS.—The attention of your Council having been more than once directed to the one-sidedness of the contracts in general use for the purchase of foreign wheat, a committee was formed from the three Northern Millers' Associations, and conferences have been held with the Hull Corn Trade Association. No report has, however, been drawn up yet. Your Council sent a resolution on the 12th of March to the London Corn Trade Association requesting them to alter their contracts in such a manner as to "allow of one of the arbitrators being selected from the National Association of British and Irish Millers, instead of being limited to two principals engaged in the corn trade as merchants, factors, or brokers, and members of the London Corn Exchange or Baltic," to which their committee replied that they could not accede to the request, and at the same time expressing their opinion that their contracts, as they now stand, are exceedingly wide and comprehensive.

NEW PROCESSES IN MILLING still continue to be brought forward to assist the miller as well as to puzzle him, as to what he shall adopt to meet the increasing competition. Two gentlemen only have availed themselves of the facilities offered by your Association for public discussion, and at a meeting very largely attended on the 31st July, papers were read by Mr. Chisholm on the Jonathan Mills' system of gradual reduction, and by Mr. H. J. Sanderson on high grinding by Nagel and Kaemp's system.

In conclusion, your Council would earnestly impress upon members the desirability of getting other millers in their respective localities to join the Association, many of whom it is quite certain would do so if they were only asked.

The PRESIDENT: In rising to move the adoption of this report, I must ask your permission to refer to the loss which the Association has sustained in the death of our departed friend, Mr. Richardson. He was the most active and helpful member of this Association—in fact we may call him the foster father of it, and I am sure that there is not a gentleman present who does not regret that his face is not to be seen amongst us to-day. The report notices the fact, but I may here say that when Mr. Richardson's death was announced, a thrill of sorrow ran through the whole Association, and your Council took an early opportunity of sending a letter of condolence and sympathy to his widow and family. Those of us who had the opportunity of witnessing the funeral of our lamented friend and of seeing the very high esteem in which he was held by his townsmen, who necessarily would know him better than we did, needed no other proof that the very high regard in which he had always been held by the members of the Association was not misplaced. Mr. Richardson was always ready to do any good work. He was cut down in the very prime of his life, and this Association in him has lost a valued friend. Although my acquaintance with him was very limited, I had learned to esteem him more highly, I think I may say, than any other gentleman that I knew, for in all his intercourse with individuals and with this Association, he showed himself to be a liberal-hearted and noble-minded man, and a man of great business ability. I am sure we shall all regret that we shall look on his face no more; he has been removed from us by the order of Providence, against which we can raise no voice, but I hope that some other noble-hearted miller will come forward and step into his shoes, and will strive with his wonted zeal and wisdom to help on the interests of this Association. We have many noble men amongst us, and if his mantle would but fall upon them it would mitigate to some extent the loss which the Association has received by his death. Turning to the report, I would say that I entirely agree with the concluding paragraph, namely, that more members would join if they were only asked. We cannot ask many more in Sheffield, for I think that all the Sheffield millers have joined, and other places might well imitate Sheffield in this respect. The report fairly represents the work of the Council during the year. They have been most assiduous in watching the interests of the Association and in giving their best thoughts towards promoting its best interests when the opportunity occurred. I beg to move the adoption of the report.

M. HIBBARD (Gloucester): I have much pleasure in seconding the resolution. With regard to the late Mr. Richardson, I can only say that I knew him intimately, and I knew him to be a good man in every sense of the word. I sincerely hope that, as the President has said, some good miller will come forward and follow in his footsteps, for he could not follow a better man.

The report was then adopted.

Mr. ROBINSON (Treasurer) then moved the adoption of the financial statement for the last year, which showed a balance in hand of £57 0s. 9d. The members' subscriptions amounted to £222, Leeds contributing £25 6s., London £19 12s 1d., and Sheffield £16 5s. 6d. Mr. Robinson concluded by saying: This report shows our finances to be in a healthy condition. I should, however, like to see our income larger, for then we could expend more, and I believe that more money could be profitably expended by this Association.

Mr. ASHBY seconded. The question for us, he said, is to consider how to increase our income. I hope that in future many millers who are not associated with us will show their interest and their patriotism by becoming members. This is called the National Association of British and Irish Millers, but the Irish millers did not show very liberally in their subscriptions towards this "National" Asosociation. I notice that in the list from which we shall re-elect nine members of the Council there is not a single Irish miller, and that Ireland is not represented by any one on the Council. I should be very pleased to see an Irish miller on the Council for next year, and then perhaps we shall receive a greater number of subscriptions from the sister isle.

The PRESIDENT: I should not like to sing our praises too much, but when one sees the London Association contributing about the same amount as Sheffield, we are induced to ask, "How is it? And when we find Leeds subscribing more than London we may ask more emphatically still, "How is it?" We are grateful to all friends who contribute to this Association, but somehow we should be glad to see an improvement in this respect. I know from the history of the past that one gentleman declined to subscribe to the Association on the ground that he could get as much information out of *The Miller* for 5d. as he could get out of the Association for a guinea. Now that gentleman knew the value of pounds, shillings, and pence, but I may say, in the presence of our secretary and of the editor of *The Miller*, that he forgot that it is their combined efforts which make *The Miller* of so much value to the trade as it is. It is by working harmoniously, and by playing into each others' hands, that *The Miller* is able to carry so much information to those who only pay their 5d. per month for it. There is every reason why the Association should be supported as well as the newspaper.

The resolution adopting the treasurer's report and balance-sheet was then carried.

THE PRESIDENT: I rise now with pleasure on two accounts—one is, that by your act today I shall be relieved from the responsibility of the presidency of this Association. I have felt during my term of office that I was placed here not because I sought for it, not because I expected it, but on account of the kindly feelings towards me. So many friends willed it that I accepted office. I bowed to their decision. It is true that I have had no extra arduous work to perform in my year of office, but I have felt that you were not so well represented as I hope you will be in the coming year. It is somewhat of a relief when you have a pressure upon you that you can see your way out of it, and in retiring I feel that I shall be relieved from a responsibility. Because I retire I shall not take less interest in your Association; on the contrary, I shall feel that I shall work with much more freedom because there is less responsibility resting on my shoulders. I can only say that I have had the utmost help and support and counsel in every time of need from all the friends who have met me at the council, and they have helped me to bear up under the great weight which I felt to be on the shoulders of the president of this association. Men ought to consider that the milling is the greatest manufacturing interest in the kingdom, if we except agriculture, as we shall recognize when we consider that in this interest 100 millions of money are turned over every year, and the value of the plant employed in it. It is, as I have said, a large interest; it is worthy of every encouragement; it is worthy of the efforts of every miller to put it in its right place in the scale of trades and professions; and I am sure that if millers as a class only fully recognize this, they would contribute towards this Association much more largely than they do at present. (Hear, hear.) For the reasons which I have given it will be a pleasure for me to resign this chair, and that pleasure is enhanced by the confidence I feel that I shall resign it to one who will fulfill the duties of the office better than I am capable of doing. I have communicated with a gentleman whom you all know, and who I am sure you all esteem very highly. He has always been a very able supporter of this Association from its commencement, he has always been ready to contribute to all good works, and he has originated matters that have greatly benefitted the Association. The Council deliberated in their choice of president for the ensuing year, and they were unanimous in selecting Mr. Appleton. (Applause.) I could say a great deal more of this gentleman if he were absent, but I know he is a gentleman of modest feeling, and I do not think that further praise from me on this occasion would be acceptable to him, and so I shall embrace an opportunity when he is not present to tell you a little more of the esteem in which I hold him. (Hear, hear.) I have, gentlemen, great pleasure in proposing as my successor Mr. R. H. Appleton, of Stockton-on-Tees, to be your president for the forthcoming year. (Applause.)

Mr. DAW (Plymouth): I have been asked to second this motion for this very curious reason—because I live at the other end of the country to Mr. Appleton. (Laughter.) If it were necessary to select some one for this office who was unacquainted with Mr. Appleton, then I should be a most fitting person; but although I have not had the honor and privilege of a personal and intimate acquaintance with Mr. Appleton, I suppose we are all more or less acquainted with him through the milling journals. Mr. Appleton's name stands in the Association in the first rank of millers, though gentlemen living nearer to him than I do, know better than me the business ability which he brings to the management of his own business affairs. My first impression of Mr. Appleton was received from a description of the fire extinguishing apparatus in his mill; and I then thought that any gentleman who took such pains to establish a fire brigade in his own mill showed the possession of a spirit certain to single him out as fit to stand in the first rank of our milling association. (Hear, hear.) I think, gentlemen, we may consider ourselves as extremely fortunate in our presidents. First we had Mr. Alderman Hadley, with whom we were so pleased that we elected him again and again; then there was Mr. Richardson, whom we all highly esteemed; and then last, but not least, is Mr. Smith, whose qualities are well known to all of us; and I do not think that our Association will suffer in having Mr. Appleton. An expression of the esteem in which he is held went forth at the unfortunate affair when he was attacked by one of his workmen. On that occasion the Council sent him a letter of sympathy, and we all know how that letter was approved by the Association. I trust that the proposal now before you will have the hearty approval of every member of the Association, and I have great pleasure in seconding it. (Hear, hear.)

The PRESIDENT: Mr. Appleton will be the right man in the right place.

The resolution was then put and carried *nem. con.*

Mr. APPLETON (who was received with cheers): Mr. Chairman and gentlemen, I can assure you that I am placed at present in a difficult position, having to hear all the kind things that have been said of me, but in the first place I must take exception to Mr. Smith's stating that I shall be able to perform the duties of the presidential chair better than he has done, for I can assure you that one of the considerations most likely to prevent my accepting the honor offered to me was that I could not meet the requirements of the Association so well as the able presidents who had gone before me. When I think of Mr. Alderman Hadley, Mr. Richardson, and now Mr. Smith, I feel as if I should not be able to support the dignity of your Association as former presidents have done, and I

am inclined sometimes to doubt whether in selecting me you have taken the right step. Your selection of me took me quite by surprise, but since you have done me that honor I am ready to do my best to serve your interests in the position in which you have placed me. (Hear, hear.) If you look back on the last year's work of the Association you will find that, though no very large work has been done, the Association has yet worked continuously for the millers generally. The report shows that a great many important matters have come before them, and that their action will be of incalculable benefit to the milling trade. I will mention one subject that before long will demand attention, namely, the revision of the insurance companies' rates. When the fire offices settled their rates for the insurance of mills, stones were universally run in mills, and they made their rates accordingly. We all know that our large millers are gradually passing from the stone to the roller system, and the fire insurance tariff gradually will require thorough revision. Before that revision takes place I think that there ought to be some movement on the part of this Association to prepare a plan for a reduction of the insurance tariffs by taking into account the number of advanced mills with the mills in which stones are only run. We know at the last revision of that tariff the action of this Association was of the greatest importance, which showed the insurance offices that they were wrong, and a great alteration was consequently made by them in their tariffs. But before there is another revision I think that there ought to be a joint committee between the millers and the insurance offices to consider the whole question. (Hear, hear.) Then there is another subject of great importance to the milling public, and that is the interchange of ideas on the improvements made in advanced milling in the present day, because improvements are continually springing up with regard to the different plants and their arrangement and management, and if half a dozen subjects could be brought forward for discussion the result would be a great benefit to the milling public, and probably of great advantage to the Association itself. (Hear, hear.) I do not wish now to prolong this meeting, but before coming to a conclusion I will briefly refer to the death of Mr. Richardson. No one present, perhaps, was so intimately connected with him as myself, for he was my close neighbor. I was with him during the visit of English millers to Vienna, and saw more of him than I had ever done before. Our friendship ripened by this continuous intercourse, and at the end of the visit my opinion of him was higher than before, as a man of business and a practical man. I look upon the paper which he read before the Association as the best and most practicable paper ever read before the Association, and I therefore deeply sympathise with you in the loss which you have sustained by his death. I thank you again, gentlemen, for the honor that you have done me, and again I promise you that during the term of my office I will do the best I can for the Association. (Applause.)

Mr. WESTLEY moved, Mr. NEAVE seconded, and it was carried by acclamation that Mr. Robinson be re-elected to the office of Treasurer during the coming year.

Mr. ROBINSON accepted the office and returned thanks.

On motion of the PRESIDENT, seconed by Mr. WIGFULL, Mr. Downing was re-appointed to the office of auditor.

Messrs. Neave, J. Harrison Carter, Watson, and Ashby were appointed scrutineers for the election of members of the council, to supply the vacancies caused by the nine retiring councilmen.

THE CENTAL.

The PRESIDENT: Your Council have thought that it would be of great advantage to the trade if the central or some uniform standard for the sale of grain, were adopted. We hope that our efforts in this direction, not yet fruitful, will in time be rewarded. The Council, however, have agreed to the following form of petition, and ask your permission for their chairman to sign it on behalf of the Association. The petition is as follows, and may be presented to any member of the House of Commons for presentation:

"To the Honorable the Commons of the United Kingdom of Great Britain and Ireland, in Parliament assembled, this humble petition showeth that

"Whereas there exists at the present time great confusion amongst the weights and measures now in use in the corn trade, in the different parts of the country, so that great uncertainty has arisen as to the value of corn sold in the different markets, and whereas it appears most desirable that one uniform standard of weights should be established throughout the country for all dealings in corn, and whereas a bill entitled the 'Corn Sales Bill, 1883,' has been introduced into your Honorable House this session, by Mr. James Rankin and other honorable members, with a view to carry out this object; your petitioners humbly beg that your Honorable House will be pleased to pass the above-mentioned 'Corn Sales Bill,' and your petitioners will ever pray."

I beg to move that you authorize me so to do.

Mr. APPLETON: I second that motion with great pleasure. It must be obvious to everyone here that the weights at which wheat is sold throughout England is most perplexing and annoying. You can hardly go into a market fair a few miles out of the metropolis without finding wheats sold at 60, 62, 63 or 64 lbs. to the bushel, and some 500 lbs. to the qr. The state of the case is this: here we are advanced in civilization and in the 19th century, and here, in England, with all our greatness, we have no fixed weight for the sale of corn. (Hear, hear.) I think it is absolutely necessary that we should now try and get some definite weight fixed on for the sale of all our corn. Attempts have from time to time been made to see whether some arrangement could not be come to amongst the different markets in different places for the establishment of a uniform system, but it has been found that they cannot come to any definite conclusion, that it must therefore rest with the Government to fix a definite weight at which wheat shall be bought and sold. This question is now to be brought before the House of Commons by Mr. Rankin, and it is our duty to support him in the best way we can. (Hear, hear.)

Mr. IBBITSON: The London Flour Millers Association have discussed the cental, and have condemned it as not suitable for their trade, but I think if they meet us here that we could give them very good reasons for altering their opinion. (Hear, hear.) I have many times been in London with the view of discussing this subject, but the members have never thought it worth their while to come to the meetings of the Association. If we are to be so thwarted in this matter I think that sooner or later we shall have to form an association in the north, and let them come down there instead of our coming to London to transact our business. (Laughter.) Then, again, what little we are able to do in the north is undone again by the London millers, and so I think that we shall have to legislate by-and-by for our own district. "A word to the wise" is sufficient—(renewed laughter)—I am, however, glad to say that Mr. Robinson has been an honorable exception to the generality.

Mr. ROBINSON: I am glad of the compliment. I support the petition with pleasure, because although London millers can bear hard work, they are conservative in their ideas, and it is very hard to start them unless you put a golden bait at the end of the line. (Laughter.) They were not unanimous about their condemnation of the cental, but they outnumbered the rest of us who took a wider view and regarded the benefit to the trade at large rather than the interest of London millers. We can do without the cental, but on the whole the adoption of the cental system, in my opinion, would prove a great benefit to the country.

Mr. DAW: In the South of England, particularly at Plymouth, we worked hard for this cental system, and we succeeded in carrying it. We worked it for a considerable time until we found that millers near by us did all they possibly could to upset it, and sent flour into our neighborhood at any weight that was asked for. At last we were very reluctantly obliged to abandon it; and it would be no use to attempt to carry it in our neighborhood in future unless the government made its adoption compulsory. (Hear, hear.)

Mr. ROBINSON: I should like to have the question fully argued in London, because one of the arguments used here against the cental is, that it has been tried and abandoned. That is a strong argument in use against the cental.

Mr. ASHBY: It will be well to present petitions to Parliament, and so strengthen the hands of the Government another time should the Corn Sales Bill be unsuccessful now.

The PRESIDENT: I need not make any observations on the subject now, as my views have been fully made known in the columns of *The Miller*. When the question was first moved I took a deep interest in it, and I am quite sure that if the milling interest and the farmers could only be made to see the benefits of the system they would carry it through the whole country. But you cannot interfere at once with vested interests and old customs, and so long as persons in one district can sell at 60lbs., 61lbs., 62lbs., or 65lbs. to the bushel, so long will you obtain opposition to any new method. And I don't think that uniformity will be obtained except by compulsion. (Hear, hear.) You cannot get every person to see their own interest in one light. I talked on the subject with one farmer at Doncaster. I put it to him in this way:—"You sell your wheat at 63lbs., if the cental were adopted you would sell at 500 instead of 504lbs. He replied, "We should like that." But I am afraid that the interests of some of our friends in the South would be in a different direction, and they would oppose it. I have heard it stated by dealers that they don't want any uniform weights and measures, as it would put the buyer on the same terms as themselves. I don't want to say anything about the morality of that argument, but if you are buyers instead of sellers you can take your own thoughts upon it.

The resolution was then carried unanimously.

THE CORN RETURNS ACT.

MR. SOUNDY: The time has passed by when any law must be considered good because it is in the Statute-book, nor can we admit that a law is reasonable and good because it suited our forefathers. I think that both of these objections may be raised against the Corn Returns Act as amended in 1882. It might have done, and did do, for the original purpose of fixing the amount of duty which was then fixed on the sliding scale of the year 1790. Most of you remember that the duty on corn then was regulated by the price obtained for English corn in our markets. and it was therefore desirable that the first sales and re-sales should be stated in the returns made. Since that the returns have been made for another purpose—a purpose with which some of us agree and some of us disagree—I refer to the tithe rate, the Tithe Rent Charge Commutation Act. 1836. These returns were then issued for the purpose of fixing the amount that should be paid year by year by the farmers to the tithe owners throughout the United Kingdom. And at that time the average price was something like 52s. for wheat, 32s. for barley, and 21s. 3 d. & 21s. 6d. for oats. The returns that have been made since that time have tended to give to the tithe owners far more than it was anticipated would be given to them by the Act; and I think we shall see if we look carefully into it that the effect of the Act. has been that the tithe owner got in the year 1880, instead of 20s. in the pound, 21s. 10d. in the pound; that is to say, £109 17s. 9d. instead of his £100. We can very well remember that year, the year 1880, was not the most favorable to those who farmed, and that the grower of corn did not reap nine per cent. more benefit from his crop than he was entitled to look for in the price and quantity of the corn that he grew. But yet, though the price was low, instead of their paying, as was contemplated in 1836, rather under £100, through these fallacious returns that are being continually made throughout the country, these poor and unfortunate farmers had to pay £109 17s. 9d. One may ask why are these returns fallacious? And the answer is this: because these returns have to be made in 150 towns in the United Kingdom, and if you go carefully through the schedule of these towns those who know about the trade will see that they are some of the biggest markets, that they are the very centres from which the samples are brought and sold in the small markets in the surrounding districts. And besides that, a great many of them are centrally situated, as far as millers are concerned, and so a great deal of the corn that is brought into one particular market comes by rail from outlying districts, and in many cases to the price returned through re-sales is to be added not only the profits of different dealers but the cost of railway carriage. The cost of transit and the profits of dealers have all to be taken into consideration, and the poor unfortunate farmer is therefore duped to a certain amount which goes into the hands of the tithe owner. Now we object to this on the ground that it is not just (and we English love a touch of justice) in this way—the Government of the present day insisting on us in the trade making faithful returns of the corn we buy, whether we buy of the grower or of the dealer, each time that we purchase we are doing and injustice to the farmer, wherever he is situated. This is the way in which the Act provides that such returns shall be made:—

"Every such buyer of corn as is hereinafter mentioned in any town from which corn returns are, for the time being, required by this Act to be made, shall, weekly, on the last market day in the week in that town, or on any such other day as may be from time to time fixed by Her Majesty in Council, make to the inspector of corn returns for that town, at the place fixed, as in this Act mentioned, a return in writing signed by him specifying, with respect to the seven days ending on and including the day on which that return is made, the amount of every parcel of each sort of British corn bought by him in the town, whether from the producer or otherwise, and the price thereof and the weight or measure by which the same was bought, the name of the seller, and if the same was sold or bought on account of any other person, the name of that person, and if an inspector of corn returns delivers to a buyer of corn required under this Act, to make returns a notice in writing, requiring him to declare where and to whom, and in what manner, any British corn was delivered to him, such buyer shall make a return of the particulars so required in a separate statement in writing signed by him."

So you see we have no option. By this Act we are compelled whether we will or not, with a liabillity of £20 per day for every market day, if we fail to make the return. We are compelled to make the return, and yet we know that by making the return we are acting very unjustly towards those who have to pay the tithe. The returns that you have to make you will find in another clause in the Act, as follows:—

"The average price of any sort of British corn for any week shall be ascertained by adding together the total quantities of that sort of British corn appearing from the summaries of the inspectors of corn returns to have been bought during such week, and the total prices for those quantities as appearing from the said summaries, and by dividing the total prices by the total quantities as so ascertained. The quarterly or yearly average prices shall be ascertained by adding together the weekly averages of the weeks included in such quarter or year, and dividing the total by the number of weeks in such quarter or year respectively."

You see that is the way in which the corn returns are to be made. In each week the average price during the next preceding week of each sort of British corn for the whole of the towns, that for each town from which a summary is obtained is to be computed. After each quarter-day the average price of each sort of British corn during the quarter ending on the quarter-day is to be computed. But that is not so when the average is to be ascertained for making up the tithe-rent charge, for then the inspector has to make his compu'ation in this way: he has to add together the total quantities that have been bought during the weeks included in such quarter of year and dividing the total by the number of weeks in such quarter of the year respectively. Coming up this morning in the train I tried an experiment in this matter, and knowing, as one who is accustomed to the trade must know, how prices vary in different periods of the year without any special cause, I found that there was a difference as between six and one in the quantity of corn brought into the markets at different times of the year, and that in the markets of September and October six times as much English wheat is brought into the country markets as in July and August, and, therefore, as a rule, is cheaper then in proportion to the foreign. If you take June, July, and August, when wheat is comparatively scarce, and make an average with September and October, when it is six times as plentiful, divide the sum total by the quantity bought, and then divide the total by the number of weeks, you will see that there is a considerable disadvantage to the tithe payer, and I cannot conceive why the Government should have ordered the returns to be so made unless for the purpose of helping the tithe owner, which is quite contrary to the avowed intention of the Act itself. This, then, is one reason why we should protest most strongly to the Government against this Act, which is so irksome and so irritating to the feelings of the trade generally—not only to millers but to dealers in corn—and to insist that this Act should be at once repealed, and to submit that if the Government require returns to be made for statistical purposes, and for the purpose of fixing the amount of tithe rent-charge then this Act should be repealed, and that the farmer himself, or at all events the person buying of the farmer, alone should make the return. If we look at the matter carefully we shall, I think come to the conclusion that it is the grower who ought to make the return. There are now about two hundred towns scheduled from which returns are to be made. In these two hundred towns they cannot accurately ascertain the amount of corn grown in this country. Some may say that there will be disadvantages to some persons on whichever system the returns are made, but it will be a great advantage to the country if the Government ascertained correctly the description of corn absolutely grown in these islands. For statistical purposes the only way that the Government can possibly correctly ascertain the amount grown is to get their returns from the growers themselves. The moment that the corn gets into the hands of the dealers the same corn is turned over and over again, the farmers get mulcted, and the Government are deluded by the statistics which they get. I now move the following resolution, and ask that it may be sent to the President of the Board of Trade, signed on our behalf by the president. Mr. Soundy then moved as follows:—

"That whereas by the Corn Returns Act, 1882, millers are called upon, subject to a fine of £20, to make returns

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of all British corn bought in certain scheduled towns in England, whether bought from the producer or otherwise; and whereas such returns, originally required for other purposes, are now, under the Tithe Commutation Act, used for fixing the Tithe Rent Charge, and also for statistical objects, this meeting is of opinion that the Corn Returns Act, 1882, is vexatious to the trade, and should be amended for the following reasons:—1st. That owing to the corn bought by millers being in many cases purchased from dealers, and therefore bearing several profits, in addition to railway charges, the value of the Tithe Rent Charge will be considerably increased to the prejudice of the tithe payer. 2nd. That for statistical purposes the returns prepared by the Board of Trade will be even of less value than at present, because (*a*) more returns ef re-sales will be included; (*b*) the apparent quantity of corn sold will be increased, and (*c*) the prices realized for British corn will give a false value to producers' profits. And that the Act should be amended by requiring returns to be made by the producer only."

Mr. ROBINSON: I shall be very glad to second the resolution. I have been brought up with the idea that tithes are very wrong, and I suppose that idea will always remain with me, for it has been burnt into my bones. I have very little to say on the subject after the speech which you have heard from Mr. Soundy, who has put the points most clearly before you. The only good that I can see in these corn returns is that they are of some statistical good, enabling the Government to ascertain the annual produce of the country, which is an important thing, and more important perhaps to millers than to any other body. But with regard to tithes, I think that they are wrong altogether. I am somewhat of a farmer as well as a miller, and I speak as one interested in the matter of these returns. I do not see quite how accurate returns are to be made. If a farmer only returns his sales of corn, then the returns will not show the produce of corn in the country, for all his offal corn and tail corn he will use himself or give to the pigs, and this will not come into the calculation at all. I do not pretend to say but that there is a charge upon the land in the shape of tithe—there is an ownership belonging to someone which I maintain belongs to the nation in the shape of tithe, but I won't enter into the general question further. All that we contend is that the statistics founded on these corn returns are fallacious in the extreme.

Mr. SOUNDY: Since I knew that I was to propose this resolution to-day I have made some inquires amongst farmers in different neighborhoods. In 1880, when the land tithe charge was £109, one gentleman said he sold 100 quarters of barley, whereas in average years he sold 300 quarters for malting purposes. The 100 quarters he sold at 36s. and the remaining 200 quarters he used, and therefore they never appeared in the returns at all, and I knew he estimated their value at 23s. per quarter. Now, if he had brought those 200 quarters on to the market and got them put through, he would have reduced the average price of his barley something like 7s. per quarter. Another gentleman told me he usually sold 400 quarters of wheat from his farm, but in 1881 he only sold 50 quarters, which I bought of him at 38s., 60 lbs. per bushel; the rest, he said, he could not bring into the market, and that if I saw it I should say it was only fit to put down in the yard. He had ground it and given it to the cattle. But even the amount of corn that he had returned only went to add to existing fallacies in the Government return for the country. It is easy to get a number of such instances, and I cannot do other than urge upon the farmers to bring all their tail corn into the market and by it back again.

Mr. STANNARD: I suggest that after the words "in addition to railway charges" in the resolution, we should insert the words "sea and canal charges," because we have very often these to pay in addition to railway charges. It is so in my district.

The PRESIDENT: Would not the words "rail way and other charges" meet the case?

Mr. STANNARD: Yes. So far as statistics are concerned; if farmers made the returns we should know better what was actually grown, and the Government would be better informed. So far as the farmers are concerned there would be no difficulty in getting this done. The only question would be with regard to unsold corn. How would the farmers return what they had never sold? We should have them estimating their unsold barley at 24s. when it was worth 30s. Their returns of the value of unsold corn would not be accepted by any Government. If there were more market buildings, that would help matters very much. At present the Government is deceived by requiring a second return of the sales of corn.

Mr. ASHBY: It makes one's blood boil to consider this tithe question. I am old enough to recollect the time when the rent-charge was in lieu of duty, and see how it was then collected. The vicar, or tithe owner, used to collect his tenth—of corn he took his tenth sheaf, and in so doing took things as they came, the good with the bad, the damp and the tail. He had to cart it away, and thresh and sell it; but now things are quite changed, and all that is done for him. Now he gets the head, not the tail nor the damp; it is carted away, threshed, and ground, and converted into money, and the money handed over to him. But legislation on this question is all of a piece, as anyone will see who studies the Acts of Parliament passed since the time of Elizabeth. It is all one side; it is all the question of the man who is going to pocket the money arranging with himself how much he shall pocket. Then, if we consider the question from a statistical point of view, and ask the farmer to return the prices which he gets for his corn, we shall be departing from a sound economical principle, for it is not a sound principle to make a man return the details of his own trade accounts. It is, therefore, not practical to make the producer return prices which he has obtained for his produce. The returns should be confined to the actual purchasers, and the average of tail corn every 10 years should be deducted from the prices settled as the average. The tail and bad quality, the cost of rail and carriage, the mode of arriving at the average, as specified by Mr. Soundy, must all make an enormous difference; and in addition to these there is the fourth question to be put before the Government, viz., the injustice done to the farmer by the present mode of taking returns.

The PRESIDENT: It is very evident that the question of tithes is not agreeable to anybody. I remember when tithes were taken in kind that a farmer who was not on the best terms with his incumbent sent word to him that he was going to pick-in apples that day, and he must come and take his tithe. The reverend gentlemen came, and was taken into the orchard. The farmer picked nine apples, and told the reverend gentleman to take his tithe off them, for that was all he was going to pick that day. Well, that was a case of difficulty for the clergyman, who probably thought that the farmer was not well disposed towards him. The question is a large one, and if I had the ability I should shrink from discussing it in a meeting like the present. A clergyman discussing the tithe question quoted from scripture to the effect that the tithes were brought to the storehouse; but the gentlemen who objected to tithes said: "Yes, they were to be brought but not to be fetched by Act of Parliament," and added, "if you will wait until we bring them it will do very well for us."

The resolution, as amended by Mr. Stannard, was then carried.

ELECTION OF THE COUNCIL.

The ballot papers for the re-election of nine gentlemen to fill the places of the members of the Council retiring by rotation were then distributed.

The President read a letter from Mr. J. W. Mullin stating that he was leaving the country, and that it would be undesirable to re-elect him.

THE ANNUAL DINNER

was held at half-past six, in the Guildhall Tavern, the president in the chair, and covers were laid for 62.

The customary loyal and patriotic toasts having been duly honored,

The PRESIDENT said: We have now arrived at a toast which concerns ourselves, which we therefore call the toast of the evening. I wish the toast were in abler hands, but as all our friends knew I have the interest of the Association at heart, I don't think that I can say more now than I have previously said—namely, that so long as I live I shall be willing to make any effort to contribute towards the benefit of the Association. I can only say that during my time of office I have received the greatest courtesy and kindness from all my friends, who have taken me by the hand in a manner that I could not anticipate, and have rendered me every service, so as to make my year of office as light as possible. I beg to thank you, gentlemen all, for your kind offices, and to propose the toast of the "British and Irish Millers' Association and local branches," coupling with it the names of Mr. Seth Taylor, Mr. Westley, and Mr. Ibbison.

Mr. SETH TAYLOR: I am unworthy of the honor of being selected to return thanks to the toast to our noble selves—though I do not think that we need be ashamed of ourselves. With regard to the work of the Association, what it has done recently we are all current in, but we have to thank the executive for the great labors and exertions of years ago. An association of this kind is I think, mostly valuable for exceptional work and for occasions of great emergency. We have not every day work sufficient for such an Association, and if the Association is constantly engaged in the consideration of minor details, then we run the risk of lowering its value. But there are important questions which sometimes crop up at short notice, when an association is able to get more fair and equitable terms for the trade as a whole than we could as individuals, and then its value becomes apparent. I represent the London branch, and we hold our meetings at hours to suit our country friends, but at hours when the members cannot conveniently be present. There was a meeting here this afternoon, and I must congratulate myself on being absent, or I might have had my appetite spoilt by some of the references made to London members. I do not wish to introduce business matters, but I am told that some important subjects were discussed at this afternoon's meeting. First of all the Corn Returns Bill, which has engaged so much attention. As returns are made now they are not only useless but worse, they are misleading. Wheat is sold two or three times over—the same parcels I mean—and as to the returns giving any idea of the yield of the country that is quite beside the question. I quite agree with those who have already discussed the question, that it is unfair to pay tithes plus the cost of carriage; to reduce the practice to that point of absurdity which would make it appreciable to the official mind, we might go one step further and add to carriage the cost of converting the corn into flour. If the returns were made by the growers we should get returns from the whole country and not from a few towns as now; and then the returns would be useful for the purposes of the tithe, and most useful for statistical purposes. With regard to the other question, the new Sales of Corn Bill which Mr. Rankin was to have introduced into Parliament to-day had not the House of Commons adjourned on account of the Derby, I know that I am in a minority here with regard to the views that I hold. I rather fancy that my friends in considering this question are inclined to confuse two distinct matters, namely, the desirability of adopting a uniformity of weight in the sale of corn, with the desirability of adopting the cental system. There is a great deal to be said in favor of having uniformity of weight, and the cental system is getting all the benefit of the arguments that should be used in favor of uniformity in weight only. If uniformity of weight is adopted, such system should be adopted as would be of the least inconvenience throughout the country. The imperial quarter of measure for wheat now in force in different parts of the country, so far as the London Association is concerned, should have received their support. There is a sweet simplicity about the cental, but] there are difficulties in the way of the fantastic and fantastical things which attach themselves to the cental system. To be by no means exhaustive I will give you a few illustrations. The cental multiplies figures very much, and unless we go in for decimal figures and weights throughout the country the cental will only add to the existing confusion. I am by no means an advocate for large numbers. When I hear a Frenchman talking about millions of francs, I would rather talk about hundreds of thousands of pounds, the idea is simpler. Instead of millions of bushels, I would rather talk of thousands of quarters, and, to my mind, calculations in quarters are much simpler and more easily grasped. I think if the country were polled from north to south that you would find more objection to than in favor of the system. If the cental will do for corn it will do for other trades as well—take coals, for example, if we had the cental and a man wanted four tons of coals at 25s. per ton he would have to order 90 centals at 14½d. per cental—and I think after a little experience a man would much prefer to have his bills made out in the old style. If, as I have said, the cental is good for corn it is good for other trades as well, and I do not see why the corn trade should be called on to "bell the cat." The process of calculation of wheat by the quarter is now well known, and the importation of the newfangled cental would only be to "make confusion worse confounded," instead of introducing greater simplicity into our system. Then, again, with regard to statistics, all our official returns with regard to the growth of our imports are based on the quarter, and why we should throw over the old lines without good reasons being shown to the contrary I have yet to learn. The Lon-

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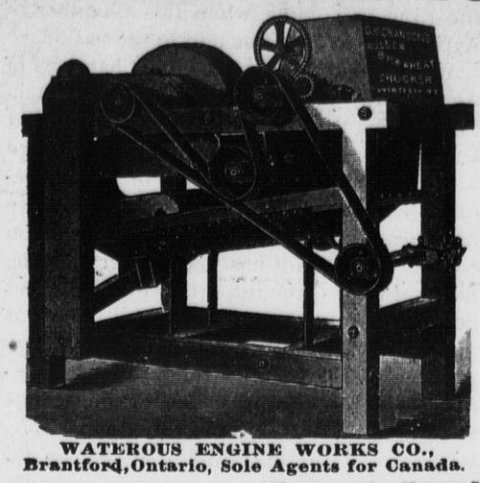

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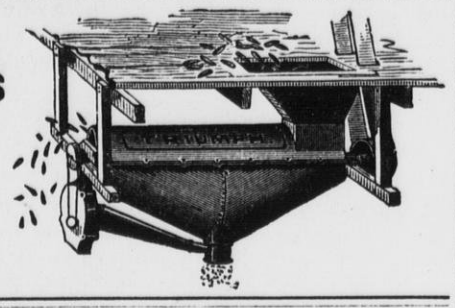

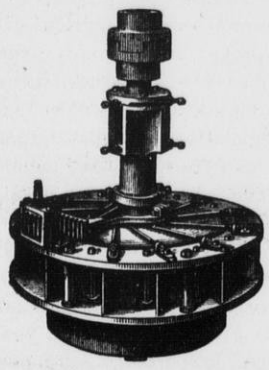

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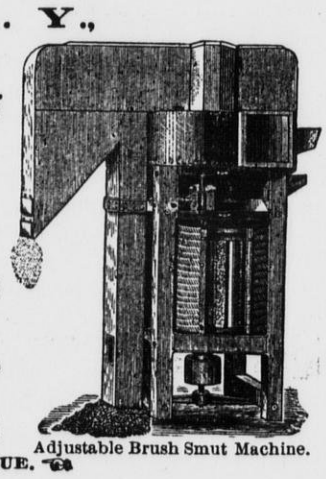

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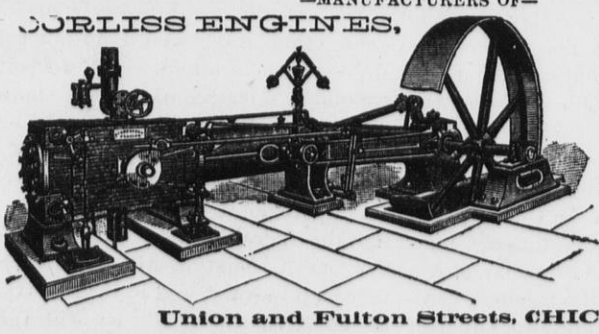

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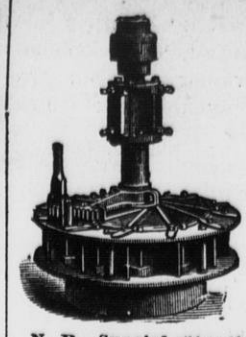

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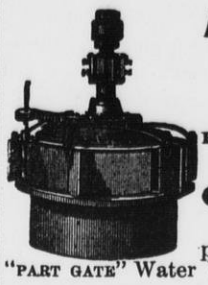

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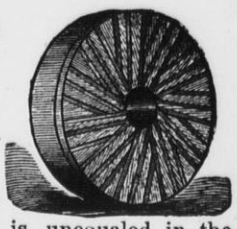

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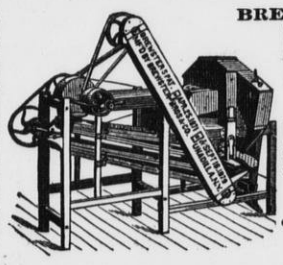

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don corn trade has taken steps in antagonism to the adoption of the cental system. The oat and barley trades are still stronger against its adoption. Oats vary from 44 lbs. to 32 lbs. per bushel—oats are sold at per bushel, and it would be inconvenient to sell at per cental, for then some sacks would be only two-thirds full, and others would, if possible, be more than full. Then, with regard to sacks, if the cental were adopted we should have to alter our denomination of sacks of flour—smaller packages, would be introduced, and, where a large trade is done, an additional outlay in sacks alone of several hundreds a year would be necessitated. The more packages you have of necessity the more you will increase the cost. The smaller the number of sacks that you have to provide, the greater the economy. Then take the charges on returns of empty sacks, the greater the number of sacks the greater the charges under this head of trade expenditure. These I think are the principal reasons that I can now put forward as objections to the introduction of the cental, and I think that many of those who have been fascinated by its apparent simplicity will take a different view of the question after considering it a little further.

Mr. WESTLY: I represent one of the small branches of our Association; I am sorry that we are not larger, but I have done the best I could to induce others to join and to form other local branches. I am glad to say that Birmingham has an association, and I hope it will be successful. I had hoped that Oxford and Banbury would have formed one. I went over to Banbury and attended a meeting, and though an association has not yet been formed there, I hope that one will be before long. Now, in regard to the cental system we know that Londoners do not see the question as we do. We think it would be a very good thing for the trade if we could have uniform weight of some sort. If not the cental, then we will take the best we can get. In our district we have very little difficulty. We buy 62 lbs to the bushel for wheat, the same as here in London—as for the cental I do not see any difficulty about its adoption. The smallness af the quantities would not make any difference in calculation if we have five centals to the quarter, as in Liverpool. It is no more trouble in Liverpool to say so many centals than to say so many quarters in London. The adoption of the cental would be a great benefit to the farmers, though not of so much benefit to the dealers. It would also be a great benefit to millers whose wheats came in any weights. I have heard friends say that one lot of wheat has come in to them in five or six different weights, and it is a difficulty with them in mixing wheats at 54, 60, 62, 63 lbs. to the bushel. It would be better all round to have one uniform weight to the bushel, and the Government should compel it. Nor would there be any great difficulty about the sacks; if the sacks now in use were not quite right, they would soon come right. I wish, gentlemen, that we had more branch associations in connection with the National, so that we should have a better income and do better work.

Mr. IBBITSON: If Mr. Taylor would only come to some of our markets in the north, he would find himself converted into a Babbage Calculating machine before he could readily deal with our trade.

Mr. TAYLOR: Are you arguing in favor of a uniformity or of the cental system? I am, as I have said, in favor of a uniform system.

Mr. IBBITSON: Both.

Mr. TAYLOR: It will be better to keep them apart.

Mr. IBBITSON: I do not see why the cental would not do for other trades as well as corn—it is as easy to order so many centals of coal as so many tons. With regard to the sacks, the best plan will be to charge for them. We in the north have looked very carefully into this question, whilst London millers have not had time to give to it—they are so busy getting rich, that is the secret. The meeting of this afternoon was nearly unanimous in favor of the cental, and if it was only adopted there would be a great saving of wear and tear. We in Sheffield intend "dogging" at the question, and to do our duty by the National. If we cannot get the "dog to wag the tail," we must get the "tail to wag the dog."

Mr. STANNARD: We may not quite fall in with the views of our northern friends nor with those of Mr. Taylor, but whenever I have explained the question to the farmers in my district they have come to the conclusion that it would be the best thing for them to adopt the cental system. If you let the farmer know that five centals will go to the quarter he will invariably say, "I am satisfied," although before he opposed any change. The farmers oppose change from a suspicion that we are going to take advantage of them. Mr. Taylor spoke of the inconveniencies of selling by weight.

Mr. TAYLOR: I do not take exception to selling by weight. We might have an imperial quarter of weight as a standard.

Mr. STANNARD: Now we have 492, 496, 500, 504 lbs. as quarter; why cannot we simplify matters, and have 500 lbs. as a quarter, and sell five centals as a quarter?

Mr. TAYLOR: That is a new idea.

Mr. STANNARD: It is no new thing in America. If you make five centals a quarter the difficulty about sacks will be got rid of. There is no difficulty about having a weight standard. You get from California and Dantzic 500, St. Petersburg 496, Odessa, 492, America, 480 lbs. to the quarter, and other standards from other places too numerous to mention. If you adopt the five centals (500 lbs.) to the quarter you will simplify matters so much that people will be able to understand them. In two or three local markets on the east coast you ask the price per 10 lbs., per 5 qrs., per 12 lbs. The next man comes up and he asks 50s.; the next man, and he asks 25s.; another comes up and he will sell per stone. At Ipswich and Bury you find everything almost sold by the 18 stone. You go from one market to the other, and you hardly know what you are doing; in the same market even you get different weights. It would be fair to all if we got one uniform weight. If there is no other difference in the things, you have only to judge the quality and decide between them. With uniform weight you get your weight and quality. Now, it is very often trying to the patience to find the great differences that there are in corn from the same wagon. I have had as much as 36 lbs. difference in the weights of two quarters out of the same wagon; I have been assured that both came from the same heap, and I can well believe it. Mr. Taylor would not be able to sell all the flour he does if he had to buy in this way. I cannot see that the adoption of uniform weight would put Londoners to any inconvenience, unless indeed it made the matter too clear for them. I have stated facts which can easily be confirmed by any country miller, and I could easily bring witnesses before a committee of the House of Commons to establish them.

Mr. TAYLOR: All Mr. Ibbitson's and Mr. Stannard's arguments have been addressed to the question of uniformity of weight, and they are in accordance with what I have stated. Only what I object to is that the denomination should be the cental. The London Association is quite agreed as to the desirability of there being uniformity.

Mr. HULTON: In North Hants we buy by measure. In some seasons 254 lbs. would go to a four bushel sack. One thing, however, is certain, you cannot move the farmers in our district; they have been in the habit of buying by measure, and you will not get them to sell by weight instead of by measure, unless an Act of Parliament compelling them to do so were passed.

Mr. STANNARD: Some difficulty has been made about the weight of a sack of flour if a change were made. I maintain that it would be a very great convenience for a sack of flour to contain 250 lbs. instead of 280 lbs. If you were to take 30 lbs. off a man's back you would get a great many men to offer for situations who do not offer now. 250 lbs. per sack of flour, 500 lbs. per quarter of wheat, would be a very good change. Then about the old sacks—they would come in very well; there need be no sacrifice on account of that change. If a sack held 250 lbs. instead of 280 lbs. the extra number of sacks would not amount to very much. On the other hand men would take less wages that carry sacks of 250 lbs. than sacks of 280 lbs.

The PRESIDENT: I am glad to find that Mr. Taylor is very much nearer in his opinions to those who advocate the cental than I had anticipated, especially after reading the memorial published against the system. This is not the time nor the place to go thoroughly into a question of this kind, especially as it has been thoroughly threshed out in the milling publications. If Mr. Taylor will give us uniform weight, we shall have no great difficulty about converting him to the cental, for I believe it to be a corrollary, and that it would follow as natural as life. Mr. Stannard has put it to you that you should have your sack of flour 250 lbs., and your quarter of wheat 500 lbs., and those who have read the letter which I published in *The Miller* on this subject, will know my opinions, which have not changed. It is a difficult thing to get men able to carry 20 stones of flour, but if the sack were reduced to 17 stones 12 lbs. you would get ten men offer to do the work where you get one now.

Mr. TAYLOR: You must not talk about "stones" but centals.

The PRESIDENT: We may get to centals by-and-by. Only one other remark. Reference has been made to Liverpool. I dare say if Liverpool men were asked to go back to the old weight and practices that they would laugh at you. That is an answer to Mr. Taylor's arguments about the difficulties of adopting the cental. The Liverpool people found that by its adoption they could carry on their business with greater ease, and if we could buy at Hull, in London, and from the farmers on the same system, the conduct of business would be as simple to us as it is to them. It is true that there is a table of weights that you can study. If a man goes into the market to buy 50 parcels of wheat at these various weights, he has to look at a book, and while he is looking another man comes in and buys them.

Mr. TAYLOR: The best man wins.

The PRESIDENT: We cannot all be clever mental calculators. I should like for us to have the fullest information on this subject. I do not care if the bushel is fixed at 63 lbs.; but if it is fixed at 63 lbs., I say let us have the cental--250 lbs. for a sack. I have studied the question, and in my opinion the adoption of the cental would quite revolutionize the trade. Some of our millers, especially the Yorkshire millers, who are so tortured now, would live longer for the change. At all events we should bring our flour to one uniform weight, even if we bought our wheats at different weights.

The PRESIDENT announced that the scrutineers had made their return of votes for members of the Council, and reported that eight votes each were given for the last three. The return was as follows: Mr. Ibbitson, Mr. Marriage, Mr. A. E. Shackleton, Mr. W. H. Dawe, Mr. Peter Mumford, Mr. Jonas Hadley, Mr. Morton, Mr. E. Appleby, Mr. T. W. Hibbert, and Mr. E. Richardson. As only nine could be elected, the tie between the last three raised a little difficulty.

Mr. ROBERTSON said that Mr. Jonas Hadley would not be able to attend the meetings of the Council.

Mr. DAWE said he should be unable to come from Plymouth very often to attend Council meetings, and all difficulty would be at an end if his name was struck out.

After a discussion, it was agreed that Mr. Jonas Hadley should be communicated with, and if it was true that he would be unable to attend the meetings of the Council as stated, to allow his name to be withdrawn. On his withdrawal the other gentlemen named will be the newly elected members of the Council.

Mr. SOUNDY: It is with pleasure that I now rise to propose a toast to the "Central Chamber of Agriculture," and at the same time I have great pleasure in coupling with that toast the name of Major Craigie, who is one of our guests here to-night. Unfortunately for me I know very little about this Chamber of Agriculture. I believe it is rather an aristocratic institution, and being a bit of a democrat myself I do not know much about it. I am, however, very glad to find that this Central Chamber has taken a lively interest in the Corn Returns Act, and all I can say is—and I say it most heartily—that any association which takes up that question as it ought to be taken up, deserves our warmest support. I could suggest one note for them to play on their fiddle—a note that we have not yet brought into our discussion—and that is that at the present time those of us who make returns have often to make returns of an imperial quarter, as we call it. It is estimated that that is 480 lbs. of wheat, but it is not infrequently that we buy 520 lbs. for this imperial quarter; and if you take that into consideration in making up the tithe rent-charge, you will see in the returns that the farmer is credited with receiving a certain price per quarter of 480 lbs, instead of 520 lbs. which he actually sells. And you can work out for yourselves how this goes against him, and in favor of the tithe owner. The object of this Central Chamber of Agriculture is to promote agriculture throughout the country, to assist people in a knowledge of the scientific principles of farming, and to advise them in all that will promote the welfare of agriculture. The welfare of landowners and tenants should be the same, but unfortunately landlords and tenants cannot always see with the same eyes. As a small farmer I cannot see the same as my landlord as to the value of his land. But if this Central Chamber, being, as I have said, somewhat aristocratic in its connections, works principally in the interests of the landlords, yet if it works along side of—though sometimes in opposition to—the Farmers' Alliance, the time will come when this Chamber of Agriculture will be a benefit to the nation.

Major CRAIGIE (of the United Chambers of Agriculture): I have to thank you very much for drinking this toast, and to assure you that I have the greatest pleasue in attending here to-night to meet the members of an association about which for the past few years we have heard so much. Since this Association has been formed it has taken a very leading part in two or three important questions that affect not millers only, but on all questions that affect the raising and disposing of the produce of the soil. I refer to such questions as the corn returns, and to the weights and measures to be used in selling corn. Mr. Soundy, in proposing this toast, said he did not know much about chambers of agriculture. I hope he will soon know more, for I should very much like to make his further acquaintance. We do not at all desire to be regarded as an "aristocratic" association, but with regard to agriculture we claim to be quite catholic—as we claim not only to belong to landlords but to tenants. We try to represent fairly not the interests of one section but of the whole body, and I am sure that the landed interest—landlords and tenants—is one that the gentlemen I am addressing have closely at heart, for I cannot but suppose that milling is closely connected with agriculture. Not only in this country but in many other countries for the past few years agriculture has been under a cloud, and therefore, as a society watching legislation in Parliament, we have had to keep our eyes more than usually open to the influence which present legislation may have on the future. It has been my duty, almost my privilege, for many years to examine every bill, whatever it may be, that has entered or left the House of Commons, and for the last twelve or thirteen years every bill of every description has passed through my hands for the purpose of seeing whether it in any way affected the interests of agriculture. The Corn Returns Act, I may assure you, has received attention at our hands. The Act as it is now was intended merely, as many of you know, as a re-enforcement of an original law which got into disuetude, and it was put in force and carried by the present Government rather for the purpose of getting over present difficulties than as a final settlement of difficulties. We have raised, and the millers have raised, doubts as to the correctness of the corn returns published in the *London Gazette* as representing the produce of this country. Mr. Taylor this evening has carefully pointed out that these returns do not represent, nor do they indeed claim to represent, the value of the produce of this country. But what they do is to represent the value of the produce which is bought by the consumer. Originally these returns were established when the duties were on the exportation of corn, the object being to get the price that the consumer had to pay after the corn passed through the markets, the Government wishing to know what price was obtained for it. This should be borne in mind by those who study this question. But things have greatly changed since 1835, and as a matter of statistics these returns are not now nearly so accurate as they were when originally framed, and do not form any criterion of the value of the produce of this country. If the Government look for an accurate return—and any return would be valueless which was not accurate—they must get it in some other way; and I do not think Her Majesty's Government could do better than appoint a select committee to inquire into the best mode for taking these returns, and before this committee members of the chambers of agriculture and of your Association could give most valuable evidence. I hope that the agitation raised by our Chamber and by your Association will pave the way to a thorough inquiry, and in that case the Chamber of Agriculture will act with the British and Irish Millers' Association to get a thorough revision of the Act if it can be done. Uniformity of weight and the adoption of the cental is another matter to which our Chamber has given great attention. Thirteen years ago we had a proposal before us, and although there have always been minorities against any change whatever, the great majority of us are in favor of a change which this Association generally approves, namely, the institution of a uniform weight and of a standard measure for the sale of corn. We have carried a resolution in favor of that change, which I hope will hereafter prove of value in urging the Government at no very distant date to deal with this subject. Of course you cannot expect to see any such change carried

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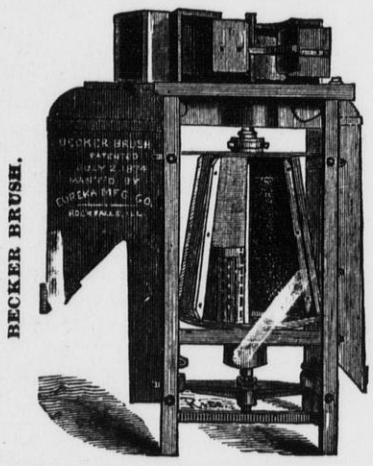

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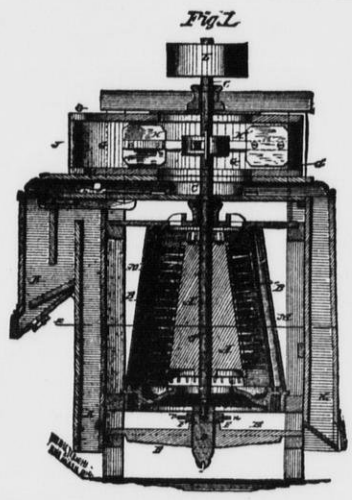

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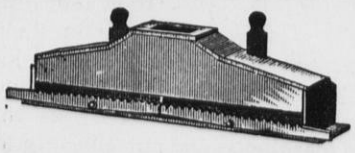

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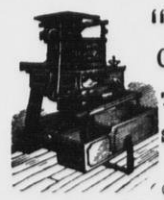

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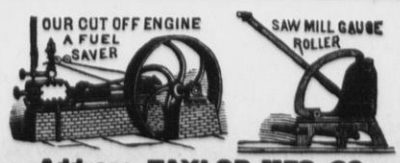

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out at once, and the question is not one on which you can expect Parliament to legislate the same year in which a bill is introduced. The question doubtlessly must be discussed, and there is no place like Parliament for discussing such a subject. I am sorry that the adjournment of the House over to-day has deprived Parliament this session of the opportunity of discussing this question. For my part I doubt if you can have uniformity in weights and measures without compulsion; and I am bound to say that the majority of gentlemen with whom I act like the cental system. It is with much pleasure that I have heard the arguments adduced here to-night, for I am sure that I shall carry away much instruction. If at any time the Millers' Association need the support of the Chamber of Agriculture we shall be glad to co-operate with you when we can, and lend our experience to so important a body connected with one of the most important trades in this country.

Mr. PETER MUMFORD: The toast which I am entrusted to propose is that of "The Corn Trade Association." This Association is composed of many excellent gentlemen who have conducted its affairs for some years. The Association has been in existence five years, I think, and has taken an interest in subjects which, if adopted, would be of considerable advantage to us. The adoption of the cental system has been before them, and the question of contracts is one which we as an Association might bring before them. It is well known to most of us that we have to buy corn on forward contracts, and the shippers are able to do pretty much as they like with us. A great many are honest men—millers are particularly honest men—but we have to bear all the damage in the transit of wheat from America, whereas we have not to bear sea damage from the Black Sea. We run considerable risks under the most favorable circumstances, and we ought to get rid of this one if we can. This is a subject which might be brought before the Corn Trade Association, and in which the Association might assist us.

Mr. Ross: I had the honor of being elected the first president of the Corn Trade Association; it was at first difficult to bring discordant elements into harmony, and form the Association on an independent basis, but ultimately we succeeded. The question of contracts received a great deal of attention during the early years of the Association, but the committee could only take into consideration contracts entered into on the general basis on which the trade was carried on at that time. There were settled rules. The Black Sea trade was done in one way and the American trade was done in another way, and the contracts were entered into in accordance with the views of those representing houses in the various trades. It is for Mr. Mumford and other great buyers to combine and alter the principles upon which the trade is conducted, and if they will make up their minds and communicate with the Corn Trade Association, we shall be happy to consider their views. It is for buyers to dictate to sellers; if they do not like the terms of sellers they must say so, and sellers generally find means of accommodating themselves to their customers' views.

MR. ROBINSON: In moving the next toast, "The National Association of Millers of America," with which I have the pleasure of coupling the name of the Hon. George Bain, I desire to acknowledge the very great courtesy which I and my brother millers received from his hands during our American visit. I met Mr. Bain in Cincinnati three years ago, and as he knew that I came there simply to spy out the land, he gave me a much stronger welcome than I had any right to expect. From the model of the American Association, of which Mr. Bain has for years been the president, we have formed ours, and I am sure that you will all give him the most hearty welcome.

The PRESIDENT: I am delighted that Mr. Bain is amongst us to-night, and that we may be able to return a little of the kindness and courtesy with which he received the English millers who visited the Cincinnati exhibition of milling machinery. Mr. Bain was the life and soul of the exhibition. We cannot show him the extent of courtesy which he showed us, but if he will come to Sheffield and spend a few days with me he will find that we have a sound heart at the core, and we will give him a hearty welcome.

The Hon. GEORGE BAIN: I thank you heartily for the kind way in which you have proposed my health, though I think you value too highly the little that I was able to do for you when you came across to our exhibition. We had not the chance of showing you half enough. Though I had some 600 or 700 people to look after I did what little I could for you, and I am glad that my efforts were so appreciated. I have been in this country some two weeks, during which time I have received many pressing invitations to visit mills, but I have not yet put my foot in one of them, and for this reason—in these days of change I was afraid to go into a mill for fear that I might learn something. I read nearly all your speeches; I get *The Miller;* I have great respect for the gentlemen who run it; I read nearly all that is said in it, and I had made up my mind that you had gone quite ahead of us. As a Scotchman, I have been conservative, but latterly I have been taught that the world don't stand still, for whilst the millers of the United States have been going on, I have been following the lead of the English millers and standing still. I have learnt better lately and have gone ahead, and I think it would be good for all of us if we were to visit each other's mills more, and I know from late improvements that there is much to be done to make milling a greater success in the future than it has been in the past. Within the last few days I read in *The Miller* a communication from a gentleman saying that better flour was offered in some town in Ireland than was offered by American millers, but that the people preferred the other, whilst the Irish milled flour was the best. Now, that seemed strange to me. If the flour that you make is better than our own it will be preferred; if we make better, depend on it we shall be your competitors. Depend upon it we have more than sufficient milling capacity in the United States to last us ten times over, and of course we have to find a market for our surplus. I think that the Britishers are too large-hearted and too much imbued with the spirit of free trade to allow any one to get away with them if they can possibly avoid it. Now, we are going to fight you—that is quite confidential—and you will want to get all the improvements you can with which to fight us. We have no bad feeling whatever against you, we like to see you worrying about your centals and 480 lbs., they don't worry us. We like to hear gentlemen from Chambers of Agriculture informing you of corn returns, we have nothing of the kind with us. We make flour, we send it here and we make money.

Mr. HIBBARD; In proposing the toast to "Mill Engineers," I do so with sorrow that any milling engineers were ever invented. If we had been content to go on as our forefathers, listening to the music of our stone damsels trotting around, we should have had none of the worry which now besets us. Our mill system is in a transition state; mill engineers bring new systems forward, and undoubtedly that which is proved to be the best will prevail. But which is the best? that is the perplexing thing for millers. So far as my experience goes, for foreign wheats the roller system is a necessity, the product being so very superior. In this country we have some of the very best of the mill engineers, and I believe that the friction of brain against brain, and competion, will bring everything out all right.

Mr. J. H. CARTER: We do feel the friction, but I can assure you that I feel the friction of having to make a speech far greater than the friction in setting up a roller plant. Mr. Bain has just told us that America is going to fight us. We mill engineers are joined with you, you admit us to your Association, and the reason why you allow us to be members is that you feel as Mr. Bain feels—that there is a fight going on, that there is to be a fight in the future, and that you look to us to carry on that warfare. We are members of the same army, though of a different regiment; our duty is to supply you with the best machines we can and receive your suggestions for improving them, but do not think that any flour coming from any one continent is going to stop your manufacture? You must know that this country owns a great proportion of the ships of the world, our merchants send them to every part, and do you think that they are going to come back here in sand and ballast when they can get grain cargoes? No, they will bring back wheat, and that wheat will be manufactured into flour by you, if you keep up your machinery to the highest point of excellence as you are now doing. If the people of India and other countries cannot get one price from you, they must sell their grain at a lower. A straw will show which way the tide runs. There is a gentleman here from Calcutta, a manufacturer of wheat bags, and he told me that he has ordered £30,000 worth of machinery for the manufacture of bags in which to send Calcutta wheat here—which you will manufacture into flour. There is no occasion for members of this Association to suggest that you should spend money more liberally, for you have spent money without stint in improvements; but there are millers outside of this Association, and I should like to see them doing their best to keep the excellence of the manufacture of flour up to the highest point. It is as impossible for them to think of competing with America with the old machinery, as to think of winning the Derby with a dray horse.

Mr. SNYDER, in the absence of Mr. Stewart: I am over here from America to argue with the weapons which Americans themselves use. I think that, with their bravery and intelligence, British millers will be able to make a good stand before Mr. Bain if they are armed with Mr. Bain's weapons. We propose to let you have his weapons for you to fight him with.

Mr. B. CORCORAN: I do not think that American machinery is altogether fitted for English milling, for in English country mills the process must of necessity be with the millstone, and the whole process gone through in one operation. I know I am in a minority here, but opinions change. Some years ago it was thought that the millstone would not touch middlings, and now it is thought that the millstone is the best for making middlings. It is not easy to bring forward a machine that has all the capacities of a millstone, which does in one operation what other machines do in several—their work being more subdivided. The idea now is to break up the wheat and finish it with the stone; in two or three years hence we may find that it is only the largest millers who are in favor of the breaking down system.

Mr. SANDERSON: Milling engineers have done their best for you; the recent mill exhibition shows that their heart is in their work, and that they have spared neither time nor money. I differ with Mr. Corcoran with regard to the millstone. It may be true that the millstone has not been properly developed and manipulated, but when the roller has been brought into actual competition with the stone it is acknowledged that the roller is superior.

Mr. HIBBARD: It has been suggested that there should be another milling exhibition next year. A notice has been sent out to mill engineers, and fourteen out of twenty-one are willing to hold an exhibition next year. It is the owners of systems, the exhibition of which costs a great deal of money, who are not just now willing to co-operate. The systems that we have in vogue now are likely to last for the next ten years, and what we want in the meantime is a more intimate acquaintance with details, so as to prevent costly stoppage of the works at any time.

The PRESIDENT: It will require more unanimity amongst mill furnishers than there is at present before there can be another exhibition.

Mr. HIBBARD: I thought I would mention the subject to give our friends an opportunity of saying something.

The PRESIDENT: My last duty will be a pleasant one. I am proud of having been elected your president, but I have felt that I could not discharge the duties of the office satisfactorily to myself. If, however, I have succeeded in doing so to the satisfaction of my friends around me, that is compensation enough for me. You have very wisely appointed a gentleman to be my successor, and I feel sure that in him you will find a president who will guide you with much wisdom and prudence and all the other excellent qualities during the coming year. You have unanimously appointed my good friend, Mr. Appleton, to be president for the coming year. You all know the excellent way in which he has rendered help to the Association at all times, and I feel that you have done the right thing in electing him. In retiring from this chair, I beg to thank you all for the courtesies and kindness which I have received from you, and I know that you will accord the same to my successor. I don't often venture to turn prophet, but I think I may venture to do so on the present occasion, and prophesy that in his hands this Association will have as great success and prosperity as it has had in any previous year. I wish you, Mr. Appleton, good health and every success as president of this Association.

Mr. Smith then retired from the chair, which was filled for the remainder of the night by the President elect, who, after being loudly cheered said: I thank you very much, Mr. Smith for your kind wishes, and I thank you all gentlemen here this evening for the cordial way in which you have drank my health as your new President, and I hope that your good wishes will be thoroughly realized with regard to the next year's presidency of this Association. At this late hour I will not detain you long. Several important questions came up for discussion this afternoon at the annual meeting, and I am glad indeed to find that the London Association is so much nearer to us with regard to uniformity in weights and measures than I had anticipated. We all are now pretty well agreed that a change is needed. We do not say that the cental is the system which could be adopted, but that there should be one fixed weight for the buying of wheat, and if this were obtained it would be a great boon to the milling public altogether. You have all heard of the agricultural depression of the country. There is one thing which has frequently struck me with regard to agriculture, and that is the decrease of the growth of corn compared with the increase of population. Test it for 10 years. Ten years ago our population in round numbers was 26 millions, at that time we were growing 16 million quarters of wheat. Since that time our population has been gradually increasing, until now it is about 32 millions, and we are growing only about 10 million quarters of wheat, so that now there are about 20 million quarters of wheat to be provided for; and the agriculturists of the country, instead ot trying to grow wheat for the home population, are going back year by year. You may say that we have been suffering from bad seasons, but there are other causes. During these bad seasons the farmers have been getting poorer and poorer, and the land has been getting poorer and poorer. The tenant farmers have been receiving all the assistance they could from the landlords, the landlords have become poorer and poorer, and so, even now, if we had a series of good seasons, it would be some time before the land would be able to grow the crops of ten years ago, That is the present position of agriculture, and it is worthy of consideration. Then, if we require wheat where are we to get it from? Your supplies from the Baltic have nearly ceased; your Russian supplies are getting small; America has had good seasons and has made up the deficiency. But suppose there should be a change, and that America should have a cycle of bad seasons, where then should we look for supplies? We must look to India, to New Zealand, and to Australia. But there is one difficulty in getting wheat from these parts and that is the Suez Canal. We have been told that we ought to have a second canal, and I quite agree with it. What is the state of the Canal now? You know that our Government has one-half interest in the Canal. There are thirty commissioners to look after its affairs, but how many of these are in England's interest? Just three, and these three are not business men. England is contributing 80 per cent. of the income of the Canal, and yet has a representation of three out of thirty commissioners. The dues are very heavy, amounting to a tax on the wheat which comes through of from four shillings to five shillings per ton. The pilotage and other charges are also very great, and all these things combined, I do not think that we shall be in a right position until we have another canal made by English influence and with English capital. Just another word, and that in respect to technical education. You are all aware that England is coming forward very prominently in regard to education. We are spending ten millions sterling, and the Government is finding half of it. The Association and Guilds of London are investing £100,000 in their new building, and as we are now associating our millers with the Guilds of London I hope that the effort will bear good fruit. We are improving our machinery, and our difficulty will be to get competent men to work these machines.

Mr. DAW: I beg to tender to Mr. Smith the heartiest thanks of the Association for his conduct in the chair during the past year.

Mr. SMITH: I am heartly obliged to you all. I feel that in retiring a weight is thrown off my shoulders, and I hope that the honors of office will not be so oppressive to my friend as they have been to me. Once again I say I am much obliged to you all for your great kindnesses.

Mr. W. C. HEPBURN: (THE MILLER) returned thanks for the milling press, and the meeting adjourned.

THE Northwestern Elevator, in this city collapsed June 7. It contained 115,000 bushels of wheat. The total loss to the owners, Messrs. Manegold Bros. and C.J. Kershaw is estimated to be less than $10,000. The wheat was insured.

NEWS.

J. B. A. Kern is putting in a 150 barrel roller rye-flour mill, which will be in operation soon.

Casper Smith's flour mill at Oshkosh, Wis., burned June 15th. Loss $35,000. Insurance $25,000.

Henckel & Voorhees, of Detroit, Mich., have adopted the Milwaukee Dust Collector in their mill.

The Case Mf'g. Co., Columbus, Ohio, have the order of John Brinks jr. for a line of new machinery.

The Union Mills, of Detroit, Mich., are making improvements by adding a full line of Stevens' rolls.

Hargis & Clark, Wellington, Kas., sixteen pair of the celebrated Allis rolls in Gray's noiseless belt frames.

The Case Mnf'g. Co., Columbus, O., have the order of R. A. Welsch, Rome, Ga., for one double Case purifier.

Armstrong & Sons, Fayette, Mo., will start up their mill in a short time, on the Case system, of gradual reduction.

J. M. & H. C. Allen, Grafton, Ill., will start their mill up in a short time on the Case system of gradual reduction.

R. K. Ailes & Co., Ann Arbor, Mich., will start up their mill in a few days on the Case system of gradual reduction.

The Case Mnf'g. Co., Columbus, O., have the order of W. T. Price, Hixton, Wis., for one Little Giant break machine.

The Case Mnf'g. Co., Columbus, O., have the order of G. D. Green & Co., Faribault, Minn., for one double break machine.

Messrs. Edw. P. Allis & Co., Milwaukee, Wis., recently sold David Stott, Detroit, Mich., one Gray's noiseless belt roller mill.

Messrs. Kidder, Bros, Terre Haute, Ind., recently purchased four more pair of Allis rolls in Gray's noiseless belt frames.

R. G. Shuler & Co., of Minneapolis, Minn., have ordered another Stevens' roller mill of the Jno. T. Noye Mf'g. Co., Buffalo, N. Y.

The Link Belt Machinery Co., Chicago, Ill., have ordered a line of breaks and purifiers from the Case Mnf'g. Co., Columbus, O.

J. T. McKenzie, Louisville, Ky., has instructed the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., to furnish a single Stevens' roller mill.

The Case Mnf'g. Co., Columbus, O., are furnishing Martin Sellhorn, Boone, Iowa, with four pair Case rolls, with patent automatic feed.

J. S. Simpson, Knoxville, Ill., has placed his order with the Case Mnf'g. Co., Columbus, O., for two pair rolls, with patent automatic feed.

The Case Mnf'g. Co., Columbus, O., have the Order of O. K. Griffith, Orrville, O., for two pair smooth rolls, with patent automatic feed.

Jno. B. Isett, of Spruce Creek, Pa., has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Stevens' roller mill for germ crushing.

Mr. M. F. Pease, Lowell, Wis., lately placed his order with Messrs. Edw. P. Allis & Co, Milwaukee, for a Gray's noiseless belt roller mill.

The Case Mnf'g. Co., Columbus, O., are furnishing Wm. Deubel & Co., Ypsilanti, Mich., two No. 1 double purifiers, for their city mills.

The firm of Durant & Paine, of the City Mills, Milwaukee, has dissolved. C. M. Paine continues the business. Mr. Durant is going West.

John Webster of Detroit, Mich., has contracted for the reconstruction of the Rudd Mill, at Orion, Mich. It will be a 100 barrel roller mill.

Oborn & Baldwin, of Waupaca, Wis., are putting in the Stevens' roller mills, to be furnished by the Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

J. R. Sechler, Sechlersville, Wis., lately purchased four pair of Allis rolls and other machinery, for the change he is now making in his mill.

Emerson, Sherman & Co., Sioux Falls, D. T., have planted an order with the Jno. T. Noye Mfg. Co, Buffalo, N. Y., for a Stevens' roller mill.

G. U. Miner, of Cedar Falls, Ia., is putting in five additional pairs of Stevens' rolls, to be furnished by the Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

J. W. Gift & Co., Peoria, Ills., are putting in another pair of smoot rolls, with patent automatic Feed, from the Case Mf'g. Co., Columbus, Ohio.

Ballard & Ballard, of Louisville, Ky., have planted an order with the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., for three double Stevens' roller mills.

Messrs. Gates & Chatfield, Bay City, Mich., recently purchased a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

Messrs Plummer & Wheeler, Petersburg, Va., lately purchased a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

Douglas, Stuart & Forrest's large oat-meal mill at Oregon, Ill., was almost destroyed by fire June 7th. Loss $40,000 on mill, $25,000 on stock. Insured.

The Novelty Mill Co., of Parkersburg, W. Va., recently purchased a Gray's noiseless belt roller mill, from Messrs. E. P. Allis & Co., Milwaukee, Wis.

L. V. Rathburg, Esq. of Rochester, N. Y., lately ordered two pair of Gray's noiseless belt roller mills from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

The Case Mnf'g. Co., Columbus, O., have furnished C. Carter & Sons, Eaton, Ind., with one 9x18 four roller "Bismarck" mill with patent automatic feed.

B. F. Gump, of Chicago, Ill., the popular agent for Stevens' roller mills in that place, has ordered from the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for Froelich & Sandman, Barrington, Ill., a four break Round's sectional roller mill, with Stevens' corrugations.

The Case Mnf'g. Co., Columbus, O., have the order of G. A. Hales, Elizabeth, Pa, for one combined break machine and scalper, making three separations.

The Case Mnf'g. Co., Columbus, O., have shipped I. B. Barrett & Son, Spring Valley, O., their patent automatic feed for five double sets of Odell and Allis rolls.

The Cascade Mnf'g. Co., of Northfield, Mich., recently put in a Gray's noiseless belt roller mill, purchased from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

The Elevator Milling Co., of Springfield, Ill., lately purchased two pair of Wemann's Porcelain rolls in Gray's noiseless belt frames, for one of their customers.

Messrs. Edw. P. Allis & Co., Milwaukee, recently received another order from Messrs. Consigny & Worth, Avoca, Iowa, for a Gray's noiseless belt roller mill.

The Case Mf'g. Co., Columbus, O., have the order of Barrett & Son, Spring Valley, O., for four of their patent automatic feeds, to go on rolls of other manufacture.

The Case Mnf'g Co., Columbus, O, have the order of L. W. Taylor & Co, Mt. Pleasant, Ia., for one combined break machine and scalper, making three separations.

Mr. E. P. Greeley, Nashua, Iowa, has ordered four pair of Allis rolls in Gray's noiseless belt frames from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

B. F. Gump, of Chicago, Ill., has directed the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., to ship A. Frediuhagen of St. Charles, Ill., a single Stevens' roller mill for cleaning bran.

H. Berkholtz, of Rock Rapids, Iowa, is putting in a Round's sectional roller mill, with Stevens' corrugations to be furnished by the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y.

The Cockle Separator Mf'g Co., of Milwaukee, Wis., recently placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, for a Gray's noiseless belt roller mill.

J. W. Kaufman & Co., of St. Louis, will use three large sized Prinz dust collectors for roller exhaust, and have ordered the same from the Milwaukee Dust Collector Mfg. Co.

Port Clinton, O., is to have a new roller mill to be built by O. J. True & Co. The Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., will furnish thirteen Stevens' roller mills for the same.

The Queen City Milling Co., of Buffalo, N. Y., have placed an order for four large sized Prinz dust collectors with the Milwaukee Dust Collector Mfg. Co., of Milwaukee, Wis.

W. T. Reynolds, Bellefonte, Pa., has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Round's sectional roller mill and two detached mills, all with Stevens' corrugations.

The Case Mf'g. Co., Columbus, O., have shipped Brandt & Manning, Mt. Joy, Pa., one 9x18 double 4 roller "Bismarck" mill, with patent automatic feed for bran and tailings.

Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., lately filled an order from Messrs. Van Epps & Cox, Freemont, Ohio, for four pair of Allis rolls in Gray's noiseless belt frames.

Philip Dowse, of Elgin, Iowa, has ordered of the Jno. T. Noye Mfg. Co., Buffalo, N. Y., a Round's sectional roller mill and one detached mill, both with Stevens' corrugations.

The Acme Milling Co., Orleans, N. Y., recently placed their order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller mill.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately received an order from Mr. J. B. Issett, of Spruce Creek, Pa., for a Gray's noiseless belt roller mill.

Messrs. Wilderman & Hill, Freeburg, Ill., lately placed their order with Messes. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller mill.

Mr. Jno. Schaab, of Papillion, Neb., has purchased two pair of Allis rolls in Gray's noiseles belt frames from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Messrs. Williams, Cargill & Fall, Houston, Mich., recently purchased a Gray's noiseless belt roller mill from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Cyrus Stiles, of Monroe, Mich., has lodged an order with the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., for a four break Round's sectional roller mill, with Stevens' corrugations.

Sylvester Bros., Boscobel, Grant Co, Wis, have ordered of the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., a Round's sectional roller mill and a detached mill, all with Stevens' corrugations.

Hall & Co., of Westfield, N. Y., have filed an order with the Jno. T. Noye Mfg. Co, of Buffalo, N. Y., for a Round's sectional roller mill, and a detached mill, both Stevens' corrugations.

Jay Sternburg, Boulder, Col., has recently ordered eight pair of Allis rolls in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Messrs. Edw. P. Allis & Co, Milwaukee, Wis., have an order from Messrs. Roger, Pennypacker & Co., Frankfort, Philadelphia, for seven pair of Allis rolls in Gray's noiseless belt frames.

Robinson & Co., of Maysville, Ky., are about to put in their mill a large sized Prinz dust collector, and have placed their order for same with the Milwaukee Dust Collector Mfg. Co.

E. W. Pride, the gallant Agt. of Nenah, Wis., has landed the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., an order for S. P. K. Sears & Son, of Beaver Dam, Wis., for a single Stevens' roller mill.

Messrs. Knoebel Bros., Belleville, Ill., lately ordered a Gray's noiseless belt roller mill from Edw. P. Allis & Co., Milwaukee, Wis., for Messrs. Land & Swaggard, Brownsville, Mo.

H. D. Rush & Co., of Leavenworth, Kansas, marching on with the rest, have ordered four Prinz dust collectors for their mill, of the Milwaukee Dust Collector Mfg. Co., Milwaukee, Wis.

Mr. C. H. Payne, of the firm of C. H. Payne & Co., Winnebago City, Minn., lately visited Milwaukee, and placed their order with Messrs. Edw. P. Allis & Co., of the Reliance Works, for a No. 2 four break reduction machine, and other machinery, necessary for the change they are making in their mill.

John Webster, of Detroit, Mich., has taken the contract for rebuilding the Perrien Bros. mill at Detroit. It will be a complete roller mill and have a capacity of about 200 barrels per day.

Chas. Heuber, the milling expert of St. Louis, Mo, has lodged an order with the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., five pair of Steven's rolls, for Geissing & Sons, of Farmington, Mo.

A. S. Davenport, & Co., of Pittston, Pa, have determined to put in a Round's sectional roller mill with Stevens' corrugations. The Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., will fill the order.

E. W. Pride, of Neenah, Wis., the valiant agent, has deposited an order with the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for Stevens' (seven) roller mills, for Stewart Bros., Seymour, Wis.

Messrs J. O. Halteman & Co., of St. Louis, Mo., recently placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller mill.

Messrs. Edw. P. Allis & Co., of the Reliance Works Milwaukee, Wis., recently received orders from the Great Western Mfg. Co., Leavenworth, Kas., for a Gray's noiseless belt roller mill, for J. M. Graham, St. Joseph Mo., also three pair of Allis rolls in Gray's noiseless belt frames, for Messrs. Lanone & Co., Concordia, Kas.

Messrs. Herr & Cissel, Georgetown, D. C., have purchased a gradual reduction machine for grinding middlings, from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

At Dalton, Wayne Co, O., a new roller mill is being built by the Dalton Roller Mill Co. The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., will furnish twelve pairs of Stevens' rolls for the same.

Chas. Heuber, St Louis, Mo., has gobbled an order from Deck Bros. Milling Co., Quincy, Ill., for a double Stevens' roller mill to be furnished by the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y.

Yeager & Anderson, Portsmouth, Ohio, have ordered of the Jno. T. Noye Mf'g. Co., Buffalo, N. Y., a four break Round's sectional roller mill, and one detached mill, both with Stevens' corrugations.

Thos. Wolf, West Farh, New York City, lately sent in an order for a Wegmann's porcelain roller mill in Gray's noiseless belt frames, to Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Norton & Gerkin, Parker, D. T., have passed in their order to the Jno. T Noye Mf'g. Co., of Buffalo, N. Y., for a four break Round's sectional roller mill, with the celebrated Stevens' corrugations.

A Round's sectional roller mill, with the celebrated Stevens' corrugations, will soon be placed in the mill of Guthrie Bros. & Chase, at Milford, Ia., by the Jno. T. Noye Mf'g. Co., Buffalo, N. Y.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently received an order from Mr. F. Thoman, Lansing, Mich., for twelve pair of Allis rolls in Gray's Noiseless belt frames.

Geo. W. Nicewanner, Piqua, O., after using some of the Case rolls for a short time has placed his order with the Case Mnf'g. Co., Columbus, O., for a full gradual reduction mill on the Case system.

H. Humbold, Eagle, Wis., has directed the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., to ship him two Round's sectional roller mills in separate frames and one single mill all with Stevens' corrugations.

Bottkol Bros., of Brussells, Deer Co., Wis., are remodelling their mill and will employ in so doing two of the recent pattern Stevens' roller mills, as made by the Jno T. Noye Mfg. Co., of Buffalo, N. Y.

Messrs. J. K. Mullen & Co. Denver, Col., recently ordered eighteen pair more of Allis rolls in Gray's noiseless belt frames, in addition to their former order, to increase their capacity to 500 bbls. per day.

Messrs. Morris & Dow, Stoughton, Wis., recently ordered six pair of the celebrated Allis rolls in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., of the Reliance Works. Milwaukee, Wis.

The Novelty Iron Works of Dubuque, Ia., have ordered of the Jno. T. Noye Mfg. Co. of Buffalo, N. Y., a three break concentrated roller mill, and two additional detached mills, all with Stevens' corrugations.

The Case Mf'g. Co, have been awarded the contract of White and Feather, Clark Mills, Pa., for a full line of breaks, rolls, purifiers, centrifugals, &c. &c., for a full gradual reduction mill, on the Case system.

Messrs. J. Jenke & Co., Sand Beach, Mich., lately placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for four pair of Wegmann's porcelain rolls in Gray's noiseless belt frames.

The La Croix H. P. Co., Indianapolis, Ind, recently put in an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller mill, for W. Long & Co., of Indianapolis.

The Case Mnf'g. Co., have been awarded the contract of D. Thomas & Son, Newark, O., for a complete line of breaks, rolls, purifiers, centrifugals, scalpers, etc., for a full gradual reduction mill on the Case system.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately received an order from Messrs. J. O. Halteman & Co., St. Louis, Mo., for a Gray's noiseless belt roller mill for Jacob Essig, Glasgow, Mo.

Cyrus Hoffa, of Lewisburg, Pa., has entered into a contract with the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for a complete roller mill to be built in that place. Eighteen pair of the celebrated Stevens' rolls will be used.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately received an order from Mr. P. W. Brickley, of Prairie du Rocker, Ill, for eight pair of the celebrated Allis rolls in Gray's noiseless belt frames.

Messrs. Chisholm Bros. & Gunn, of Chicago, Ill., recently placed an order with Messrs. Edw. P. Allis & Co., of the reliance Works, Milwaukee, Wis., for four pair of the celebrated mill rolls in Gray's noiseless belt frames.

The Case Mnf'g. Co, Columbus, O., have been awarded the contract of C. T. Johnson, Flora Ills., for a full line of breaks, rolls, purifiers, centrifugals, scalping reels, etc., for a full gradual reduction mill on the Case system.

The Case Mnfg. Co., Columbus, O., have again heard from W. H. Childs, Abilene, Kans. He wants one more pair smooth rolls, with patent automatic feed, and has instructed the Case Mnf'g. Co. to ship the same at once.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, recently received an order from the Todd & Stanley Mill Furnishing Co., of St. Louis, Mo., for a Wegmann's porcelain roller mill in Gray's noisless belt frames.

Messrs. Chisholm Bros. & Gunn., Chicago, Ill., recently placed orders with Messrs. Edw. P. Allis & Co. of the Reliance Works, for twelve pair of rolls in Gray's noiseless belt frames, also twelve pair of rolls in Gray's noiseless belt frames for Messrs. Bridge & White, Crete, Neb.

One of the most serious troubles a miller has to contend with is the liability of explosions in the old fashioned dust room. The Prinz patent dust collector, manufactured by the Milwaukee Dust Collector Mfg. Co., obviates this and gives perfect safety, with thorough work and is consequently being universally adopted. The miller's insurance is also much lightened by using these machines.

Chas. Heuber, of St. Louis, Mo., reports business unusually good. He has recently ordered for Wm. R. Wilkinson, Wittenbergs, Perry Co., Mo., a Stevens' roller mill, to be furnished by the Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

J. C. Dixon & Son, Port Byron, N. Y. have tumbled to the Round's roller mill boom, and will put in one at once. Two additional detached mills will be utilized also. Al to be furnished by the Jno. T. Noye Mf'g. Co., Buffalo, N. Y.

The Case Mf'g. Co., Columbus, O., have been awarded the contract of R. Tuttle & Co., Columbia City, Ind., for a full line of breaks, rolls, purifiers, centrifugals, scalpers &c., for a full gradual reduction mill, on the "Case system."

Sackett, Ransom & Co., Watkins, N. Y., are about to put in a Round's sectional roller mill, with Stevens' corrugations, and also a double mill for germ and middlings. The Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., will fill the order.

The Williams & Orton Mnf'g. Co., Leavenworth, Kas., recently ordered four pair of Allis rolls in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for Messrs. C. H. Guenther & Son, San Antonio, Texas.

Ballard & Ballard, of Louisville, Ky., have placed an order with the Milwaukee Dust Collector Mfg. Co., of Milwaukee, Wis., for six Prinz dust collectors, to do away with the necessity for the old fashioned and dangerous dust room.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately received an order from Messrs. J. O. Halteman & Co., of St. Louis, Mo., for three pair of Allis rolls in Gray's noiseless belt frames, for a mill they are rebuilding in Mo.

Urban Mill Co., (Geo. Urban & Co.) of Buffalo, N. Y. have recently placed an order with the Milwaukee Dust Collector Mfg. Co., of Milwaukee, Wis., for a large sized Prinz dust collector, in addition to those being now successfully operated by them,

F. R. Hetcher, of Decorah, Iowa, who has been sick for some time is again around and at work. He has recently placed an order with the Jno. T. Noye Mf'g. Co, of Buffalo, N. Y., for a Stevens' roller mill, for J. D. Williams, Lune Springs, Iowa.

The new mill now building at Grand Rapids, Mich, by Messrs. C. G. A. Voigt & Co., will have a complete outfit of roller mills in Gray's noisless belt frames, twenty-six pair in all, from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Among the mill furnishers who have ordered the Prinz dust collectors of the Milwaukee Dust Collector Mfg. Co. during the past week, are, E. P. Allis & Co., Case Mfg. Co., Barney & Kilby, Stillwell & Bierce Mfg. Co., Garden City Mill Furnishing Works, and others.

There is a movement on foot at present to form a grain and produce exchange for Winnipeg, composed exclusively of members of these trades. The organization will probably be formed under the direction of and in connection with the city Board of Trade.

B. Robinson, of Union Springs, N. J., has instructed the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., to ship him a Round's sectional roller mill, with Stevens' corrugations. The mill will be of the new pattern, two pairs, four breaks, with five foot scalpers, all in one frame.

The Jewell milling Co., New York City, lately placed their order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, for thirty-three pair of the celebrated Allis rolls in Gray's noiseless belt frames, having increased the capacity of their former mill.

The Bass Foundry & Machine Works, Ft. Wayne, Ind. recently secured an order from Frank Boone, Freemont Center, Mich., for a Gray's noiseless belt roller mill, and sent the same in to Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., to be filled.

S. F. Johnson, of Milford, Neb., whose mill was recently burned to the ground, has contracted with the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for an outfit for a complete roller mill. There will be used fourteen pair of Stevens' rolls, besides other first class machinery.

Messrs. Richards & Butler, the wide awake agents of the Allis roller in Indiana, have recently sent in an order to Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, for four pair of Allis rolls in Gray's noiseless belt frames, for Messrs. L. Miller & Co, Peru, Ind.

Joseph R. Gebhard & Son, Dayton, O., write, "We have been running our Case mill for three months, stopping only for want of wheat. Our flour is giving splendid satisfaction; have not had a complaint and are getting as much flour out of the wheat as any mill in Dayton."

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently secured contract for building a 125 bbl. mill for Messrs. Cowden Bros. & Hoppe, at Hanna, Ind., and are putting in two gradual reduction machines and seven pair of rolls in Gray's noiseless belt frames.

The orders will come in in spite of all advertising, etc., even from the Pacific Coast. Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee Wis., recently received an order from San Francisco, for eleven pair of the celebrated Allis roller mills, all in Gray's noiseless belt frames.

Messrs. M. S. Blish & Crane, of Seymour, Ind., have placed contract with Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a No. 2 four break reduction machine, also for a No. 3 reduction machine and machinery, necessary to remodel their mill to the roller system.

Messrs. Chisholm Bros. & Gunn, Minneapolis, lately placed orders with Messrs. Edw. P. Allis & Co., of the Reliance works, Milwaukee, Wis., for two Gray's noiseless belt roller mills and a No. 2 four break reduction machine, and also for a Gray's noiseless belt roller mill, for Wm. Wilson, Twin Lake, Minn.

Messrs. J. O Halteman & Co., of St. Louis, Mo., again come to the front with an order for a Gray's noiseless belt roller mill, for Messrs. Iran Bros., Ava, Ill., which they sent to Messrs. Edw. P. Allis & Co., of the Reliance Works Milwaukee, Wis., to be filled, knowing that the same would receive prompt attention.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently received an order from Messrs. Jerre Wood & Son, Havanna, Ill, who are remodeling their mill to the roller system, for four pair of Allis rolls, a No. 2 four break machine, together with all of the other machinery necessary for their change.

Brown Brothers, Columbus, O., have come to the conclusion, that they will have to change their mill to the roller system, or close up, and preferring the former they have placed their order with the Case Mf'g. Co., of their City, for a full line of breaks, rolls, purifiers, centrifugals &c., for a full gradual reduction mill, on the Case system.

Messrs. J. Q. Halteman & Co, of St. Louis, Mo., recently placed orders with Edw. P. Allis & Co., Milwaukee, Wis., for twenty-four pair of rolls in Gray's noiseless belt frames, together with all the machinery for a job they are building at Freeburg, Ill.; also for a Gray's noiseless belt roller mill for Hartman & Markwood, Warrenburg, Mo., also four pair of rolls in Gray's noiseless belt frames, for J. Miller & Co., Lebanon, Ill.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately shipped twenty pair of rolls, all in Gray's noiseless belt frames for a mill they are furnishing at San Jose, California, also seven pair Allis rolls and a No. 2 four break reduction machine for jobs in California.

Messrs. Richards & Butler of Indianapolis, Ind., placed orders with Messrs. Edw. P. Allis & Co., of the Reliance Works, recently for ten pair of the celebrated Allis rolls in Gray's noiseless belt frames for Messrs. W. P. Hambaugh & Co., Clarksville, Tenn. Also ten pair of Allis rolls in Gray's noiseless belt frames for Messrs. E. Gripp & Son, Louisville, Ky.; a Gray's noiseless belt roller mill, for A. R. Loughry, Monticello, Ind., and three pair of Allis rolls in Gray's noiseless belt roller mill frames for C. F. Moore, Waveland, Ind.

Odell rolls are to be placed in the mill of Staley & Zigler, Carnie, Ills.

Odell rolls are to be placed in the mill of E. C. Huntington, Elmyra, N. Y.

Isaac Radcliffe, Amo, Hendricks county, Indiana, has purchased two pair of Odell rolls.

G. C. Miller, Eldersville, Pa., has purchased Odell rolls from the Stilwell & Bierce Mfg. Co.

Four pair of the Odell rolls are to be placed in the mill of W. H. J. Moore, Turner Junction, Ills.

The Stilwell & Bierce Mfg. Co. have just shipped Odell rolls to Wm. Lindsay, Humbolt, Kansas.

John Frost, Mantua, Ohio, has ordered four pairs of the Odell rolls of the Stilwell & Bierce Mfg. Co.

The Stilwell & Bierce Mfg. Co have orders for the Odell rolls, from The Slater Mill Co., Blanchester, Ohio.

The Stilwell & Bierce Mfg. Co. have just shipped a line of rolls to their agent, Mr. Gardner, Gloucester, Eng.

Hollibaugh & Werner, Hartville, Ohio, have purchased an Odell bran roll from the Stilwell & Bierce Mfg. Co.

The Stilwell & Bierce Mfg. Co, have orders from C. Burkhardt & Co., Chambersburg, Pa., for a 9x24 roller mill.

The Stilwell & Bierce Mfg. Co. have orders for three pair of Odell rolls, from L. I, Blashfield, Jackson, Michigan.

The Stilwell & Bierce Mfg. Co., have orders for six pair of Odell rolls, for the mill of Raban & Mass, St. Wendel, Indiana.

Two pairs of 9x24 Odell rolls have been purchased from the Stilwell & Bierce Mfg. Co., by A. & H. Wilcox, Jackson, Michigan.

The Stilwell & Bierce Mfg. Co. have orders recently from J. W. Langdon, Evansville, Indiana, for twelve pair of Odell rolls.

The Stilwell & Bierce Mfg. Co. have an order from Moehle Bros., Arrow Rock, Missouri, for one new Odell eight-roll roller mill.

One double Odell roller mill has been ordered from the Stilwell & Bierce Mfg. Co., to be shipped to F. M. Mooney, Steubenville, Ohio.

One new Odell eight-break mill, and other machinery have been ordered from the Stilwell & Bierce Mfg. Co., for The Miller Co., Canton, Ohio.

Five pair of Odell rolls, purchased of the Stilwell & Bierce Mfg. Co., are to be placed in the mill of Joest & Wintenheimer, Wadesville, Indiana.

The Stilwell & Bierce Mfg. Co., have orders from their agent in Gloucester, England, for Odell rolls, to be placed in the mill of George Shaw & Co., Cork, Ireland.

The mill of Samuel G. W. Stokes, Alexandria, Nebraska, is to be run by a Victor turbine water wheel, to be furnished by the Stilwell & Bierce Mfg. Co., Dayton, Ohio.

The Stilwell & Bierce Mfg. Co. are furnishing six pair of Odell rolls for the mill of Monroe Peas, Columbus Grove, Ohio. The mill is to be built on the Odell system.

The Stilwell & Bierce Mfg. Co. have a contract to remodel the mill of W. I. Ballenger & Son, Plain City, Ohio, furnishing six pair of the Odell rolls and a line of machinery.

The Stilwell & Bierce Mfg. Co., have orders for rolls from the Moravia Foundry & Machine Co., Moravia, N. Y., also from the Richmond City Mill Works, Richmond, Indiana.

The Stilwell & Bierce Mfg. Co. have just shipped one of their Victor turbine water wheels to the Santos Mining Co, Mexico; also to Jas. Wagner & Co. San Francisco, California.

The Stilwell & Bierce Mfg. Co. have a contract with J. D. Bowersock, Lawrence, Kansas, for fifteen pair of the Odell rolls, and a line of machinery. The daily capacity will be 500 barrels.

The Stilwell & Bierce Mfg. Co. have orders for six pair of Odell rolls from the Link Belt Mfg. Co., Chicago; also have recent orders from the Simpson & Gault Mfg. Co., Cincinnati, Ohio, for Odell rolls.

The Stilwell & Bierce Mfg. Co., have a contract to remodel the mill of F. D. Hartzel & Son, Chalfeut, Pa., ten pairs of Odell rolls are to be used, and a full line of machinery to produce 100 barrels per day.

The Stilwell & Bierce Mfg. Co. have a contract with S. B. Greely, Fosters Crossing, Ohio, for ten pairs of the famous Odell rolls, and also furnish a full line of machinery, and remodel the mill to the Odell system.

The Stilwell & Bierce Mfg. Co. have orders from Charles Tiederman, O'Fallon, Illinois, for ten set of the celebrated Odell roller mill with independent simultaneous belt tighteners, and all the valuable Odell adjustments.

The contract for remodeling the mill of Wm. Selover & Co., Moravia, N. Y., has been awarded to the Stilwell & Bierce Mfg. Co., Dayton, Ohio, ten pair of Odell rolls will be used and a complete mill arranged on the Odell system.

The Stilwell & Bierce Mfg. Co., have a contract to erect a large flouring mill on the Odell system, for Martin & Ruhl, Summerville, Oregon. A full line of Odell rolls are to be used. This is the first roller mill to be built in Oregon.

The Stilwell & Bierce Mfg. Co. are to furnish the plans and machinery for the new mill of S. Y. Billingsley, and A. E. Burkholdt, DeGraff, Ohio, twelve pair of Odell rolls will be used. The capacity of the mill will be 100 barrels per day.

The Stilwell & Bierce Mfg. Co. have orders from Henry Schnur, Mt. Vernon, Indiana, for five pair of Odell rolls.

Orders have been placed for Odell rolls from the Stilwell & Bierce Mfg. Co. for the mill of J. U. Wilder, Huntington, Tenn.

The Stilwell & Bierce Mfg. Co., furnish a complete line of Odell rolls for the mill of J. M. Hains, New Albany, Ind., which is to be a capacity, when finished, of 200 barrels per day. The programme for the mill is furnished by Mr. Odell.

The Stilwell & Bierce Mfg. Co. furnish Odell roller mills for the new mill at Wellington, Ohio, of which six pairs are to be used in connection with a six-break concentrated Odell roller mill. The capacity of the mill will be 150 barrels.

The Stilwell & Bierce Mfg. Co. have orders for a six-break concentrated Odell roller mill in six pairs of Odell rolls. The same are to be placed in the mill of A. F. Dexter, Clay Center, Kansas. The programme for this mill is to be furnished by Mr. U. H. Odell.

White & Feather, Clarks, Pa., have decided to change their mill to the roller system, and after investigating the different systems they placed their order with the Case Mnfg. Co, Columbus, O, for a combined outfit of breaks, rolls, purifiers, scalpers, etc., for a full gradual reduction mill on the Case system.

One six-break Odell concentrated roller mill complete, also six pair of Odell rolls have been ordered from the Stilwell & Bierce Mfg. Co., for the mill of Amos Phelps, Delavan, Wis. They also furnish the programme for the mill on the Odell system, and a full line of machinery to produce 100 barrels per day.

The Stilwell & Bierce Mfg. Co., are furnishing the machinery and the programme for the mill of George Husler, Salt Lake City, Utah. A four-break concentrated Odell roller mill will be used, and also double Odell rolls.

The Stilwell & Bierce Mfg, Co. have orders for the Odell rolls for the mill of Jacob Venier, Archville, Ohio.

Messrs. Willford & Northway, of Minneapolis, report a good demand for Allis rolls throughout their territory. They recently sent in an order for two pair in Gray's noiseless belt frames, for Messrs. A. S. Lasser & Co., Maconia, Mich., also an order for two pair in Gray's noiseless belt frames, for the Pray Mnf'g. Co., Minneapolis, Minn.

The new mill now building by Messrs. J. K. Mullen & Co., Denver, Col., will be driven by a 25x48 Reynold's Corliss engine, condensing, from the Reliance Works of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis. Messrs. Allis & Co. also have contract for all of the roller mills, special machinery, and iron work for this mill.

Messrs. Edw. P. Allis & Co., of the Reliancce Works, Milwaukee, Wis., are furnishing the roller mills, centrifugal reels, Gray purifiers, etc., for the addition to the Camp Spring Mill Co's. mills at St. Louis, Mo., and are putting in thirty pair of rolls in Gray's noiseless belt frames, making fifty-six pair in all in their complete mill.

Mr. Fred. Fishinger, Columbus, Ohio, has contracted with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for one of their new four break machines, a Gray's noiseless roller mill, and other machinery for his mill. This makes another of the four break reduction machines bound soon to achieve the success of the others that have preceded it.

The following orders were received by Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., from Richards & Butler, the well known mill furnishers of Indianapolis, Ind; Harrison & Klesser, Zionsville, Ind., one Gray's noiseless belt roller mill; W. P. Hambaugh & Co., Ringole, Tenn., one Gray's noiseless belt roller mill; Gem Milling Co., Rushville, Ind., ten pair of rolls in Gray's noiseless belt frames.

Work on the Halliday Mill at Cairo is progressing rapidly under the superintendence of Mr. J. N. Patrick. Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., are furnishing forty pair of rolls in Gray's noiseless belt frames, together with other special machinery, and are doing all of the iron work. Messrs. Halliday Bros. do nothing by halves and the mill when completed will be first-class in every respect.

Among the orders recently received by Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., are the following from the Richmond City Mill Works, Richmond, Ind.; Y. M. Rigor, Franklyn, Tenn., one Gray's noiseless belt roller mill. Merritt Bros., Louisville, Kas., one Gray's noiseless belt roller mill. Galva Mill Co., Galva, Kas., one Gray's noiseless belt roller mill. Metzger & Ficher, Stella, Neb., one Gray's noiseless belt roller mill; G. H. Hunter, Wellington, Kas., one Gray's noiseless belt roller mill; Henry Segler, Valley Falls, Kas., two pair Allis rolls Gray's noiseless belt frames; Messrs. West, Allson & Co., Hutchinson, Kas, two pair Allis rolls in Gray's noiseless belt frames.

Messrs. Willford & Northway, Minneapolis, again come to the front with a batch of orders for Messrs. Edw. P. Allis & Co's Realiance Works, Milwaukee, Wis., among which are the following: Edwin Clark, Melrose, Minn., one Gray's noiseless belt roller mill; N. W. Roller Mill Co., Baraboo, Wis., one Grays noiseless belt roller mill; one No. 2 four break reduction machine for a mill they are remodeling in Minn; Chas. Stewart, Stewartsville, Minn., eight pair rolls in Gray's noiseless belt frames; Andrew Friend, Garden City, Minn., eight pair rolls in Gray's noiseless belt frames; Messrs. Sorrenson & Bridge, Freemont, Neb, twelve pair rolls in Gray's noiseless belt frames, together with other machinery necessary for their change

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THE Managers of the Smithsonian Institution have undertaken to present in all the leading branches of mechanical and manufacturing industry, examples on the one hand of the old, crude, and primitive appliances which exist as relics of a past age, and on the other the most approved specimens of American machines or devices which those arts in their modern state afford. In that branch of industrial science which comprises the utilization of the power of water, the managers of the institution have selected the James Leffel Double Turbine as a representative modern American water-wheel, embodying the most improved and efficient means for the development of water-power as applied to the propulsion of all kinds of machinery. To this end they requested the firm of James Leffel & Co. to furnish them with a specimen of the Leffel wheel, to be placed in the new National Museum building lately completed, adjoining the original structure of the Institution, where it will form a part of the collection of the best modern machinery which is now forming on the plan above described. The wheel asked for by the Smithsonian Institution has been made at the shops of James Leffel & Co., in Springfield, Ohio, and is now at their office at 110 Liberty st., New York. It is not a "model" merely, but a working wheel of 7⅝ inches diameter, one of the regular sizes made by the firm. It differs in no respect from those of their ordinary make, save in its ornamental finish, upon which special care has naturally been bestowed. The gates and gate-rods are plated with gold, and the other parts of the casing with silver.

ABOUT ANDREW HUNTER'S $100,000 CLAIM.

Andrew Hunter, well-known middlings purifier man of Chicago, recently filed a claim with Secretary Seamans, of the Millers' National Association, for the sum of $100,000, for the use of members of the Association of his patent, No. 137,207, the third claim of which reads as follows: *Third.* The combination with the bolt or screw B, of the inclined suspending links C and the mechanism for vibrating the bolt, substantially described, whereby a rising and falling as well as a reciprocating or vibratory movement is imparted to said bolt, as described. Mr. Hunter claims that no successful purifier can be made without infringing his patent.

It appears, upon examination, that Hunter's patent was clearly anticipated by W. C. Brown's application for patent, and others. W. C. Brown was a miller in Minneapolis, and filed his claim in 1871. He procured a limited claim on construction, and half of this patent was assigned to Geo. T. Smith, previously to the payment of the final fee, and the application was renewed, putting in five claims, three of which were based upon the slotted links and their supporting devices. One of the claims being quite a broad one for the combination of the shaker (A) and the pendulum links (B), supported at their upper ends in slots (C), whereby the inclination of the links and the consequent toss of the shaker could be varied. The examiner found no reference to anticipate this claim, and it was put into interference with Jauney, Hardenburgh, Hardenburgh & Fender and LaCroix.

Before the interference had proceded far, however, the examiner found two patents, No. 20,976, to L. Ellig, May, 1871, and another, No. 114,463, to W. A. Myres, May, 1871, both of which show adjustable inclined pendulum links. As these references were perfect anticipations of Brown's invention, the broad claim above referred to, was struck out of his application, but by carrying the matter before the Board of Appeals the claim was allowed for combination of a shaker supported upon inclined pendulum links, which had their upper ends adjustable of an adjustable feeder. The claim was put in interference with a number of existing patents and pending applications when the examiner found a drawing and description in a German publication of 1868, of the "*Mittheilungen des Gewerbe-Vereine fur Hanover.*" This machine fully anticipates the claim allowed to Brown by the Board of Appeals, and also disposes of Mr. Hunter's claims, as the toss of the shaker can be varied at will by changing the inclination of the wooden springs, which are the equivalents of Hunter's inclined adjustable links.

THE ROSE POLYTECHNIC INSTITUTE.

Chauncy Rose, a rich bachelor of Terre Haute, Ind., who died a few years ago, provided in his will for a grand school of technology in that city. A splendid edifice and complete workshops were built some time ago, and on March 7 the school was formally opened with a class of twenty-five students selected by competitive examination from forty-five applicants. Charles O. Thompson, eminent in his profession, from Worcester, Mass., is president. The press report of the State remarks: "This event is one of the most important in the history of education in this State, the institution being the first of the kind established in the West. The institution, in addition to the buildings and property, has, according to the *Minnesota Trade Journal*, an endowment fund of near $500,000, left to it by its founder at the time of his death in 1878."

A fair notion of a few of the leading ideas of this new Western enterprise may be obtained from the following extracts from President Thompson's opening address:

"The Almighty makes superintendents and leaders of men—no school can. But the training required for a superintendent must be that of his subordinates. All the best experience of the world sanctions this rule. A superintendent who has not had the training of the shop is as useless as Achilles without his weapons; he may seem and assume to direct and to lead, but he does not. On the other hand, the man who attempts to lead without natural leadership is as useless as the weapons without Achilles."

THE ATMOSPHERE OF A FLOURING MILL.

The proprietors of the Pillsbury "A" mills, at Minneapolis, requested Prof. James A. Doge, of Minnesota State University, to subject the atmosphere of that mill to a scientific test, which was accordingly done. The following is an extract from the Professor's report:

"The detection of slight traces of inflammable gases intermixed with air would be very difficult or impossible, if it were required that such inflammable admixture should be sought for by direct test. Chemists have as yet no agent for proving the presence of such gases except in a few cases; but I had in mind at the time of the request, methods, of reaching a conclusion indirectly by determinng if the air in question were of a normal character, in so far as chemical tests could be readily applied to it. These methods I have carried out. On the evening of December 22, I visited the mill and procured samples of the air from the upper stories near the centre, and again on the evening of December 29, procured samples from the second floor, near the packers. These samples I find do not differ from the air of an ordinary, well ventilated building. A determination of the amount of carbonic acid gas in air serves as a standard test of the purity of the air and of the thoroughness of the ventilation. In the air taken from the upper story I found 3 8-10 parts of carbonic acid gas in 10,000 parts of air. The air out of doors regularly contains between 3 and 4 parts in 10,000. In the house it is often 5 or more. The air of the mill is nearly as pure in this respect as the air out of doors. This proves the satisfactory character of the ventilation. Further, the quantity of fine dust of flour, etc., in the samples of air which I procured representing the matter of that kind suspended in the air at that moment, was extremely minute, so that it proved to be impossible to make a determination of the amount. Whether some traces of inflammable gases may or may not be present in the air of the mill, it is, as I have stated, impossible to learn by direct test; but all chemists would, I think, agree that there is no cause or action in the regular working of the process carried on in the mill, by which any inflammable gases should be generated. Some of the mill dust is so fine that it may behave like an inflammable gas; but inflammable gases themselves are, without doubt, absent."

IMPORTANT NOTICE.

Milwaukee, Wis, May 1st, 1883.

To Whom it May Concern:

For the more complete protection of our patrons, and to secure them beyond question against loss or annoyance from suits for infringement with which they have been threatened, we have, at a great cost to ourselves, secured a LICENSE from the GEO. T. SMITH MIDDLINGS PURIFIER CO. of Jackson, Michigan, KIRK & FENDER, of Minneapolis, Minn., and SAM'L L. BEAN, of Washington, D. C., licensing the "PRINZ" Dust Collector under all Dust Collector patents owned by the parties above named. The patents now controlled by our company on this class of machines cover broadly the whole process of collecting dust in flour mills, and all the most modern devices by which the process is carried out.

The license, which we shall furnish to all parties having Dust Collectors made by us, carries with it ABSOLUTE security and PROTECTION in the use of our machines.

Yours very truly,

MILWAUKEE DUST COLLECTOR MFG. CO.
JULIUS SCHLESINGER, Manager.

FOR SALE.

A Flouring and Grist Mill; good water power, fine location, about 400 feet from Rail Road Station. Would take other real estate for part payment. For particulars inquire of O. E. MEYER, 183 West Water Street, Milwaukee, Wis.

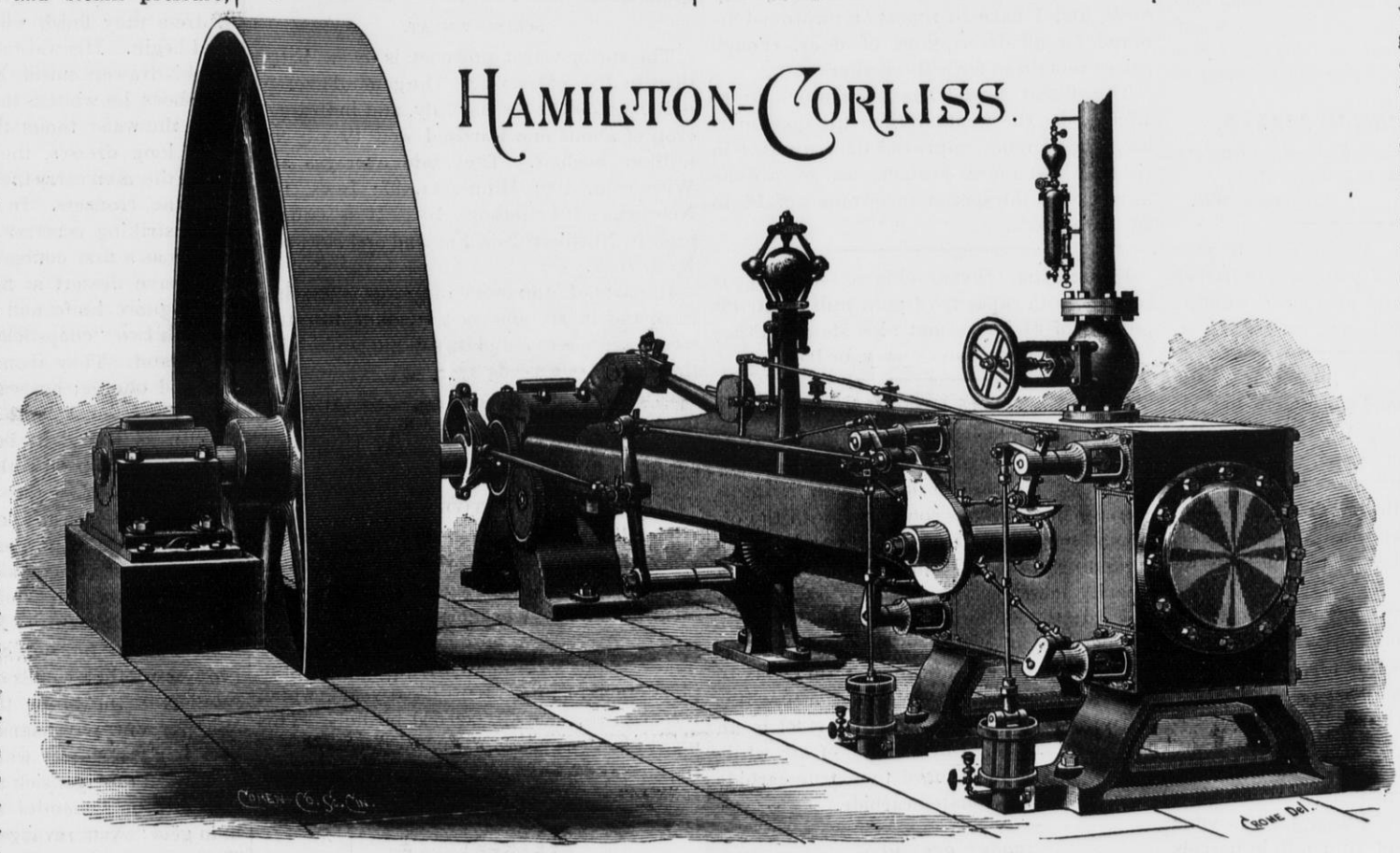
ROLLER FLOUR MILL WANTED—To rent preferred, or buy. Capacity about 100 barrels daily; water power; must be unfailing. Address: Box 544 Lindsay, Ontario, Canada.

The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 15, No. 4. } MILWAUKEE, AUGUST, 1883. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

THE HAMILTON-CORLISS ENGINE.

Among the many varieties of Corliss engines, the Hamilton-Corliss, built by the Hooven, Owens & Rentscheler Co., Hamilton, O., holds high rank, and it is claimed by the manufacturers that there is a saving of fuel of from 30 to 40 per cent., and that it has few, if any, superiors among the Corliss family of engines in mechanical construction, regularity of speed, economy of steam, and accessibility of all its parts. Besides this there is a saving of oil and an increase of all that relates to the production of power. Its mechanical construction is so perfect that there are no stoppages by "break downs" and hence little cost in repairing. The new high speed governor which the manufacturers have attached, causes the speed to be very regular under varying loads and steam pressure, while no part of the regulating medium enters the steam chest out of sight of the engineer, and subject to the corrosive action of steam and the oils used in lubricating the valves and piston. All the larger parts are made from drawings and symmetrically proportioned to the size of engine, while the smaller parts are made to gauges, so that the manufacturers are always ready to duplicate any part if needed for repairs. The cylinders are made of the best iron, and the shafts are of hammered wrought iron with long bearings, the diameter of which equals one-half the diameter of the cylinder. There are several sizes of engines built, with cylinder from 12x30 to 24x60, and from 44 to 240 horse power. Further particulars will be supplied by the manufacturers.



LOSS BY LACK OF SYSTEM.

The manufacturer, says the *Scientific American*, can usually, by reference to his books, ascertain the cost of any article of his production, and the amount of his regular daily expenses. He can discover how much material has been lost by waste, and possibly he can make approximate allowance for loss by incompetence of his workmen. But there is one source of loss that cannot be readily estimated, and yet exists and has its effect on the results of the year's production. This is the loss from the lack of a rigid system in the using of tools and from the habitual carelessness this want of system encourages.

In every shop there must be tools that are for general use and are not individual possessions. If each successive user mislays a tool that is intended for general shop use, the aggregate of time lost in seeking for it may amount to a serious waste. Drills, taps, reamers, boring-bars, arbors, milling-tools, wrenches, and other implements may be intended for general use all about the shop, but when not in use they should have a home—an abiding place—so that no time would be lost in searching for them. And they should be left in proper condition for immediate use, either by the last user, or by some person whose business it is to keep them in condition. In every large shop provision should be made for this purpose, a repairer or sharpener being designated to perform this duty.

Attention to these little details is fully as important in small shops as in large ones; for sometimes the loss of small sums occasioned by carelessness will seriously affect the balance sheet. A good practice, which is a rule in many large establishments, could be followed in smaller ones with saving results. This is to have a series of shelves or pigeonholes to contain the drills, reamers, arbors, etc., each numbered and each provided with a marked tag of sheet-metal designating the tool. Every workman has a hook convenient to the pigeon-holes, with a card bearing his name. When the workman takes a tool from its rack, or pigeon-hole, he hang its corresponding tag on his hook. A single glance shows where the missing tool is, and when it is returned to its place its tag is replaced over the corresponding pigeon-hole. In effect, the workman charges himself with the tap, drill, or other tool when he takes it, and credits himself with it when he returns it.

The practice of this system has a good general effect on the workmen. They cannot fail to see the advantages to themselves in the saving of vexation in an aimless search for a missing tool; and the habit of care for general shop tools will extend to a similar care for their own bench and machine appliances. A saving of time could also be made in many shops by a more generous provision of general bench appliances. A single bench block for the use of a dozen vise men is not enough; it would be well if every vise had a bench block, a casting say eight or ten inches long, by four or five inches high and wide, planed on one face and side. Its cost is trifling and its uses many. It saves the hammering on the vise, and the defacing of the bench when used for straightening rods and small forgings. Encouragement to order in the care of lathe and planer tools would be given by providing for each lathe a handy tray, or sliding shelf of wood, to lie across the ways; lathe tools should never be laid on the ways of a lathe; the nicely trued surface of the Vs of a lathe cannot stand the batter of steel tools as they are usually dropped from the hand. Such a tray is useful, also, on the platen of a planer, which is too commonly used as a general receptacle for anything that should be laid on a bench.

Every shop should be provided with boxes or other conveniences for holding bolts, nuts, washers, angle irons, and blocks, for lathe and planer use, and boxes for receiving odds and ends not of present apparent value. These boxes should be distinct from the scrap heap, which ought to receive nothing of real possible shop use. They not only conduce to habits of order, but are valuable magazines to draw from in case of emergency.

THE Chancellor of the Exchequer in India thinks that country can undersell the United States on wheat, because the Indian peasant can live on six cents a day, and doesn't need any clothes to speak of. This is one of the mediæval superstitions about economics which it is the despair of political economists to root out. The American laborer gets higher wages than any other because his labor is more efficient in production. That a race of spiritless starvelings should "run out" a race of energetic and ingenious workmen is grotesquely contrary to all history and all rational philosophy; and indeed, the most remarkable feature of recent industrial history is that this country, where labor is the highest in the world, is breaking the markets of the Old World, where the masses are doomed to hopeless poverty.

TESTS OF INDIAN WHEAT.

Dornbusch (England) publishes the report of an English milling firm to the Secretary of State for India on a series of experiments with Indian wheat. Four representative varieties were taken. The results obtained were that, without exception, the yield of flour was unusually large, the two lots most suitable for bakers making probably more bread than the product of any other country. The flour was found profitable for millers, and in color and strength ranged from white and light to dull brown, and the strength liked by the bakers. The flavor of the four lots was beany. The report says there is no probability of these Indian wheats coming into demand for manufacture into flour such as that required by the British and most other foreign markets without a liberal mixture of other wheats. The Indian flours were found to possess in a marked degree the same characteristics of great dryness, and a distinct beany and almost aromatic flavor, inseparable from wheats grown in the climates and soils of the tropics. "The flours are ricy, the texture of the breads is too close, and the crust is hard and brittle. But these characteristics do not detract from their usefulness in any important degree. As is well known, a miller cannot show skill in his craft to greater advantage or profit than that with which he selects his wheats and mixes his grists so as to produce to best advantage a flour from which bread can be made of the color, bloom, strength, and flavor desired, and withal a good yield."

The report adds: "We pronounce them to be exceedingly useful wheats; in fact, hardly equaled for what is deficient and wanting in the English markets by any other wheats. Their chief characteristics are just those in which the wheat grown in our variable climate [Great Britain] are most deficient. Their great dryness and soundness render them invaluable for admixture with English wheats that are in any degree out of condition through moisture, and the great proportions of the wheat harvested here have been in that condition for some years past, a condition that must prevail in all others than that of wheats harvested and stored during fine and favorable weather; and this the English farmer knows, greatly to his cost, is a state of climate that is by a long way the exception rather than the rule."

The thinness of the skins of these Indian wheats, which makes a heavy yield of flour, also puts them in the front rank as millers' wheat. The yields of flour range from 77.46 to 80.52 per cent., against 65.2 for English and 72.2 for American spring wheats. They also yield a larger percentage of bread than other wheats. The beany flavor is found not to be a serious obstacle, for fair average deliveries, well cleaned and properly dealt with, can be employed in the proportion of 25 per cent. to 50 per cent. with British or wheats like the Americans, possessing a sweet milky or nutty flavor. The character and general excellence of the Indian wheats are said to be improving with every harvest. The development of the wheat resources of India is strongly recommended in the report.

THE Hon. W. M. Robbins, of North Carolina, in a recent address before the literary society of Erskine college, gave the young men about entering the busy stages of life some excellent counsel, which seems all the more impressive when compared with the utterances before the rebellion. "The dignity of labor must be respected," said Mr. Robbins. "The young man must discard the old models, pull down the ancient idols, put away false pride, and go to work. In this way they would make the fair southern land what God and nature intended it to be—the world's garden of beauty, a treasure house of wealth, the dwelling place of power, the home of science and of humanity's best and noblest civilization."

UNITED STATES MILLER.

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ANNOUNCEMENT:

☞ WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & CO., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞ *The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

WILLIAM TRUDGEON, ESQ., the able representative of the Richmond Manufacturing Co., of Lockport, N. Y., called on us recently. He reports business very good.

INVENTORS all over the civilized world ar busy trying to invent a successful bran-packer. Secretary Seamans receives new designs almost daily.

THE Millers' National Insurance Co., of Chicago, Ill., in their semi-annual statement, dated July 1, show a surplus over all liabilities of $811,253.57. Their losses since January 1, have amounted to $58,090.60. The company appears to be in a flourishing condition.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

OUR encyclopædic fellows do not move armies or senates, nor do they build railroads or cities. They gravitate into the unseen corners of newspapers, or wear out their lives under the weight of their own erudition in some pedagogue's seat. Knowledge is inestimable. But it must be turned into character. Life itself is the best university. Experience is the great almamater. The object of the college should be not alone to make gentlemen—but men.

ATTENTION has recently again been drawn to M. M. Neugean and Delaite's process of protecting iron surfaces against rust. A very fine powder of metallic zinc is mixed with oil and a siccative, and applied to the iron by means of an ordinary brush. In many cases one coat is sufficient. Two coats are, at any rate, guaranteed to secure a protection against the corrosive action of the atmosphere, as well as of sea-water. The zinc coating gives the iron a steel-gray appearance, and it does not interfere with subsequent painting. A good mixture, of which only the necessary quantity should be prepared, consists of eight parts, by weight, of zinc, 71 of oil, and 2 of a siccative.—*Engineering.*

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FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

THE milling business in nearly all parts of the country is still very dull, but is not as dull as during the previous month.

Mr. G. A. Buchholz, of Frankfort-on-the-Main, the inventor of Buchholz's roller mills, called on us July 31th. We shall have something to say on the subject in our September number.

OUR friend R. Birkholz, the milling engineer, who occasionally contributes to the columns of the UNITED STATES MILLER, was in the sixth story of the Camp Spring Mill, in St. Louis, not long since, when one of those Mississippi zephyrs came along, and some of the boys with Birkholz yelled, "Look out—cyclone's comin'". They say that Birkholz got down to the ground floor in quicker time than any first class elevator could have made the trip.

ANTON KUFEKE'S Circular, dated Liverpool, July 18th, 1883, says: There has been quite a break in the *weather*, and a good deal of heavy rain has fallen all over the country. Though this has probably not yet done any injury to the growing crops, it has, nevertheless caused some apprehensions. Farmers' deliveries of native *wheat* are diminishing, and last week only amounted to about 100,000 qrs. at the average price of 42s. 2d., against 48s. 5d. at the corresponding period last year.

The unsettled weather of the last few days has at length imparted a little life into the *Flour trade*, and I have to report an improved demand for all descriptions of flour, though prices remain so far without alteration.

The *Wheat market* has been much more affected by the weather than the flour market, and Cargoes improved 6d. a quarter in value, whilst a *large* business has been done in wheat on the spot at an advance of 1d. to 2d. per cental.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

A CAST IRON FILE.

One of the interesting inventions shown at the recent railway exposition, at Chicago, was a cast iron file, the merit of which lies in its extreme durability as compared with the ordinary steel file. Scientists assert that in hardening cast iron brittleness and want of tenacity increase with the increase of hardness. In the file in question, there is from 3 to 4 per cent. of carbon, and the tenacity, as compared with steel, bears a ratio of six to one. It is claimed for the cast iron that it is a true carbide of iron, whereas steel is an oxidated carbide. One breath of air while the metal is being reduced to a true carbide reduces it to an oxidated carbide.

BOOKS RECEIVED.

PRACTICAL CARPENTRY—Price $1; published by the Indu trial Publication Co. New York. A guide to the correct working and laying out of all kinds of Carpenters' and Joiners' work; Solutions of the various problems in Hip-roofs, Gothic work, Centering, Splayed work, Joints, Hinging, Dovetailing, Mitering, Timber-splicing, Hoppers, Sky-lights, Raking-mouldings etc. This work should be in the hands of every mechanic. One of the features to which this book will undoubtedly owe its success, is the absence of those numerous formulas which serve only to confuse the ideas of so many workmen; everything is written in a clear, concise and practical manner, and its utility is brought within the grasp of those workmen who have not had the benefit of a school education.

COMMERCIAL RELATIONS OF THE UNITED STATES FOR 1880 AND 1881; from the Dep't of State, Washington, D. C.

INDIANA AGRICULTURAL REPORTS FOR 1879, 1880, 1881. 1882; from the Secretary of the Indiana State Agricultural Society.

WISCONSIN STATE AGRICULTURAL SOCIETY REPORT FOR 1881—'82; from the Secretary of the Society.

AN experimental lighting of the Court Opera House at Vienna by the electric light, recently took place before a large audience of invited guests. The first scene was laid in a room in which broad daylight was gradually changed through dusk and twilight into heavy night. The experiment went off with surprising steadiness, and at the close the audience broke into loud applause. After further experiments came a trial of costumes under various degrees of lighting. About fifty "supers," male and female, were assembled on the stage in dresses of varied hue and texture. The electric light showed up the colors of the dresses perfectly, without any of the materials losing their brilliancy. After this there succeeded a landscape scene, in which bright daylight was followed by slow degrees of evening red, sunset, moonlight morning glow and sunrise. After this the proceedings terminated with a thunderstorm, and the audience left with high expressions of approval.

THE CROPS IN JULY.

WHEAT.

Winter wheat has been harvested in the South, and the harvest is now in progress in the central zone, and will be completed during the month in the northern.

The outcome will not differ much from the expectation in April, though somewhat larger than was indicated in the June report, finer weather having developed the promise in some sections and dispelled in slight degree the previous forbodings of failure. Yet the improvement is not very marked, and assurance is made very positively sure that there will be a shortage of eighty to ninety million bushels in the winter wheat crop, and a probable deficiency of seventy to eighty million bushels in the aggregate wheat product of the year. As there will be a surplus left over on the 1st of August greater by forty million bushels than the small surplus of the previous year, there will be an ample supply for home consumption and an average exportation, though prices must be high, and in event of a temporary stoppage in the movement of competing grain toward European markets still higher than heretofore.

Reference to the table of averages will show that the improvement of the past month has been mainly in Connecticut, New York, Virginia, South Carolina, Texas, Ohio, Michigan, Indiana, Illinois, Missouri, Kansas, and California. The general average of condition is advanced from 75 to 79.

SPRING WHEAT.

The spring wheat prospect is even better than in July of last year. The general average is 100 against 98 for last July, and indicates a crop of about one hundred and twenty-five million bushels. The State averages are: Wisconsin, 100; Minnesota, 97; Iowa, 100; Nebraska, 104; Dakota, 103. It is equally high in Northern New England and Northern New York.

In parts of Minnesota the crop is needing rain, and in sections of abundant moisture weeds are vigorous and threatening to smother the wheat; but weeds are more efficient for evil in the Northwest in any year than all other causes of injury combined. There is infinitely more loss from weeds than from grasshoppers.

THE PROSPECTIVE SUPPLY.

The distribution of the crop of 1882, which was estimated at 504,185,470 bushels, shows a home consumption of 246,879,930 bushels—for seeding, 51,425,212 bushels—leaving a net surplus of 205,880,328 bushels, from which are made exports (estimated from nearly complete official figures for the fiscal year), which will require about 153,000,000 bushels. This makes last year's crop 47,000,000 in excess of requirements. The distribution is thus presented:

Group of States.	Production.	Consumption. For bread.	Consumption. For seed.	Surplus.	Deficiency.
New England	1,103,020	19,144,660	119,520	.....	18,161,160
Middle	35,745,200	51,177,141	3,770,850	.....	19,202 791
South Atlantic and Gulf	40,556,550	55 894,024	5,923,416	.....	20,60 0,890
Kentucky and Tennessee	27,221,200	15,416,955	3,056,400	8,747,845	.....
Central Western	248,792,100	73,673,175	22,886,875	147,232,050	.....
Lake	88,491,300	20,330,110	9,213,000	38,948,190	.....
Pacific and Territories	67,276,100	11,303,865	7,055,151	48,917,084	.....
Totals	504,185,470	246,879,930	51,425,212	268,845,169	57,964,841

On the same basis the distribution of the five preceding years made the following averages:

	Bushels.
Used for food per annum	233,139,786
Used for seed per annum	50,800,065
Exported as wheat and flour	145,274,678
Total distribution	429,214,529

The estimates of production, with a few millions reduction of the usual surplus to eke out the failure of 1881, cover this amount.

BARLEY.

The condition of barley is represented by 97; July, 1882, 96. The average in New York is 103; in Pennsylvania, 91; Wisconsin, 102; California, 90.

CORN.

The rainfall of the spring and early summer has been unfavorable for corn planting, and for germination when planted. Much of the late crop was not sufficiently matured for seed, and this fact increased the area of replanting. On the other hand, the winter-killing of extensive areas of wheat rendered necessary a replanting in some spring crop. From this cause a large extension of the breadth in maize is due in the central States of the West.

The area of the corn crop has been increased about two and a half million acres, making the aggregate sixty-eight million acres. There has been some extension of area in nearly every State. The proportion of increase is large in the northwest and southwest. On the coast from Virginia to the Mississippi the advance has been small. In some places the reduction of price from enlargement of supply last year had a discouraging effect.

There has been too much rain in the great Western maize districts, and failure of stands from planting poor seed, making the crop late and growth small, but improvement has of late been rapid. Taking all the States together, the average for corn is 88 against 85 July, 1882, 90 in 1881, and 100 in 1880.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

CHINESE CUSTOMS.

The Chinamen seem to be our antipodes in customs as well as geographically. In matters of dress they finish where the rest of mankind begin. His waistcoat is outside his coat, and his drawers outside his pants. We blacken our shoes, he whitens them. Our ladies compress the waist, theirs the feet. Our women wear long dresses, theirs long sleeves. In China the men carry the fans, and the women wear the trousers. In eating, their customs are in striking contrast with ours. We have a soup as a first course and dessert at last; they have dessert at first and soup at last. They ignore knife and fork and spoon, and eat with two "chopsticks," both held in the right hand. They abominate beef, milk, butter, and cheese; but eat puppies, cats, rats, birds' nests, sharks' fins and snails.

With us the right hand is the place of honor; with them it is the left hand. In dating letters we place the year last; they write the year first. Instead of saying "northeast" or "southwest," they say "east-north" and "west-south." They always speak of the mariner's compass (their own invention) as pointing to the south. Here, a mother shows her affection for her child by kissing it; a Chinese mother smells of it. We locate the intellect in the brain; they in the stomach. We pay our physicians when we are sick; they pay the doctor while they are well, but as soon as they get sick the pay stops. Here, men kill their enemies in revenge; a Chinaman gets "sweet revenge" by killing himself. They mount a horse from the right side, and when they want him to go they say "Whoa!" The men ride sidewise and the women astride. We use lanterns on a dark night, they carry more lanterns at full moon than at any other time. We place a candle in a candlestick; they put the candlestick in the candle. Their detectives sound a "tom-tom" at night to give thieves and rogues notice of their coming. We ride in railroad cars, they in wheelbarrows. We draw canal boats with horses; they with men. We sell wood by measure; they by weight. We vaccinate in the arm; they in the nose. We use a soft pillow, they a block of wood. Our store signs are horizontal; theirs are perpendicular. They launch ships sidewise, ring bells from the outside, and actually turn their screws in the opposite direction from ours.

AN IMMENSE WATER POWER.—Experts say that Broad River at Anthony Shoals, Georgia, has a volume of 19,000,000 cubic feet of water per minute, and its velocity is 175 feet per minute, its fall in a mile and a quarter being ninety-two feet. The horse-power is calculated to be 37,286, while Lowell, the finest developed water-power in the United States, has only 16,000 horse-power.

SEATED once with the driver of a stage-coach, Phil Sheridan, in replacing his cigar, put the lighted end in his mouth. He winced and shook his head. The Jehu managed to get his head turned from the wheeler and said: "From the fuss that they was makin' about ye I never thought yees was afroid of a little foire like that."

PATENT METALIC-FASTENED WIRE CLOTH BINDING.

Since the general adoption of the roller or gradual reduction system of milling, millers have felt the need of some simple, cheap and durable means of attaching the wire-cloth covering to the break or scalping reels. If simply tacked on the ribs the constant vibration of the wire soon causes the cloth to break at the edge of the rib or at the heads of the tacks. If made up in the ordinary manner with silk or linen threads, the wire soon cuts out the thread, in either case causing the reels to leak and seriously interfering with their efficiency, while the cost of repairs is a serious item. The simple device represented by the accompanying cuts furnishes a complete solution of the difficulties heretofore encountered. The wire cloth is bound either with ticking or heavy cotton duck held in place by wire staples. This binding is far more durable than binding fastened with linen or silk stitches, as the wire stitches will not cut as they pass through the wire cloth, or chafe or wear off from constant contact with rough stock. Wire cloth bound in this manner will last longer, is more easily attached to the reels, and will do better and more even work because it can be stretched thoroughly, making the meshes square and even. The binding being flexible prevents the wire from breaking from continual vibration. Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., are the exclusive owners of the patent covers, this method of attaching wire cloth to scalping reels, screens, etc.

SMITH vs. GOLDIE.

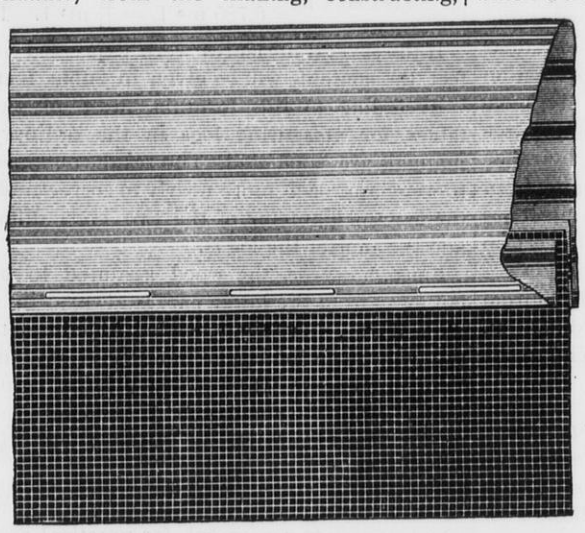
In the Supreme Court of Canada, Tuesday, the 19th day of June, 1883.

Present:—The Honorable Sir William Johnstone Ritchie Knight, Chief Justice, the Honorable Mr. Justice Strong, the Honorable Mr. Justice Fournier, the Honorable Mr. Justice Taschereau, the Honorable Mr. Justice Gwynne.

Between George Thomas Smith, et al, appellants (plaintiffs) and John Goldie, et al, respondents (defendants).

The appeal of the above named appellants (plaintiffs), from the order of the Court of Appeals for Ontario made in this cause the 30th day of June, 1882, and dismissing the appeal of the said appellants from the decree of the Court of Chancery made the 23d day of June, 1880, coming on to be heard before this Court on the 28th, 29th and 30th days of November last, in the presence of counsel as well for the appellants as for the respondents. Whereupon, and upon hearing what was alleged by counsel aforesaid, this Court was pleased to direct that the said appeal should stand over for judgment, and the same coming on this day for judgment this Court did therefore declare, order and adjudge, that the said appeal should be and the same was allowed.

And this Court did further declare, order and adjudge that the appellants (plaintiff), George Thomas Smith, was the first and true inventor of the invention described and claimed in the Letters Patent No. 2,257, mentioned in the first paragraph of the appellant's (plaintiffs) re-amended bill of complaint, that the said Letters Patent are good, valid and in full force and effect, and that the appellant (plaintiff), George Thomas Smith, has been from the date hereof, and still is, entitled thereunder to the exclusive right, privilege and liberty of making, constructing and using, and vending to others to be used, the invention in the first paragraph of the said plaintiff's re-amended bill of complaint described as follows: "In combination with the bolting surface of a flour-bolt, through which a current of air is made to pass by means of an air chamber and fan or its equivalent, a brush, or a series of brushes arranged to traverse the under surface of said bolt, substantially for the purpose set forth in the said Letters Patent, and the specifications thereto, of clearing the bolt of particles of flour adhering thereto," subject to such rights as his co-plaintiffs now have under the assignments and licenses in the said bill of complaint set forth. That the patents 1,739 and 1,793 in the respondent's (defendant's) answers mentioned were never valid, and form no defence to the appellant's (plaintiff's) said patent, and that the machines constructed by the respondents (defendants) in the pleadings mentioned, are infringements of the said Letters Patent of the said George Thomas Smith, and that the appellants (plaintiffs), are entitled to an injunction restraining the said respondents (defendants), and each of them and theirs, and each of their servants, workmen and agents during the continuance of the Letters Patent or any extension of them, from making, constructing, using or vending to others to be used, any machine containing the same combination as the said machines in the pleadings mentioned, or only colorably differing therefrom, or any other machine constructed according to or involving the appellant's (plaintiff's) said patented invention, or only colorably differing therefrom, or being an infringement of the appellant's (plaintiff's) said patent, and from in any way infringing the appellant's (plaintiff's) said patent, or causing or procuring the same to be infringed. And that the appellants (plaintiffs) are entitled to have the respondents (defendants) discover upon oath all machines in their possession, or made, used or sold by, or for them, or either of them, containing the combination hereinbefore set forth in infringement of the plaintiff's patent and of the amounts received therefor, and of the cost thereof, and of the names of the purchasers thereof. And that the appellants (plaintiffs) are entitled to an inquiry and to be paid the amount found due upon such inquiry, for damages sustained by the appellants (plaintiffs) or any of them, from the making, constructing, using, selling or vending to others to be used, by the respondents (defendants), or any of them, and by the persons to whom they have sold, given or let the same, of any of the said machines containing the combination hereinbefore set forth in infringement of the said patent of the appellant George Thomas Smith since the filing of the appellant's (plaintiff's) said bill of complaint, and for six years previously, and also of the amount of the profits received by the respondents (defendants) from the making, constructing,



SHOWING HOW CLOTH IS ATTACHED TO TICKING.

SECTIONAL VIEW SHOWING WIRE STAPLES

using and vending to others to be used, the said, or any machine infringing the plaintiff's said patent, namely: any machine or part of machine containing the combination hereinbefore set out from the date of the filing of the said bill, and for six years previously. And that the appellants (plaintiffs) are entitled to be paid the costs of this suit including the costs incurred by them in the Court of Chancery, or Chancery Division of the High Court of Justice for Ontario in the Court of Appeals for Ontario, and also in this Court forthwith, after taxation thereof. And for the purposes aforesaid this cause is referred back to the Chancery Division of the High Court of Justice for Ontario, to make such orders and directions as may be necessary. And this Court doth further order that the Registrar of this Court do deliver up to the appellants and respondents the exhibits filed or deposited herein by them respectively. Certified a true copy.

[Signed] ROBT. CASSELS,
Registrar.

THE WOBURN EXPERIMENTS.

The Royal Agricultural Society of Great Britain publishes the results of a series of tests made to show: 1, the effect of withholding all fertilizers from cereals; 2, the influence of various artificial fertilizers and of barnyard manure; 3, comparative manurial value of decorticated cotton cake and maize meal; 4, the unexpended virtue of artificial fertilizers. The experiments were continued seven consecutive years. The grains were wheat and barley; and the ground was divided into plots of a quarter of an acre, and every test on wheat was duplicated for barley.

Two plots, I and VII, were unmanured. Allowing for a difference in seasons, it may be said that their yield gradually diminished, beginning with 22⅛ of wheat per acre, in 1877, decreasing to 9.6, and averaging 16 bushels for the whole period.

Plot II received annually 200 pounds of ammonia salts; its average return for the time was 23½ bushels.

Plot III was treated in a similar way, the nitrogenous supply being furnished by 275 pounds nitrate of soda instead of the ammoniacal salts, and the result was an average of 22.2 bushels; although in five out six seasons the yield was somewhat more from the ammonia salts than from the nitrate of soda. The latter, especially in wet seasons, exerts more energy on the straw than on the berry.

Mineral fertilizers—sulphates of potash, soda, and magnesia, and superphosphate of lime—applied to plot IV produced no appreciable results. The yield was less than that of the unmanured plot I for the first two years, and but little larger the remaining years; while the barley product was really less; the figures for barley being 22.1 bushels against 27.5; the present color of the growing plant is inferior to all of the other plots. Plot V received the same mineral manure to which was added 200 pounds of salts of ammonia; and plot VI was similarly treated, receiving the equivalent of ammonia from 275 pounds of nitrate of soda. Plots VIII and IV were manured, as were V and VI, except that the nitrogenous elements were doubled, 400 pounds of salts of ammonia and 550 pounds of nitrate of soda. The results from V and VI were but one-fifth of a bushel per acre apart in favor of the ammonia salts, the average being 29.1 bushels and 28.9. The barley plots showed a difference in favor of the soda, the average being 42.6 against 41.2 bushels, the slight divergence indicating that nitrate of soda is more beneficial to barley, and salts of ammonia to wheat. The plots to which were applied the double quantity of ammonia appear much like and remarkably well, the average product being from the ammonia salts 36.2 bushels, and from the nitrate of soda 33.8. A similar result is noted on the barley plots, the difference—not over half a bushel per acre—being also in favor of the ammonia.

Plot X received four tons of good farm yard manure annually, and produced at the rate of 18 bushels per acre. The manure was doubled on Plot XI, and the return was 22.6 bushels—much less in both cases than from an equal amount of ammonia in the shape of the salts or of nitrate of soda.

Tests of the comparative value of manure from decorticated cotton cake and from maize meal show, contrary to the general belief, that the meal has a greater value, and while the difference is slight, give rise to the vuestion: Are English farmers throwing away money on cotton cake?

The experiments conducted to determine whether or not artificial manures were of value to land beyond the season in which they are applied were of peculiar interest to the tenant farmer as well as to the landlord. The tests were thorough and decisive. Plots VIII and IX received each for five years 200 pounds sulphate of potash, 100 pounds sulphate of soda, 100 pounds sulphate of magnesia, and 3½ cwts. superphosphate of lime. In addition, it will be remembered, was, in one case, 400 pounds salts of ammonia, and in the other, 550 pounds nitrate of soda. In 1882 one-half of each of these plots was left unmanured, the other half receiving the regular amount. The crop on the unmanured half of Plot VIII was 13.3 bushels per acre, or one bushel more than the unmanured Plot I, which was 12.3 bushels, and 3 bushels less than the average of the unfertilized plots. The manured half produced 43.5 bushels per acre. The test is still in progress, the half plots being interchanged, and the appearance indicates a repetition of last year's result. The unmanured half looks no better than the plots to which no fertilizer has been applied. The same effect was noted on Plot IX, the unmanured portion showing no traces of its generous treatment in the previous five years.

In brief, the experiments show that mineral manures alone do not increase the product of wheat or barley; that the increase is due to nitrogenous matter; that a quantity of farm-yard manure supposed to possess an equivalent in ammonia to ammonia salts, in fact displays much less virtue; and that artificial fertilizers lose all their power before the second crop appears; and also that manure resulting from feeding corn meal is worth quite as much as that from cotton-seed cake.

A BALLON UNDER THE SEA.—Our Marseilles Correspondent writes:—The International Exhibition of Nice is reserving some wonders for the foreigners who may propose to pass a portion of the winter of 1883–84 upon the borders of the Mediterranean. One of these wonders is a balloon which its inventor, M. Toselli, calls "the observatory under the sea". It is made of steel and bronze, to enable it to resist the pressure which the water produces at a depth of 120 métres. This "observatory under the sea" has a height of eight métres, and is divided into three compartments. The upper apartment is reserved for the commander, to enable him to direct and to watch the working of the observatory, and to give to the passengers the explanations necessary as to the depth of the descent, and what they will see in the depths of the sea. The second apartment, in the centre of the machine, is comfortably furnished for passengers to the number of eight, who are placed so that they can see a long distance from the vessel or machine. They have under their feet a glass which enables them to examine at their ease the bottom of the sea, with its fishes, its plants, and its rocks. The obscurity being almost complete at 70 métres of depth, the observatory will be provided with a powerful electric sun, which sheds light to a great distance in lighting these depths. The passengers have at their disposal a telephone, which allows them to converse with their friends who have stopped on the steamboat which transports the voyagers to such places as are known as the most curious in the neighborhood. They have also handy a telegraph machine. Beneath the passengers an apartment is reserved for the machine, which is constructed on natural principles, that is to say, as the *vessie* of a fish, becoming heavier or lighter at command, so as to enable the machine to sink or rise at the wish of the operator.—*The British Mail.*

ITEMS OF INTEREST.

WIRE DRAWING.—It was not until some time after 1300 that wire-drawing became an art. A race of wire-drawers, who made iron wire by hand and afterward by water power, then sprang up in Germany and became famous in Europe. Wire-making was introduced in England, about the middle of the fifteenth century. This industry was commenced in the United States at the beginning of the present century, and it is needless to say that it has grown to enormous proportions within the past few years.

TO MEASURE THE FLOW OF STREAMS.—The *Manufacturer and Builder* gives the following very simple method: To measure water roughly in an open stream, take from four to twelve different points in a straight line, across the stream, and measure the depth at each of these points, and adding them together, divide by the number of measurements taken. This quotient will give you the average depth, which should be measured in feet. Multiply this average depth by the width in feet, and this will give you the square feet of cross section of the stream. Multiply this by the velocity of the stream in feet per minute, and you will have the cubic feet, per minute, of the stream. The velocity of the stream can be found by laying off 100 feet on the bank, and then throwing a board into the stream at the middle, note the time required to pass over the 100 feet, and dividing the 100 feet by the time and multiplying by sixty gives the velocity in feet per minute, at the surface. The velocity at the center is only eighty-three per cent. of that at the surface, and so only eighty-three per cent. should be calculated. For example, suppose the float passes 100 feet in ten seconds, this divided by ten and multiplied by sixty (seconds in a minute), gives 600 feet per minute as the velocity, and eighty-three per cent. of this gives 498 feet per minute as the velocity of the stream at the center, and the area of the cross section, multiplied by this will give the number of cubic feet per minute in the stream.

"WAS I in the wah, Boss? Just listen at dat; was I in the wah? Why, I seed every battle dat was fit, and knowd Lee and Stonewall Jackson and Jeff Davis and all dem jis as well as I does dat nigger you see in dar shinin' shoes. General Lee particler, he thought a great deal of me, and when I'd ax him to giv me a furlough he low'd, 'Bob, I can't spare you. I'm agwine to fight dat battle what I talked to you about, and I'm bound to have you by me. But, howsever, if you'll be back in four days certain sure, yo can go.' Sure 'nough I'd be comin' back into camp whistlin' at night, and Lee he'd say to Stone wall Jackson, 'Dere's Bob coming back now; I know him by his whistle. It's all right now; we can go ahead."

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, AUGUST, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California 209; Colorado, 52: Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

GEO. BAIN has returned from his trip to Europe in good health and spirits.

THE Case Manufacturing Co., of Columbus, O., have not sold their purifier patents. All statements to the contrary were entirely "too previous."

DURING the year ending June 30, 1883, there arrived 592,324 immigrants from foreign countries, against 770,442 last year, showing a decrease of 178,098.

WE are sorry to learn that the office of *The Millstone*, at Indianapolis, Indiana, was struck by a cyclone during the evening of July 12. Damage to the amount of $700 was the result.

IF it is gold you crave, go not into the seductive path of Parnassus. Dig potatoes, build fences, sell calicoes, argue cases at the bar, doctor, if your conscience allows you to do so, your ailing fellow-creatures, preach the gospel, do anything that is necessary, but seek not wealth in literature.

THE *Farmers' Journal* says, that the losses by fire in this country since January 1, 1883, have amounted to $34,969,727, and that we may reasonably expect that the final showing for the whole year will not be less than $77,334,500.

CENTRIFUGAL REELS are now in great demand and they are being rapidly introduced in all parts of the country. There are twenty-five different styles of these machines manufactured and sold in Great Britain, and possibly as many more styles are being built in this country.

THE *St. Louis Miller* finds fault with us for publishing only a column and a half report of the proceedings of the Millers' National Association, at their June meeting in Chicago. We published quite enough, we think. There is sometimes such a thing as making *too complete* a report, as the publishers of the *St. Louis Miller* have probably learned by this time.

WE welcome to our table a new railroad journal. It is called the *American Journal of Railway Appliances*, and is published by the American Railway Publishing Co., at No. 67 Williams street, New York City. Subscription price $3.00 per year. The first number contains 28 large pages. It is edited by Robt. Grimshaw, M. E., and G. B. Heckle, Ph. D. We congratulate the railroad industry on the acquisition of such an able exponent of all matters of importance to its interest. P. G. Monroe, is the Western representative, and a good one.

THE total value of exports of breadstuffs for the year ending, June 30, 1883, was $202,971,491, against $177,001,396, for the previous year.

During the year ending June 30, 1883, there were exported 9,069,031 barrels of flour, valued at $54,044,837, against 5,733,194 barrels, valued at $35,396,705, for the previous year.

THE *Northwestern Miller* and The *Milling World* have been indulging in an inky fight. The *N. W. Miller* commenced the war by accusing the *Milling World* of filching *original* matter from its valuable columns, and republishing it without credit. The *Milling World* retaliates with the same accusation against the *N. W. Miller*.

Inasmuch as none of the ideas contained in the items referred to are at all new or original with either paper, we do not see the utility of carrying on this "bloodless war." Keep your tempers, gentlemen. Be amiable, especially while the hot weather lasts.

MILLING MATTERS IN FRANCE.

During the month of July the Paris Wheat and Flour Syndicate expended about $2,500 for the purpose of making experiments with different systems of milling and to determine, if possible, which system was best adapted to the requirements of the French public. Among the systems tried were: two roller systems, three stone systems, two disc systems and the "Carr" disintegrator in combination with stones and rolls for finishing. We have not yet heard the report of the committee having the experiments in charge. France has been very backward about changing from the stone system, but now that the subject has become one of great interest we expect to note important changes. The *Bulletin des Halles* has just issued a new milling journal which we trust will faithfully chronicle all changes and improvements beneficial to the trade.

ESTIMATE OF THE 1883 WHEAT CROP.

S. H. Seamans, Secretary of the Millers' National Association, in his report, dated June 20, estimates the present crop as follows:

	Wheat crop '82 from U. S. Agricultural Departm't	Indications for 1883 as reported May 16th.	Present indications for crop of '83 in r'nd numbers.
California	34,546,600	45,000,000	42,750,000
Nebraska	14,947,200	15,000,000	16,500,000
Texas	4,173,700	2,100,000	2,100,000
Kansas	33,248,000	23,000,000	23,000,000
Missouri	27,538,600	21,400,000	17,624,700
Iowa	25,487,200	15,300,000	17,850,000
Dakota (approx.)	12,000,000	18,000,000	18,000,000
Minnesota	37,030,500	37,000,000	35,000,000
Wisconsin	20,145,400	18,500,000	18,500,000
Illinois	52,302,900	25,000,000	23,536,000
Kentucky	17,250,000	12,400,000	11,200,000
Tennessee	8,971,200	6,800,000	6,280,000
Georgia	3,812,900	3,800,000	3,400,000
Virginia	8,311,400	8,300,000	8,300,000
Maryland	8,655,600	9,000,000	9,000,000
Delaware	1,200,000	1,000,000	1,000,000
New York	12,145,200	10,800,000	10,800,000
Pennsylvania	20,300,700	22,300,000	22,300,000
Ohio	45,453,600	26,000,000	23,250,000
Indiana	45,461,800	29,500,000	25,000,000
Michigan	33,315,400	23,300,000	23,300,000
States named } Total	466,297,900	373,500,000	358,690,700

The above includes the *principal* wheat growing area of the United States, except Oregon.

Shortage indicated by our May report 93,000,000 bushels, compared with crop of 1882, as estimated by the U. S. Agricultural Department *in the above named States*. The present outlook in the *same States* indicates a shortage of 107,607,000 bushels.

In presenting this report, I desire to state explicitly that, except where otherwise stated, the figures are the results of the replies received, regardless of "impressions," theories, or other sources of information; and the "conclusions" arrived at are believed to be a fair indication of the outlook of the wheat crop at the date reported.

IN cases of externally-fired boilers many must have noticed the snapping and bubbling sound at the bottom, after pulling down the fires with a strong draft on, prior to blowing down. This is due to the "mud" (organic and inorganic substances) which has settled during the night, while the boiler was losing heat on the lower side; the water becoming comparatively quiet on the inside. Under such circumstances the boiler may be compared to a pot of boiling mush. The steam bubbles are made at the bottom, underneath the mass of mud, and when sufficiently buoyant, come in contact with the colder water above, and are condensed, forming a snapping noise in collapsing. This never occurs in a clean boiler, with comparatively pure water.—*N. W. Williams.*

(Translated from the Allg. Müller Zeitung, for the UNITED STATES MILLER.)

PRACTICAL FORMULAS FOR DETERMINING THE CUBICAL CONTENTS OF LOGS.

In calculating the cubical contents of a log, it is generally regarded as the frustrum of a cone, and the surfaces of its sections, both at the top and bottom, forming circles. Generally speaking, this is near enough to the truth, regardless of small irregularities occuring in the trunks of all trees; but frequently the sections vary considerably from a true circle, and approach more nearly to the eliptic or other similar forms, besides which a tree is very seldom straight, but presents all manners of twists and excrescences. For these reasons all formulas for measuring the cubic contents, deduced from a supposed circular form of the sections, must be considered only approximately correct; but there being no other way of reaching a more satisfactory result without launching out into endless calculations, these formulas are the only ones of any practical value.

The frustrum of the cone formed by a log, may be considered as a cylinder with the same diameter, as the arithmetical medium between those of the two end sections; the parts cut away from the lower half, if such a cylinder was made, being supposed to be added to the upper half.

Let L be the length of the log, D the diameter of the larger, and *d* the diameter of the smaller end, including the bark. The diameter (*m*) of the log at the middle is then $\frac{D+d}{2}$ and the cubical contents (C) of the log reduced to a cylinder.

$$C = \frac{3.14 \times m^2 \times L}{4} = 0.785\ m^2\ L = \frac{11}{14}\ m^2\ L \quad 1)$$

If the several measures were expressed in feet, the contents will be given in cubic feet.

According to this formula most of the tables for measuring logs in the ordinary manuals are calculated. The results obtained thereby approach more nearly to correctness, the less the diameter of the two ends differ and the shorter the log is.

Since, however, the wood assumed to be cut away from the lower part is always, in a natural tree, more than needed to complete the cylinder in the upper part, it is evident that this formula, when solved gives a value that is a little too small, and if therefore the decimal fraction 0.785 be rounded off into 0.8, we obtain the formula

$$C = 0.8\ m^2\ L = \frac{4}{5}\ m^2\ L \quad 2)$$

which is easy to remember, for practical purposes more convenient than No. 1, and sufficiently correct for all ordinary requirements.

Compared with the mathematically more correct formula for obtaining the cubic contents of the frustrum of a cone, this formula No. 2, gives a somewhat larger result, but if it should be desirable to have a formula which accurately expresses the real value of the frustrum, it is necessary to take a coefficient between 0.785 and 0.8. The arithmetical medium is 0.793, the nearest approach to which, in ordinary fractions is $\frac{23}{29}$, and thus the most accurate practical formula is

$$C = \frac{23}{29}\ m^2\ L. \quad 3)$$

This formula is not so convenient to handle as No. 2, but, as before said, more accurate. Since $\frac{23}{29}$ is $\frac{3}{406}$ larger than $\frac{11}{14}$ and $\frac{1}{145}$ smaller than $\frac{4}{5}$, the results of formula No. 3 will consequently be greater than those of No. 1 and smaller than those of No. 2.

For instance if

$L = 6$ ft., $D = 0.8$ ft., $d = 0.6$ ft., then $m = \frac{0.8 + 0.6}{2} = 0.7$ ft.

According to formula No 1:

$C = \frac{11}{14} \times 0.7 \times 0.7 \times 6 = 2.3091$ Cub. ft.

According to formula No. 2:

$C = \frac{4}{5} \times 0.7 \times 0.7 \times 6 = 2.3520$ „

According to formula No. 3:

$C = \frac{23}{29} \times 0.7 \times 0.7 \times 6 = 2.3216$ „

According to the mathematically correct formula for calculating the contents of a true frustrum of a cone is $C = 2.3351$ cubic feet; and the result of formula No. 3, therefore, comes the nearest to this value.

If it is desired to ascertain the cubic contents of wood in a log after removing the bark, and after parts which are useless, we recommend employing the following formula, which is in general use in Switzerland, viz.:

$$C = \left(\frac{P}{4}\right)^2 L \text{ cubic feet.} \quad 4)$$

P being the circumference on the surface of the median section, and L the length of the log expressed in feet.

If convenient to make use of the diameter of the median section (m), this formula (P as is well known being equal to 3.14 m) can also be expressed as follows:

$$C = \left(\frac{3.14\ m}{4}\right)^2 L = \frac{31}{50}\ m^2\ L \quad 5)$$

If this formula is compared with No. 3, it will be seen that the refuse is $\frac{251}{1450}$, or from $\frac{1}{5}$ to $\frac{1}{6}$. It is thus easy to deduce also practically the cubical contents of a round log from the three first formulas, by deducting 17 to 20 per cent. for bark etc., the percentage to be allowed depending, of course, on the condition of the raw log.

FREE TRADE IN IRELAND AND INDIA.

BY JUDGE KELLEY, OF PA.

It was British diplomacy that enslaved Ireland. It was the act of Union by which the development of her mineral resources was arrested and her flourishing manufactories extirpated. He who would read a condensed statement of the effect of England's Free Trade upon Ireland will find it in Carey's "Slave Trade," or in "Why Ireland is Poor," a recent pamphlet by John F. Scanlan, of Chicago. So used are we to hear Ireland spoken of as "Green Erin," that most of us regard the island as a mere pasture field, in favored spots of which due industry may produce potatoes. And few will be prepared to hear that during a recent year the iron makers of the United States imported 10,640 tons of iron ore from Ireland. Her native resources are undeveloped; her people have been decimated by famine; her chosen representatives, having only discontent to represent, have come to be regarded as dangerous, and are untried and unindicted prisoners in the jails of their native country. These blessings she owes to the fact that the articles of Union between Ireland and Great Britain, executed by Castlereagh and other Irish traitors, inflicted upon her that system of British Free Trade which is vindicated by the science based upon assumptions.

So, too, with India. Less than a century and a half has elapsed since the civilized world looked to what is now British India for its cotton goods, chintzes, and calicoes. I know of a bedspread and set of curtains which have been in the possession and use of a family of my friends for more than a century. The designs, which are floral, are exquisite in their perfection; and the blue in which they appear is as bright as though it had been imparted but yesterday. Orme, in his "Historical Fragments," says: "On the coast of Coromandel and in the province of Bengal, when at some distance from a high road or principal town, it is difficult to find a village in which every man, woman, and child is not employed in making a piece of cloth. At present much the greater part of the whole province is employed in this single manufacture. Its progress includes no less than a description of the lives of half the inhabitants of Indostan."

Under the system of national economy taught by List and Carey, Ireland's extensive deposits of coal and iron and her other mineral resources would be developed, her textile manufactories would revive, her agriculture would be diversified, and her population would increase as do the descendants of her expatriated children in other lands. The assertion that the island could, under this system, maintain 20,000,000 liberal consumers of each other's production is largely within the bounds of moderation. In 1841 her people numbered 8,175,124; in 1851 the number had shrunk to 6,552,385, and by 1881 to but 5,159,839. No language can proclaim the misery of Ireland more forcibly than do these diminishing figures. They relieve from the charge of exaggeration Thomas Francis Meagher, who, when addressing his countrymen in 1848, when the failure of the potato crop of 1845, 1846 and 1847 had caused the death of a million of their fellow-subjects by starvation and disease engendered by hunger, said:

The cotton manufacture of Dublin, which employed 14,000 operatives, has been destroyed; the stuff and serge manufactures, which employed 1,490 operatives, have been destroyed; the calico looms of Balbriggan have been destroyed; the flannel manufacture of Rathdrum has been destroyed; the blanket manufacture of Kilkenney has been destroyed; the camlet trade of Bandon, which produced £100,000 a year, has been destroyed; the worsted and stuff manufactures of Waterford have been destroyed; the rateen and frieze manufactures of Carrick on Suir have been destroyed; one business alone thrives and flourishes, and dreads no bankruptcy. That fortunate business which the Union act has stood by; which the absentee drain has not slackened but has stimulated; which the drainage acts and navigation acts of the imperial senate have not deadened but invigorated; that favored and privileged and patronized business is the Irish coffin-makers.

[The following article, which was written for *The Miller*, London, by a milling engineer, contains many points of interest and much information of value to young American millers who have a desire to learn. The publisher of the UNITED STATES MILLER has endeavored to obtain an article something similar to this from a well known American milling engineer, but as yet he has been unable to do so. He believes he renders a valuable service to his readers by republishing from *The Miller*, London, the article as below. The article was prepared with a view to assisting millers to pass the examination for admission to the ranks of English journeymen millers.]

STUDIES FOR YOUNG MILLERS.

Milling Technology, with Suggested Questions for Examination Therein.

(Continued from June number.)

Those questions which we have thus far treated under the headings of *Storage, Manufacture, Motors, Machinery, Technology, Preparation, Reduction, Separation, Chemical composition and physical properties of the wheat berry,* and *Explosions*, are all more or less closely related to the *mechanical treatment* of the wheat and its products during the various stages of manufacture, irrespective of its *origin, variety,* and *value* as a raw material. England being, however, a largely importing country, it is necessary for British and Irish millers to study carefully those questions which have reference to milling in its commercial aspects, namely, the price and quality of those wheats which are imported into the United Kingdom from the various centres of wheat production.

The *available supply* of the exporting countries, the *cost of transport* to the centres of import, and the *demand* there for breadstuffs, influence the *price* of the wheat and its products, and thereby indirectly the profits of the miller. The greater the difference between the value of the raw material and that of its finished products, and the smaller the cost of production, the greater is the miller's profit. On the other hand, his profit also greatly depends on the *quality of the wheat*, in so far as this influences the *quality* and the *value* of its finished products. If by using first-class wheats a miller can effect a *greater difference* of value between the raw material and its finished products than by using cheaper wheats of medium quality, the first will, of course, be more profitable than the latter, notwithstanding their greater cost. The quality of wheats depends much on their origin, their variety, on the soil and climate, and on the state of agriculture in the country where they are grown. All these points, therefore, deserve very careful attention from millers in order to guide them in judging the relative *milling value* of various wheats. Mr. Emmerich Pekar, in his work on "The Wheats and Flours of the World," has made very extensive and careful investigations about the relative value, from a milling point of view, of nearly 200 different wheats, and his tables and explanations, which are now being published in *The Miller*, should be carefully studied by every intelligent miller.

1. *Milling.* We have already treated the various mechanical processes which constitute the process of milling. The greater the degree of perfection which is attained in these different processes the greater will be the value of the finished products and the greater will be the realized profit, if the cost of production has not been unduly enhanced by the greater cost generally incident upon the employment of perfected machinery. It is evident that not every improvement in the value of the finished products is necessarily accompanied by increased profits, but that it entirely depends whether such improvements are effected without causing undue expenditure during production. There is no doubt that many perfections are yet possible, and that they will probably be effected in the near future; but millers should not forget that they must have due regard to the three main points which fix the profit of every mill—namely, 1, *the milling value of their wheats;* 2, *the cost of production;* and 3, *the total value of their finished products.*

2. *Supply.* The milling value of wheat, that is the relation between its *price* and its *quality*, is subject to the fluctuations which the question of *supply* and *demand* causes in the ruling markets. Very often wheats of good quality have an unassuming appearance, and are offered at moderate prices, thus giving intelligent millers a favorable opportunity to realize a good profit by adapting their machinery to the physical peculiarities of such wheats. This question of adapting mills to the peculiarities of certain wheats is one which deserves much more attention than has hitherto been bestowed upon it. The great milling value of Hungarian wheats was not recognized until Hungarian mills had been adapted to their physical properties. There are many other wheats offered in the English market which would pay well for the trouble of special treatment, and indeed it may be questioned whether it is not more advantageous to treat different wheats separately, and mixing their flours instead of mixing the wheats before reduction. Of course, as far as the English market is concerned, the supply depends on the available surplus of various exporting countries, it is very changeable, and the same variety is not always obtainable at remunerative prices. But, on the other hand, there is no difficulty even for English millers to obtain a regular supply of such varieties which may be advantageously treated by the same specially adapted machinery.

3. *Variety.* England draws its wheat supply from the United States, Canada, Russia, Turkey, and the Danubian principalities, Austro-Hungary, Spain, Egypt, East India, Australia, New Zealand, Chili, &c., and it is clear that the milling qualities of these wheats vary as much as do the soil and the climate of these many countries. Generally speaking, those countries which have the greatest available surplus are far distant from England, and, as a natural consequence, the cost of transport can only be borne by the better classes of wheat. The lower class wheats will therefore generally remain in their native country, unless the native milling industry is able to produce such flour from the better wheats which will be able to bear a sea voyage, and realize more remunerative prices.

There are about 800 differently named varieties of wheat in the world but Vilmorin distinguishes only six botanical species, namely: 1. *Triticum sativum;* 2. *Triticum turgidum*, 3. *Triticum durum;* 4. *Triticum polonicum;* 5. *Triticum amyleum;* 6. *Triticum spelta.* Of these the first three are the most common, and include nearly all those wheats which are at the disposal of British and Irish millers. If there were no import and export duties in some countries, those countries in which consumption exceeds the production would naturally draw their supply from those countries, which are most favorably situated with regard to cost of transport; but as these duties are very variable it often occurs that far distant countries have greater facilities of transport than nearer ones.

It would lead us too far if we were here to attempt a description of the quality and characteristics of all those wheat varieties which are imported into the United Kingdom, nor is this the place to refer to all those circumstances which affect the importation of wheat. Excellent statistics about wheat production, consumption, and import can be found in Neumann Spellarts's reviews, and also in Emmerich Pekar's book.

(*a*) Those countries which under average circumstances *import* wheat are: Great Britain and Ireland, France, Holland, Belgium, Germany, Austria, Italy, &c.

(*b*) Those countries which, under average circumstances, *export* wheat, are: The United States of North America, Canada, Chili, New Zealand, Australia, East India, Egypt, Turkey and the Danubian Principalities, Russia, Hungary, Denmark, &c.

(*c*) The production of wheat generally equals consumption in the following countries: Spain, Portugal, Sweden and Norway, the South American Republics, Mexico, &c.

(*d*) The principal divergent characteristics of wheat are its color, its strength, its hardness and its shape and size.

(*e*) The following are the divergences of the the principal wheats which are imported into the United Kingdom:

(*a*) *United States.*—1. Oregon, large white wheat, soft.

2. Californian Nos. 1 and 2, large white wheat, a little harder than Oregon.

3. Minnesota, hard and soft red wheat of best quality.

4. American winter wheat, soft red wheat, comparatively strong.

5. American spring wheat, mostly hard red wheat, good strength.

6. Michigan, white soft wheat of good quality.

(*b.*) *Canada.*—Fine white soft wheat from British Columbia, and fine white and red wheats, harder, from Manitoba.

(*c*) *Chili.*—Hard and soft white wheats.

(*d*) *New Zealand*—Soft white wheat.

(*e*) *Australia*—Fine large wheat, strong and heavy.

(*f*) *East India*—1. Calcutta club wheat, soft white wheat No. 1 and No. 2.

2. White Bombay, soft and hard, white wheat, large.

3. Soft, red Calcutta, small.

4. Hard red Calcutta, small.

5. Hard and soft red Bombay, small.

(*g*) *Egypt*—White and red wheats, soft and hard, rather dirty.

(*h*) *Turkey* and the *Danubian Principalities*—Various red wheats, hard and soft, generally thin and strong wheats, some of them fine.

(*i*) *Russia*—1. Kubanka, large hard red wheat, very strong.

2. Saxonska, soft red wheat, very strong.

3. Berdianski, large red wheat, very fine.

4. Odessa Ghirka hard, small, red wheat, very strong.

5. Taganrog, very hard, small, red wheat, strong.

6. Sandomirka, very fine red wheat, very strong.

7. Polish, red and white, large, soft and hard wheat.

(*k*) *Hungary*—Generally red, large, hard wheat, very strong.

(*l*) *Denmark.*—Soft red and white wheats, large.

(*f*) Of the above-mentioned countries the following will probably increase their exportation:—The United States, Canada, Australia, and New Zealand, because their wheat acreage increases in a far greater degree than their consumption. In the other countries the home consumption is continually increasing without a corresponding increase in the wheat production; their available surplus will, therefore, probably become smaller.

4. *Transit.*—The methods of carrying wheat from the interior to the exporting seaports have great influence on the cost of transport. The numerous and capacious elevators and the great facilities for water carriage, as well the low freights on railways, enable America to compete successfully with other countries which are much nearer to the United Kingdom. In many countries the grain cannot be conveyed otherwise than in sacks, whereas in America it is carried *in bulk* on the railways, unloaded by the elevators, and reloaded into the ships which carry it in bulk to the United Kingdom.

(*a*) The principal ports of importing and exporting countries are—

1. *Export*—New York, New Orleans, San Francisco, Quebec, Valparaiso, Adelaide, Melbourne, Calcutta, Bombay, Alexandria, St. Petersburg, Odessa, Danzig, &c.

2. *Import*—London, Liverpool, Bristol, Hull, Glasgow, Dublin, Belfast, Bordeaux, Hamburg, Rotterdam, Amsterdam, Antwerp, Lissabon, Marseilles, &c.

(*b*) The relative cost of transit from the exporting countries is variable, but the following will serve as examples:

COST OF WHEAT CARRIAGE PER BUSHEL.

San Francisco to England	36 to 39	cents.
The Far West to Atlantic Harbor	40	"
New York to Liverpool	10	"
Chicago to Liverpool	19	"
Bombay to England	13	"
Calcutta to England (*via* Suez)	18 to 29	"
Calcutta to England (*via* Cape)	15 to 20	"
Australia to England	21	"
Buenos Ayres to Havre	16 to 24	"
Odessa to England or Antwerp	13 to 28	"
Brody to Hamburg	31	"
Ibralia to London	17	"
Galetz to Hamburg	51	"
Budapest to Hamburg	39	"
Budapest to Liverpool (*via* Fiume)	28	"
Lemberg to Frankfort-on-Maine	23	"
Vienna to Frankfort-on-Maine	22	"
Vienna to Fiume	26	"
Vienna to Trieste	21	"

(*c*) Oregon wheat intended for the United Kingdom would be sent by rail to San Francisco, thence per Southern Pacific Rail to New Orleans, where it would be unloaded and conveyed into the ship by the elevators and carried per steamers or sailship to Liverpool, Bristol or London.

(*d*) A sea voyage affects the quality of the wheat in so far as the latter becomes more moist. It has been asserted that in some cases the increase of weight caused by this additional moisture is sufficient to pay for the cost of transit.

(*e*) Reliable information on the import and export duties on *wheat* and *flour* in the various foreign countries and in British Colonies is very scarce.

The statistical tables in the Blue-books of 1880 and 1881 do not mention *wheat* and *flour* among the articles which pay duty in foreign countries; they only give these duties for the British possessions. The following are some of them:—

(A) Import duties: India free; New South Wales, free; Victoria, 1s. per 100 lbs; South Australia, free; Western Australia, 10 per cent.; New Zealand, 9d. per 100 lbs; Queensland, 6d. per 100 lbs.; Cape of Good Hope, 8d. per 100 lbs.; Canada, 7½d. per 100 lbs.

(B) Morocco is perhaps the only country in which, from time to time, an export duty on wheat and flour is levied.

(*f*) The effect of *import duties* on the corn trade is an immediate rise in price. The home producers are benefitted thereby, but the home consumers have to pay more for their staff of life. Import duties may, in some cases, disable foreign competition, but they do not benefit the country which imposes them, if it depends largely on these imports. *Export duties* have the effect to keep the wheat at home, and, when continued, they would tend to equalize home production with the requirements of home consumption.

Having thus returned an answer to all those questions on milling technology which were suggested in *The Miller* of July 3d, 1882, I should like to state that I do not desire to create the impression that my answers are so correct and so terse that they could not be improved upon. I have only endeavored to give young millers an illustration how those questions *might* be answered, and in some cases I have added explanatory remarks in order to show the reasons which induced me to come to those conclusions which I have detailed. It must therefore be understood that these answers are influenced by my personal opinion, and although they are based upon practical experience and patient study, they must not be taken for more than they are worth. Every young miller who intends to submit himself to the coming milling examinations should endeavor to form his own conclusions on the basis of his own practical experience and his daily observations in the mill, with due regard to such information which he may be able to obtain from the milling press and from milling books. It is much to be regretted that this latter source of information, at least so far as English milling books are concerned, is still so limited. This is one of the weak points in the otherwise admirable scheme for the advancement of technical milling education, as inaugurated by the Association of British and Irish Millers.

It is not difficult to obtain full information on the five *science subjects* which are demanded by the Science and Art Department. There exist very many excellent text-books on the subjects, and the books can be had at low prices. Besides, there exist in nearly every place facilities for hearing lectures on these subjects from persons who have devoted their life to the study of such sciences.

But there is no *text-book* on *the manufacture of flour* in which its principles and fundamental laws are treated in the same comprehensive and clear manner as is done in the many text-books on the steam engine, on chemistry, on the manufacture of iron, &c., &c., and there are no lecturers who have specially devoted themselves to milling technology.

The secretary of the Association of British and Irish Millers said, during the meeting on July 31, 1882, that owing to the small amount of funds at their disposal they were unable to form a Millers' College, but that they had been able to induce the City and Guilds of London Institute to hold certain milling examinations under certain conditions. Now, although this is a very good beginning, and will, I hope, be followed with better results than the last bakers' examination, I have taken this opportunity to point out some of the difficulties which milling students have to contend with in preparing themselves for these examinations; and in order to remove these difficulties I should like to submit the following suggestions to the attention of the Council of the Association.

1. Would it not be possible to offer a substantial prize, or several prizes *for a Text-book on Milling Technology*, in order to encourage English milling literature?

2. Would it not be possible to induce the City and Guilds of London Institute to engage a competent person, perhaps the author of the prize text-book, to hold *Lectures on Milling* in their new Finsbury Technical College, so that young millers might there acquire their technical education?

I am sure the achievement of these objects does not require any great funds, and they are the easiest and best means towards the accomplishments of that desirable object, the institution of a *Millers' College* where millers can acquire a thorough technical education *after they have served their time* and have acquired sufficient *practical knowledge* to form a sound basis for their subsequent acquirements.

(*To be continued.*)

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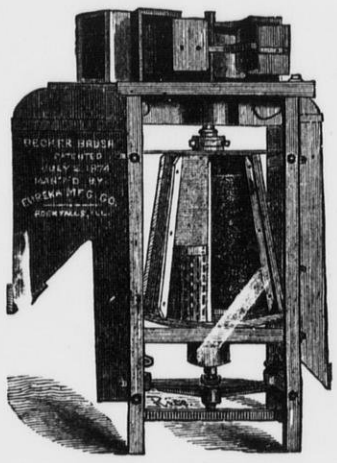

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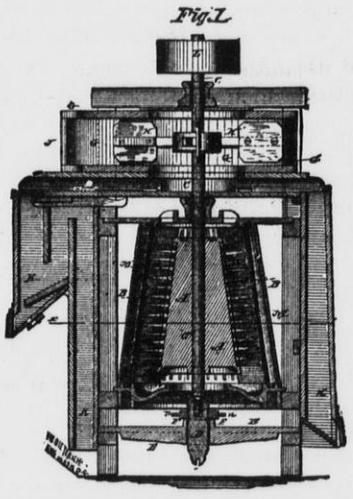

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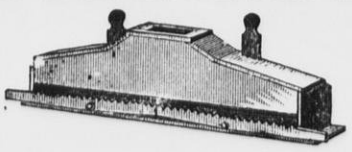

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(From STOUT, MILLS & TEMPLE Catalogue of Milling Machinery, for 1883.)

CONSTRUCTION OF HEAD-RACES, FLUMES, WHEEL-PITS AND TAIL-RACES.

Under the above heading we propose to make some practical remarks for the benefit of any who will avail themselves of our experience and observation. The importance of large and sufficient canals in the improvement of water powers are appreciated by but comparatively few who are using water as a motive-power, consequently in very many instances the subject receives but little consideration. It is almost invariably the case that much valuable power is lost in consequence of insufficient head-races, flumes, wheel-pits, and tail-races. The first thing that should be considered, where a water-power is to be improved, is, how many horse-power will be required or can be obtained, and how many cubic feet of water per minute will be required to produce the requisite number of horse power with the fall to be employed. When this is determined, the canals and wheel-pits should be constructed of sufficient size to allow the water to pass to and from the water-wheels at a velocity not to exceed one and a half feet per second, and no tail-race should have less than two feet of dead-water before the wheels are put in motion. Where a very large amount of water is to be employed it would be better to have at least three or four feet of dead water the entire length of tail-race. By having this depth of water in the tail-race, as soon as the water is discharged from the wheels it displaces the dead-water, and consequently there is but little, if any, loss of head. In order to make our point plain, we will suppose the bottom of the tail-race is only sunk to the level of the water in the river or receiving canal; the consequence would be, the water discharged from the wheels would rise in the tail-race in proportion to its width and quantity of water used, while if there was the desired depth, as before stated, the water discharged from wheels would displace the dead water, and at once conform to the general level of water in the tail-race and river. We very frequently see two or three feet head lost in water-powers from the want of proper consideration.

We will suppose we have a fall of twenty feet, and wish to employ three hundred and eighteen horse-power, which will require one 60-inch American wheel. On the left hand of the table of horse powers will be found the diameter of wheels in inches, and in the top a column of figures which indicates the head in feet, and, as in this instance, we wish to use a 60-inch wheel, we will follow the column of figures opposite sixty until intersecting the column under twenty feet head, where will be found ninety-two revolutions of wheel, 7209 the number of cubic feet of water discharged per minute, and 218.87 the number of horse-powers produced. For this amount of water flowing at the velocity named, the cross section of canals would be 80.1 square feet; thus—80.1x1.5x60=7209 cubic feet per minute. The cross sections of all the passages to and from the penstock or flume in which the wheel is placed should equal 80.1 square feet; this will, of course, include the opening under the penstock for the water to escape after it leaves the wheel.

Practice demonstrates that it is advisable to have as much room to pass the water from the wheels as there is to get it to them, and there is no argument that disproves the correctness of this theory, as the same water passed through the wheels has to be passed off below them, although this can not in all cases be done without more expense than most persons are willing to incur. But as this is a subject of great importance, we here give a definite rule which will serve as a guide in determining what the capacity of canals should be in order to secure the best results from the use of water for any number of horse-power under a given head. By referring to the table of horse-powers and discharge of water (which we have carefully prepared), it will be seen what size wheel or wheels will be required to produce the requisite horse-powers under the head to be employed, and in the same column above the horse-powers will be found the number of cubic feet discharged per minute, from which calculations can be made what the cross section of canals would be in square feet.

We have given this example which establishes a data showing that for any diameter of wheel or wheels, under any head, there should be one square foot of cross section in flume of tail-race for every ninety feet of water used per minute.

We have given this proportion, which is large enough to secure the best result from the use of water applied to a turbine. The question is often asked what would be considered the best size to make flumes to supply water-wheels of a given capacity. This will anticipate the above question.

The construction of large flumes are of great advantage, as when the head is reduced from any cause there may still be sufficient capacity to supply the demand. Great advantage will also be found in long-continued cold seasons, when ice is formed so as to seriously obstruct the flow of water.

It is desirable to bring the water as near a state of rest as possible, before entering the wheels, and as near the same condition after passing the wheels. There are many who are using water as a motive power, and setting turbine wheels, who have had a very limited experience, and are not aware of the importance of proper application, and believe that comparatively small water-ways will answer fully as well as what is absolutely necessary in order to utilize a good percentage of the full power of the water employed. Our object is to utilize all the power we can, rather than to sacrifice power in order to save a small outlay in the construction of sufficient inlets and outlets for water. It is very seldom that wheel-pits and tail-races are made with the comparative capacity we have named. One-half the cross-section in wheel-pits and tail-races is quite common, and from all appearances turbines under such conditions may give good satisfaction, especially when the full power of the wheels is not required. But at the same time the same wheels would produce more power with the same amount of water were all the conditions as favorable as they could in many locations be made with a very small additional expense.

MACHINE FOUNDATIONS.

(By M. POWIS BALE. M. E.)

The proper fixing on adequate foundations has much to do with the satisfactory performance of wood-working machinery, and in the case of high-speed machines, especially those with a reciprocating motion, the jar or vibration is absorbed in a very considerable degree by the foundations as well as by the framing of the machine. In the case of machines working on the rotary principle, little difficulty is experienced as regards foundations, the stress being as a rule easily absorbed by well-apportioned framing, that is on the assumption that the working parts are all truly balanced and fitted.

In the case of vertical saw frames it has been attempted to do away with the ordinary masonry foundation by mounting the frame of the machine on an extended cast iron bed-plate, or in light deal frames by casting the main framing of the machine in one piece. The extended bed-plate system is not to be recommended except in cases of necessity, where the foundations are bad from the ground being marshy or from overflow water in tidal rivers or such like causes, as the vibration is not by any means done away with; by using this form of bed-plate, small deal frames may be made very strong and compact by casting the frame solid, but they are somewhat more difficult to make and repair.

Where much water that cannot easily be got rid of is found, and where it is necessary to put in a deep foundation, especial means must be taken to get, in the first instance, a solid basis. Where the weight to be supported and the vibration to be absorbed are considerable, as in the heaviest class of log-sawing frames, we have found a series of English elm piles to make a durable and satisfactory foundation. The depth they should be driven and the distance apart must depend on the action of the machine, the weight of the load, and the nature of the soil. The tops of the piles should be sawn off level and sleepers or planks fixed transversely on the top of them; the piles and sleepers should be creosoted. Where the ground is moist only, and much concrete is unnecessary, a good plan is to ram the substratum firm, and cover with a layer of broken stone or slag to about 6 inches in depth; into this layer pour melted asphalt; this binds together in one solid mass, prevents damp, and gives a good foundation for the subsequent masonry.

The vibration of saw frames is lessened considerably by counterbalancing their reciprocating parts, and by arranging the crank-shaft as near the base of the machine as possible, and a fly-wheel or wheels are found to add considerably to their steadiness in working.

The vibration of a machine may be also considerably lessened by the introduction of a sheet of lead betwen the base of the machine and the masonry for light machines; on an upper floor a thick sheet of felt may also be used with advantage.

As regards the masonry employed for foundations, stone is the best, and offers a better resistance than brickwork, but its cost is somewhat of a bar to its general adoption. A deep bed of concrete, if well laid will also be found very serviceable. The strength of a stone foundation depends greatly on the quality of the stone employed, and also whether the size and shape of the blocks used are in proportion to the strength of the stone; the mortar, too, used for this purpose should be of the finest quality, and the stones accurately dressed. If the dressing is badly done, and the pressure is unequal and severe, they are liable to fracture. Blocks of stone of long dimensions in proportion to their thickness should never be used, as with heavy machines with a reciprocating motion, with a positive stroke or dead blow, the risk of breakage is considerable. A safe rule is to make the length of the block—say—about three times the thickness, and the width one and a half-times. Great care should be taken that the masonry is accurately levelled, and set as nearly perpendicular to the direction of the stress as possible. The top blocks should be clamped together, and the joints filled in with molten lead, as excessive vibration and stress is in a great measure overcome by the weight and the solidity of the foundations; the framing of the machine should be made to combine as far as possible, and made integral with it.

The quality of the work turned out and the longevity of the machine depend also more on the stability of the foundations than is generally imagined. The foundation bolts should pass entirely through the masonry, and either be cemented in their places, or, should they not be cemented they will be found less liable to work loose by putting a piece of hard wood between the plates and the masonry. Wood-working machines with a reciprocating motion should never be put on an upper floor, except those of the very lightest class. In machines with a rotary motion, and the straining forces acting horizontally to the axis of motion, brickwork or timber foundations are usually sufficient, but for the heaviest class of machines such as rack-saw benches or planing machines, if the earth is at all unsound, concrete or rubble masonry should be used; for heavy log frames, steam mortising machines, etc., ashlar masonry is undoubtedly the best. Any reasonable cost incurred for perfect foundations is soon repaid by increased steadiness in working, and consequently improved quality of output. As a rule, inferior production in machines with a rotary motion is directly traceable to inferior workmanship or design in the machine, loose bearings, weak spindles, improperly sharpened cutters, insufficient feed, or unbalanced cutter blocks; but it cannot be denied that, in the first instance, weak or insecure foundations contribute largely through imperfectly absorbing the vibration, to bring about some of these results, especially in machines with their framings put together in sections. If brickwork foundations are used, the bricks employed should be hard and well burnt, and Portland cement should be used; this is especially necessary in damp situations.

As regards brick foundations for machinery, Mr. Trautwine, who has experimented a good deal with building materials, says on this point that a rather soft brick will crush under a weight of 450 to 600 lbs. per square inch, or about 30 to 40 tons per square foot, whilst a first-rate machine-pressed brick will require from 300 to 400 tons per square foot. This last is about the crushing limit of the best sandstone, or two-thirds as much as the best granites or roofing slates. But masses of brickwork will crush under much smaller loads than single bricks. In some experiments referred to by this author, small cubical masses only 9 inches on each side, laid in cement, crushed under 27 to 40 tons per square foot, others with piers 9 inches square and 2 feet 4 inches high, in cement, only two days after being built required 44 to 62 tons per square foot to crush them. The same authority, however, is careful to add the statement that cracking and splitting usually commence under about one-half the crushing loads. To be safe, he recommends that the load should not exceed one-eighth or one-tenth the crushing load; so also with stone if bricks are used as foundations. For some kinds of wood-working machinery, such as steam mortising machines and saw frames, where there is what we may call a constant punching action going on, we certainly think the dead weight should not exceed about one-sixth the crushing load.

CASKS AND BARRELS OF STEEL.—An exchange says: A Wolverhampton firm have turned their attention to the manufacture of casks and barrels of steel. The two edges of the sheet steel which forms the cask are brazed together in such a manner as to justify the title of "seamless," which the patentees have applied to these productions. The head of the barrel is also rivited to the body, so as to leave no seam, and the end rims are shrunk on hot, thus making a very solid end, while, at the same time, the rims are thick enough to give a good purchase to the grappling-hooks of hoists and cranes for loading and unloading purposes. The bush for the tap does not project beyond the rim, so that the nozzle is not liable to be knocked out and injured. The casks are more durable than wood, less bulky and lighter—an 18-gallon steel cask weighing some ten pounds less—a not unimportant consideration as regards transit. In point of shape the steel barrel is exactly that of a well-formed wood one, the bulge of the belly allowing of its being easily rolled along, and better managed by one man than drums can be by two.

MISDIRECTED EDUCATIONAL TRAINING.

The evils of the misguiding of educational training of youth is seen in the fact that it is no uncommon thing to find men who have been graduated at the best colleges seeking in after life the very crumbs and scraps of employment, unable to succeed in art, literature, science, or any class of work demanding brains and not muscle. These men are often free from vicious habits and are entirely willing to work hard, so that it is not to willful negligence of their opportunities that their failure is attributable. They are simply misplaced atoms of society, and their education has been the cause of their incapacity. When a human peg is hopelessly square, the utmost art of the tutor or the professor is wasted in trying to fit it into a round hole; yet that is what thousands of parents are constantly doing. The reason for most of these ill-directed efforts comes from certain social laws. To be a lawyer, a doctor, a professor, an actor or a clergyman, confers a higher social rank than to be a machinist, an engineer, a carpenter, a bricklayer, a coppersmith or a plumber; consequently there is a much greater demand for the former named places than for the latter. But in seven cases out of ten there is little attempt made to discover what is the natural taste of the youngster before his training begins. He may have a gift for machinery sufficient to lift him into eminence in iron and steel working; but when set to treading the mill of Latin and Greek verbs and struggling with the career of a minister it is not wonderful that a good machinist is spoiled and a nondescript turned into a pulpit. Of course, he fails there, and, having no training for any other place, he eats the bread of practical beggary and serves no useful purpose. In such a case the man's life is wrecked by his faulty education. Attempting a career far outside his natural capacity, training does not secure his success in one direction, although it closes all avenues in another. He can neither fly with the birds nor run with the mice, and necessarily spends a twilight existence among the bats.

It may be claimed that his failures are not due to his education, but that they happen in spite of it, and that without it he would have been more incapable than ever. There may be a few instances of this kind, but there are not enough of them to be worth noticing in comparison with the number whose attempts to become learned have absolutely prevented them from becoming skilled. It may be admitted that, while most people desire good social position, all people must have their daily bread; consequently, the man who is led into poverty as a result of seeking social eminence will be sure to regard his quest as a failure. But supposing that he gets the social benefit of being known as a professor instead of blacksmith, and that he is just able to get enough food, clothing and shelter for a bare existence, does he enjoy life or does he contribute his share toward the labor of the world one-half as well as if he had gone to the forge, the mold and the lathe when he was a boy, instead of getting a very incomplete knowledge of many subjects and trying unsatisfactorily to impart it to others?

It is all very well to say that if a man cannot succeed as a preacher he ought to have no false pride about shouldering a hod. The same pride that lead his parents to make a preacher out of him, when bricklaying would have been better suited to his tastes and capacities, will hold him back from taking a plunge so entirely opposed to the previous habits of his life.

In point of fact, one kind of work is just as honorable as another kind; but the millennium will come before most men will think so.—*Chicago Journal of Commerce.*

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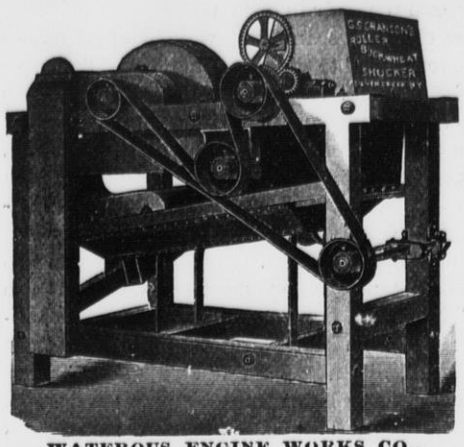

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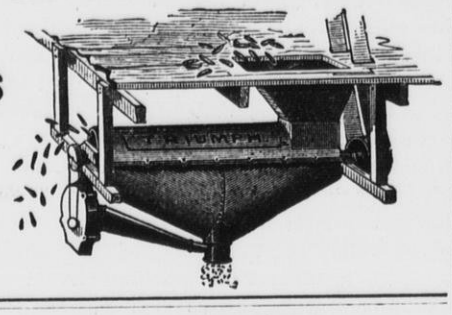

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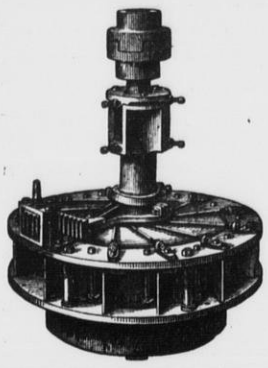

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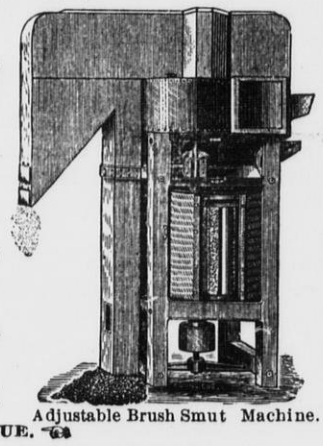

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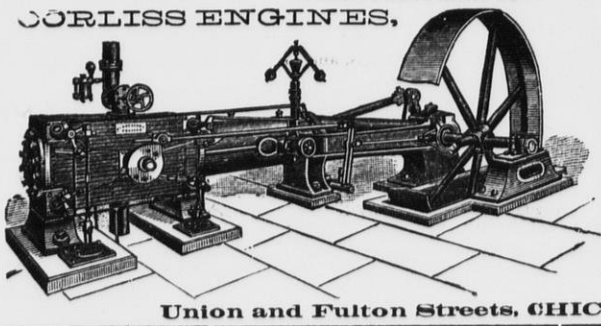

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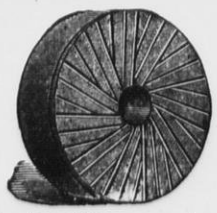

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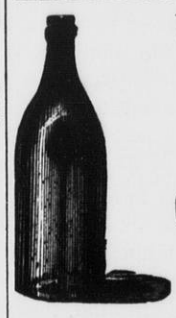

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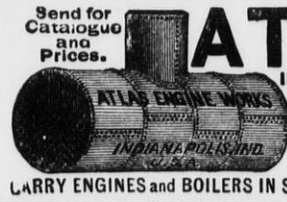

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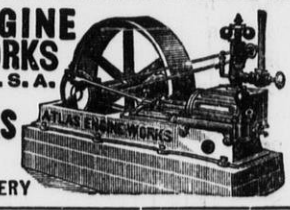

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The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms.

The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine.

The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Proprietor.

[Mention this paper when you write to us.]

THE MILLERS
MUTUAL INSURANCE COMPANY
OF WISCONSIN,

is now issuing Policies of Insurance on all approved applications received so far. The Company has now sufficient members to allow it to increase the risks on any one Mill from $1.000 to $3.000.

All matters relating to Insurance should be addressed to

JOHN SCHUETTE, Sec., Manitowoc, Wis.

[Please mention the United States Miller when your write to us.]

NEWS.

Odell roll- are to be placed in the mill of Nathan D. Egbert, Charlotte, Mich.

Odell rolls have been recently ordered by M. C. Stoner & Co., Chambersburg, Pa.

The Stilwell & Bierce Mf'g Co. are furnishing Odell rolls o A. Egloff, St. Meinard, Ind.

The Stilwell & Bierce Mf'g Co. have an order from Loaiza, N. Y. City, for one of their Heaters.

The Stilwell & Bierce Mf'g Co. have just shipped 4 large Victor wheels to Fred. Voll, London, Eng.

Jonathan Gregson Austin, Minn., is operating his mill on the Case system, of gradual reduction.

H. T. Pendleton, of Wentzville, Mo., is just starting up his mill on the Case system, of gradual reduction.

The Stilwell & Bierce Mf'g Co. furnish a Victor turbine for the flour mill of Ja's K. Horr, Tippecanoe, O.

J. P. Felt, Emporium, Pa., will start up his mill in a short time on the Case system of gradual reduction.

R. K. Ailes & Co , of Ann Arbor, Mich., are now operating their mill on the Case system of gradual reduction.

The Case Mf'g. Co., Columbus, O., have the order of S. B. Chambers, Rome, Ga., for one No. 1 double purifier.

E. W. Allen, an employe in the Sherman Mill, at Eau Claire, Wis., recently broke both legs just above the knees.

The Stilwell & Bierce Mf'g Co., have just shipped one of their celebrated Stilwell Heaters to Guaymos, Mexico.

The Eureka Mf'g Co., of Rock Falls, Ill., have lately sent a Becker Wheat Brush, to O. J. True, of Port Clinton, Ohio.

The Case Mf'g. Co., Columbus, O., have the order of Miller & Russell, Pana, Ill., for one No. 2 single Case purifier.

Carr & Bracken, Jamestown, Pa., are now happy as they are running their mill on the Case system of gradual reduction.

The Case Mf'g. Co., Columbus, O., are furnishing Hurlbut and Carkeuff, Westford, Pa., with a break machine and purifier.

C. A. Smith, Lebanon, Mo., has purchased a Gray's noiseless belt roller mill, from Edw. P. Allis & Co., Milwaukee, Wis.

The Stilwell & Bierce Mf'g Co , have an order from the North Star Iron Works, Minneapolis, Minn., for one of their Heaters.

The Stilwell & Bierce Mf'g Co. are furnishing Victor turbine water wheels to run the flour mill of Dye & Weller, Troy, O.

The Stilwell & Bierce Mf'g Co. have just shipped to Erlich Bro's Marion, Kas., a Victor turbine water wheel, for their flour mill.

Edw. P. Allis & Co , Milwaukee, Wis., recently sold Knapp, Stout & Co., Menominee, Wis., a Gray's noiseless belt roller mill.

The Case Mf'g. Co., Columbus, O., have furnished Thos. Bradford & Co., Cincinnati, O., one more Little Giant break machine.

Belken & Murray, Fredericksto, Md , recently ordered a Gray's noiseless belt roller mill of Edw. P. Allis & Co., Milwaukee, Wis.

Browsel & Russell, Morris, Manitoba, lately purchased a Gray's noiseless belt roller mill of Edw. P. Allis & Co., Milwaukee, Wis.

The Case Mf'g. Co., Columbus, O., have the order of Baxter, Comstock & Co., Sac City, Iowa, for one No. 2 double Case purifier.

Thos. Koenigsmark & Co., of Columbia, Ills., have lately put in a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

Colton Bros., Bellefontaine, O., have ordered from the Case Mf'g. Co., Columbus, O., one Case automatic feed, for a double Odell roll.

The Stilwell & Bierce Mf'g Co. are furnishing two Victor wheels to the Albion Milling Co , Albion, Mich , to furnish power for their mills.

E. P. Rhodes & Co., Bridgeport, Ohio, have recently ordered a Gray's noiseless belt roller mill from Edw. P. Allis & Co., Milwaukee, Wis.

L. A. Carr & Co. of Buffalo, W. Va., have filed an order with The Jno. T. Noye Mf'g Co., Buffalo, N. Y., for a double Stevens' roller mill.

L. M. Marshall, Perry, Mich., has put in a Gray's noiseless belt roller mill, purchased from Messrs. Edw. P. Allis & Co , Milwaukee, Wis.

The mill of Baker & McMillen, Redwood Falls, Minn., is to be run by a Victor turbine just shipped to them by the Stilwell & Bierce Mf'g Co.

The Stilwell & Bierce Mf'g Co. have received in June, orders for special Victor turbine water wheels from the Umbagog Pulp Co., Portland, Me.

Cha's Galligher & Co., Cairo, Ill., have ordered another Gray's noiseless belt roller mill, from Edw. P. Allis & Co., Reliance Works, Milwaukee, Wis.

The Case Mf'g. Co., Columbus, O., have the order of I. C. Mansfield & Co., Athens, Tenn., for one pair bran rolls, with patent automatic feed.

The Case Mf'g. Co., Columbus, O., have been ordered to ship Barnard & Harrison, Morrisonville, Ills., one pair scratch rolls, with automatic feed.

H. D. Rush, of Leavenworth, Kas., is putting in additional Stevens' roller mills, to be furnished by the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y.

E. Valentine, Baltimore, Md., has recently ordered four pairs of Allis rolls in Gray's noiseless belt frames, from Edw. P. Allis & Co., Milwaukee, Wis.

The Stilwell & Bierce Mf'g Co. have recent orders for their celebrated lime extracting heaters from the Great Western Mf'g Co. Leavenworth, Kan.

Geo. Esmond, Ft. Wayne, Ind., is shipping his Allis rolls to the Case Mf'g. Co., Columbus, O., to have their patent automatic feed placed on them.

The Case Mf'g. Co., Columbus, O., have received two invoices of rolls, from J. M. & J. I. Walton, Gallatin, Tenn., to be reground and recorrugated.

D. L. Geyer, of Pomeroy, O., has lodged an order with the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., for a double Stevens' roller mill, for bran and tailings.

The Link Belt Machinery Co., Chicago, Ill., lately ordered six pairs of Allis' rolls in Gray's noiseless belt frames from E. P. Allis & Co., Milwaukee, Wis.

Wilson & Co., Rosemond, Ill., lately purchased a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

The Port Washington Mill Co., Port Washington, Wis., have recently contracted with Edw. P. Allis & Co. of the Reliance Works, Milwaukee, for the machinery for their new mill, taking the place of their old one burned recently; the mill will have twelve pairs of Allis' rolls in Gray's noiseless belt frames, and will be run by a Reynolds-Corlis engine. The mill, when completed will have a capacity of 125 bbls. in 24 hours.

G. W. Hecker & Co., New York City, recently added another Gray's noiseless belt roller mill, purchased from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

Wolf & Hamaker, Allentown, Pa., recently ordered six pair of Allis' rolls in Gray's noiseless belt frames, for Messrs Gabel, Bertolet & Co., Montgomery, Pa.

The N. W. Mill Co., Milwaukee, Wis , recently put in a Gray's noiseless belt roller mill, from the Reliance Works, of Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

Edw. P. Allis & Co , of the Reliance Works, Milwaukee, Wis., recently sold Messrs. Schoelkopf & Matthews, Buffalo, N. Y., one Gray's noiseless belt roller mill.

J. C. Cox, Warren, Ill., has placed an order with the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y., for a Rounds' sectional roller mill, with Stevens' corrugations.

Woodward & Norton, Le Roy, Kas., are putting in an Allis roller outfit in Gray's noiseless belt frames, from Edw. P. Allis & Co.'s Reliance Works, Milwaukee.

R. Bishop, of McHenry, Ills., not bring suited with his cleaning machines, has lately adopted the Becker Brush, make by the Eureka Mf'g. Co., of Rock Falls, Ills.

Horr, Warner & Co., of Wellington, Ohio, are overhauling their mill and have put in a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

Weenhold & Sons, have improved their cleaning machinery by placing in their mill a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

The Case Mf'g. Co., Columbus O.. are furnishing A. F. Ordway & Son, Beaver Dam, Wis., one 3 roll break machine, for the mill they are building at Ixonia, Wis.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have just received an order from the Plano Mf'g Co., Plano, Ill. for a 26x48 Reynolds' Corliss engine.

H Julius Klingler, Butler, Pa , recently purchased a porcelain roller mill in Gray's noiseless belt frames, from Edw. P. Allis & Co., Reliance Works, Milwaukee, Wis.

L. B. Joy of Bath, N. Y., is putting in a No 2 four-break reduction machine, and a Gray's noiseless belt roller mill purchased from Edw. P. Allis & Co., Milwaukee Wis.

The Stillwell & Bierce Mf'g Co. have orders for 6 pairs of Odell rolls from the Gratiot Mf'g Co., Chicago, Ill.: also from the Simpson & Gault Mf'g Co., Cincinnati, O.

J. & S. Emison, of Vincennes, Ind., are increasing the capacity of their mill by the addition of Stevens' rolls, to be furnished by the Jno. T. Noye Mf'g. Co., Buffalo, N. Y.

The Case Mf'g. Co., Columbus, O., have the order of the Novelty Iron Works, Dubuque, Iowa, for one Little Giant break machine, to be shipped to G. G. Bonn, Bellevue, Iowa.

A. J. Klinger, Greenville, O., has shipped his Livingston rolls, paying freight both ways to the Case Mf'g. Co., Columbus, O., to have their patent automatic feed attached.

Edward P. Allis, Milwaukee, Wis.; Ja's Leffel & Co., Springfield, O.; Agerter, Stephenson & Co., Upper Sandusky O., have ordered Heaters from the Stilwell & Bierce Mf'g Co.

Wm. Lindsley of Humboldt, Kans, wishing to clean his wheat in a perfect manner, has lately bought a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., recently shipped twenty pairs of Allis rolls to San Francisco, Cal., for jobs they have under construction in California.

The Case Mf'g. Co., Columbus, O., have the order of A. F. Ordway & Sons, Beaver Dam, Wis., for a line of breaks and rolls, for the mill they are building at New Bassel, Wis.

Haggerty, Hunter & Co., Peoria, Ill., recently ordered a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co , Milwaukee, Wis., for a job they have at Magnon, Ill.

Capt. E. W. Pride of Neenah, Wis., has lodged an order with The Jno. T Noye Mf'g Co. of Buffalo, N. Y., for a double Stevens' roller mill for Henry Bruemmer, of Ahnapee, Wis,,

J. O. Halteman & Co., St Louis, Mo., recently placed an order with Edw. P. Allis & Co., Milwaukee, Wis., for a Gray's noiseless belt roller mill for A. Austin & Co , Metropolis, Ill.

Bell & Foster, Mansfield, Pa., have ordered of The Jno. T. Noye Mf'g Co., Buffalo, N. Y., ten pairs of Stevens' rolls for their mill, which is being converted into a new roller mill.

A complete line of Odell rolls are to be placed in the mil of Jacob Rankerk, Bolivar, O. The contract of this mill was awarded to the Richmond City Mill Works, Richmond, Ind.

Chas. Galligher & Son, of Cairo, Ills., who are among the best and largest millers in the state, have lately added a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

Edw. P. Allis & Co., Milwaukee, Wis., recently received an order from the Bradford Mill Co., of Cincinnati, O., for a Gray's noiseless belt roller mill, for J. W. Talbot, Rising Sun, Ind.

The Case Mf'g Co. Columbus, O., are furnishing Crissman & Burnell, Denver, Colorado, with one No. 1 double purifier, one Case centrifugal reel and other machinery for their "Star Mills"

B. F. Gump of Chicago, Ill., has directed The Jno. T. Noye Mf'g Co. of Buffalo, N. Y., to ship him another Rounds' sectional roller mill with Stevens' corrugations, scalpers and elevators.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have sold a 12x36 Reynolds' new style engine to the Milwaukee Industrial Exposition, to furnish power for electric light plants, etc.

Upton Darby, Seneca, Md., lately ordered a four-break machine, Gray's noiseless belt roller mill, cleaning machinery, etc , from Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately received an order from Mr. W. J. Geohegan, Paris, Ill., for a Gray's noiseless belt roller mill, for Mr. W. H. Singer, Neoga, Ill.

J. P. Becker, & Co , of Petersburg, Mich., are putting in a Rounds sectional roller mill with Stevens' corrugations, and a single mill, all to be furnished by the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y.

The Jefferson Mills of Mt. Vernon, Ills., have recently improved their cleaning machinery, and have put in their mill a Becker Wheat Brush, made by the Eureka Mfg. Co., of Rock Falls, Ills.

Chas. Heuber, the milling engineer, of St. Louis, Mo., has instructed the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., to ship Jefferson Mill & Elevator Co , at Mt. Vernon Ill., three Stevens' roller mills.

Edw. P. Allis & Co., Milwaukee, Wis., recently received an order from the Bass Fd'y. Machine Works, Ft. Wayne, Ind., for a Gray's noiseless belt roller mill, for Darling Mill Co., Fremont Center, Mich.

The Stilwell & Bierce Mf'g Co., have an order from Calvin Seybolt, Scranton, Pa., for 13 pairs of Odell rolls, and a complete line of machinery for their 100-bbls. mill to be built on the Odell system.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., in spite of all competition, secured the order for a 32x48 Reynolds' Corliss engine, complete, for the Geo. P. Plant Milling Co., of St. Louis.

Jno. Strong & Son, of South Rockwood, Mich, have looked into the merits of all Brush Machines, and have placed a Becker Wheat Brush, in their mill, made by the Eureka Mfg. Co., of Rock Falls, Ills.

The Stilwell & Bierce Mf'g Co. have the following recent orders for Heaters: from Robinson & Burr, Champaign, Ill.; H. Haifley, Cadellac, Mich.; H. B Groff, Fertility, Pa.; The Winford Water Co., Winford, Kan.

The Link Belt Machinery Co. of Chicago, show their appreciation of Stevens' roller mill over all others, by placing an order with The Jno. T. Noye Mf'g Co. for the mill they are overhauling at Merom, Ind

Wm. Brinner of Atlanta, Ga., reports the State of Georgia to be in a ripe condition for the introduction of modern mill machinery. He has two Stevens' roller mills of The Jno. T. Noye Mf'g Co. of Buffalo, N. Y.

After examining into the merits of all the different Brush Machines, J. R. Clark & Co., of Baltimore, Md., have placed in their mill a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

Penfield, Lyon & Co., at Oswego, N. Y., are increasing their capacity by putting in six pairs of Stevens' rolls in addition to what they already have; The Jno. T. Noye Mf'g Co. of Buffalo, N. Y., will fill the order.

O. L. Rounds, of Auburn, N. Y., has filed an order with the Jno. T. Noye Mf'g. Co., Buffalo, N. Y., for a Rounds' sectional roller mill, with Stevens' corrugations, and two single mills for bran and low grade grinding.

R. W. Mehard, East Brook, Pa., has ordered one Little Giant break machine, and one double Bismarck mill, with automatic feed, from the Case Mf'g. Co., of Columbus, O., to be shipped to New Wilmington, Pa.

Williams Bro's, Kent, Ohio, are remodeling their mill to the roller system. Allis & Co. of Milwaukee, Wis., are furnishing the machinery, which will include seven pairs of Allis rolls in Gray's noiseless belt frames, etc.

E. P. Allis & Co., Milwaukee, Wis., have secured a contract for remodeling the mill of M. Tapping & Son, Plainfield Mich., and will use a No. 2 four-break reduction machine and Gray's noiseless belt roller mills, etc.

Victor water wheels are to be placed in the following mills: Milton Boorst, Cobbleskill, N. Y.; A. P. Clark, Cazenovia, N. Y.; S S. Greely, Fosters Crossing, O.; S. Moore, Tolland, Mass.; and Richards & Co , Gardner, Me.

Price & Wilkinson, Taylorville, Ill., have ordered a 16x42 Reynolds' Corliss engine, complete, to run their flour mill at that place. Messrs. Allis & Co., also furnish the roller mills and special machinery for this mill.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently sold the La Crosse Brush Electric Light and Power Co., of La Crosse, Wis., a 14x36 Reynolds' Corliss engine, complete, to drive their electric light plants.

The Case Mf'g. Co., Columbus, O., have been awarded the contract of Geo. Esmond, Ft. Wayne, Ind., for a full line of breaks, rolls, purifiers, scalpers, centrifugals, &c., for a full gradual reduction mill, on the Case system.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have a contract with Virgil Beale, Cobden, Ill., to remodel his mill to the roller system, and will use fourteen pairs of Allis' rolls in Gray's noiseless belt frames.

Geo. F. Smith, Middlings Purifier Co., of Jackson, Mich., have put in a 12x30 Reynolds' Corliss engine, from the Reliance Works, of Messrs. Edw. P. Allis & Co., Milwaukee, Wis., to furnish power for their works at Jackson.

Orders have been placed with the Stilwell & Bierce Mf'g Co. by Jarvis, Barnes & Co., Lansing, Mich.; Smith, Beggs & Rankin Machine Co., St. Louis, Mo.; Kansas City Smelting and Refining Co., Argentine, Kan.; for Stilwell Heaters.

Shuler & Co., of Minniapolis, Minn., are putting in the mill of C. F. Butterfield, Lake Crystal, Minn., a Rounds' sectional roller mill with Stevens' corrugations, to be furnished by the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y.

The Carlyle Mill Co., of Carlyle, Ills., in making their recent improvements, have adapted the Becker principle of cleaning wheat, and have lately put in a Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.

Ehrlich Bros., Marion, Kas., have placed an order with the Jno. T. Noye Mf'g. Co., Buffalo, N. Y., for a Rounds' sectional roller mill with Stevens corrugations, cylinder scalper and elevators, and a double mill for bran and germ.

The Stilwell & Bierce Mf'g Co. have recent orders for the celebrated Stilwell Heaters from Heffnor & Co., Circleville, O.; Wysor, Hains & Co., Muncie, Ind.; Coble, Throne & Co., East Palestine, O.; and Graham & Daugerty, Dayton, O.

The Pierce Mill Co., Pierce, Neb., have contracted with Edw. P. Allis & Co. for new 100-bbls. mill; E P. Allis & Co. to furnish everything and do all the work The mill will contain ten pairs of Allis rolls in Gray's noiseless belt frames.

Smith, Gifford & Co., Nashville, Tenn., recently placed their order with Messrs. Edw. P. Allis & Co , of the Reliance Works, Milwaukee, Wis., for a Gray's noiseless belt roller mill, for Messrs. Barrett, Denton & Lynn, Dalton, Ga.

The U. S. Albumen Mf'g Co., Osterville, Mass., lately purchased four pairs of porcelain rolls in Gray's noiseless belt frames, from Edw. P. Allis & Co , of the Reliance Works, Milwaukee, Wis., to use in their albumen works at that place.

Peter Schatz, Eldorado, Iowa, is remodeling to the roller system, and has placed his order with Edw. P. Allis & Co. of Reliance Works, Milwaukee, Wis., for one of their No. 2 four-break reduction machines and a Gray's noiseless belt roller mill.

The Banner Milling Co., owned and operated by Esser, Zimmerman & Ogden, of Buffalo, N. Y., are increasing their capacity by putting in ten pairs of Stevens' rolls with recent improvements. The Jno. T. Noye Mf'g. Co., have the contract.

J. S. Evans, Haddonfield, N. J., is placing in his mill a Rounds' sectional roller mill with Stevens' corrugations, cylinder scalper and elevators, and a double mill for germ and tailings; all will be furnished by The Jno. T. Noye Mf'g Co. of Buffalo, N. Y.

The Case Mf'g. Co., Columbus, O., have been awarded the contract of A. J. Klinger, Greenville, O , for a full gradual reduction mill on the Case system, using a full line of breaks, rolls, purifiers, centrifugal, scalpers, &c, of the Case Co's. manufacture.

The Haxtun Steam Heating Co., of Kewanee, Ill., have ordered a 22x48 Reynolds' Corliss engine, complete with boiler, heater, pumps, etc., for their works at that place; same was ordered of Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

H. E. Long, Grand Rapids, Wis., is remodeling the mill of Hon. W. T. Price, at Hixton, Wis. Edw. P. Allis & Co., Milwaukee, are furnishing eight pairs of Allis rolls in Gray's noiseless belt frames, together with the rest of the machinery necessary for the change.

J. S. Bristol, Auburn, N. Y., has determined to place in his mill a Rounds' sectional roller mill with Stevens' corrugations, cylinder scalpers and elevators, a single mill for low grade, and a double mill. The Jno. T. Noye Mill Co., of Buffalo, N. Y., have the order.

The Stilwell & Bierce Mf'g Co. are to build the mill of Ja's C. Wilkinson of Lewiston, Ill., the capacity to be 150 barrels per day; the mill is to be built on the Odell system and furnished with 10 pairs of Odell rolls with independent and simultaneous belt tighteners.

The Riverton Mill Co., Riverton, Va., will soon remodel their mill to the roller system, and have already contracted with Edw. P. Allis & Co , of the Reliance Works, Milwaukee, Wis., for the outfit, including eight pairs of Allis' rolls in Gray's noiseless belt frames.

J. T. Clark of Hunter's Creek, Mich., is remodeling his mill and placing therein a Rounds' sectional roller mill with Stevens' corrugations, cylinder scalper and elevators, and a double mill for bran and tailings. The Jno. T. Noye Mf'g Co., of Buffalo, N Y., have the contract.

A. F. Ordway & Son of Beaver Dam, Wis., continue to have their hands full of work in the mill furnishing line. They are now remodeling the mill at Exonia, Wis., and putting in an outfit of Allis' rolls in Gray's noiseless belt frames, from Edw. P. Allis & Co. of Milwaukee.

A. G. Akin & Son, Hagarstown, Md., have recently purchased the mill at Hagarstown, and will remodel same to the roller system, having placed an order with Edw. P. Allis & Co , Milwaukee, for the entire outfit, including ten pairs of Allis rolls in Gray's noiseless belt frames.

F. Thoman, Lansing, Mich., will soon remodel his mill to the roller system, and has placed his order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for eight pair of Allis' rolls in Gray's noiseless belt frames, together with purifiers, etc.

The Bradford Mill Co , Cincinnati, O., are remodeling the mill of Pearce Bros. at Maysville, Ky., and have ordered a line of Allis' rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for the same.

The Bradford Mill Co., of Cincinnati, O., lately placed an order with Messrs. Edw. P. Allis & Co , of the Reliance Works, Milwaukee, Wis., for sixteen pair of Allis' rolls in Gray's noiseless belt frames, also purifiers, etc., for a mill they are remodeling in Ohio

E. F. Schatzer & Co., Evansville, Ind., are remodeling the mill of A. J. Woods King Station, Ind., and have placed an order with Edw P. Allis & Co., Milwaukee, Wis , for sixteen pair of Allis' rolls in Gray's noiseless belt frames, together with centrifugals, reels, purifiers, etc., the mill will have a capacity of 150 bbls.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.,, recently sold Messrs. C Shoe & Son, Appleton City, Mo., three pair of Allis' rolls, one of their new four break reduction machines, and other machinery, necessary to change their mill to the roller system.

Shuler & Co., of Minneapolis, Minn , are busy as bees and are now building a new roller mill at Lisbon, D. T., in which will be used a Rounds' sectional roller mill with Stevens' corrugations, and two double mills, all to be furnished by the Jno. T. Noye Mf'g. Co., of Buffalo, N. Y.

Edw. P. Allis & Co., Milwaukee, Wis. are remodeling the mill of Messrs. Barnum & Keenan, Leroy, Ill., and are putting in one of their No. 2 four break machines, six pair of rolls in Gray's noiseless belt frames and other machinery, necessary to change their mill to the roller system.

Schenck & Strassen, Lyons, Wis., visited Milwaukee, Wis., recently and while there placed an order with Edw. P. Allis & Co. of the Reliance Works, for one of their new four-break reduction machines, four pairs of Allis' rolls in Gray's noiseless belt frames, and other special machinery.

Jno. Webster, of Detroit, Mich., the popular and good looking millwright, has lodged an order with the Jno. T. Noye Mf'g. Co., Buffalo, N. Y., for a Rounds' two pair sectional roller mill, with Stevens' corrugation and reel scalpers, and three double mills for the mill of C. H. Rudd, Orion, Mich.

Mr. J. Hayes of J. & J. Hayes, Goneburn, New South Wales, Australia, after visiting all the principal mill furnishing establishments in this country, came to Milwaukee and placed his order with Edw. P. Allis & Co., of the RelianceWorks, for two pairs of Allis' rolls in Gray's noiseless belt frames, for their mill in Australia.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis , recently received an order from the Nashville Mill Co., for a 14x36 Reynolds' Corliss engine, complete with boiler, heater, pump, etc., also for the roller mills, special machinery, etc., for their new mill, which, when completed, will have a capacity of 150 bbls. per diem.

Wolf & Hamaker, Allentown, Pa., recently placed orders with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for ten pair of the celebrated Allis' rolls in Gray's noiseless belt frames, from Messrs. Harzel & Sons, Chalfort, Pa., also for six pair Allis' rolls for Messrs. H. P. Butz & Co., Alburtis, Pa., same in Gray's noiseless belt frames.

J. Hayes, of the firm of J. & J. Hayes, Goneburn, New South Wales, Australia, who has been in this country for the purpose of investigating engines and mill machinery, after visiting all of the principal factories, came to Milwaukee, and placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, for an 18x36 Reynolds' new style engine, also for Allis' roller mills, in Gray's noiseless belt frames.

The Texarkana Oil & Mf'g. Co., Texarkana, Ark., have recently placed their order with Messrs Edw. P. Allis & Co , of the Reliance Works, Milwaukee, Wis., for an 18x42 Reynolds' Corliss engine, complete with boiler, heater, pumps, etc. The Reynolds' Corliss engine is coming into quite general use among the Oil Compress Co's., of the south largely on account of its regulating of motion, economy and great durability.

The following well known mill furnishers, have recently placed their order for the Becker Wheat Brush, made by the Eureka Mf'g. Co., of Rock Falls, Ills.: E. P. Allis & Co., Milwaukee, Wis.; Nordyke & Marmon, Indianapolis, Ind.; B. F. Gump, Chicago, Ills.; Barney & Kilby, Sandusky, Ohio.; Slater Mill Co., Blanchester, Ohio,; A. Dehner & Co., St. Louis Mo.; Sinker, Davis & Co., Indianapolis, Ind., Great Western Mf'g Co., Leavenworth, Kans.; Gratiot Mf'g. Co., Chicago, Ills.: Oscar Oexle & Co., Augsburg, Germany.

THE ⁝ CASE ⁝ PURIFIER!

Made Either Double or Single.

We now come before the Milling Public with Renewed Confidence in our Unrivalled Purifier.

The Court, in deciding the Smith Company's infringement suit against us, not only said there was no infringement, but added, "Case is as far beyond Smith as Smith was beyond Stoll"—which but echoes the sentiments of hundreds of Millers using our Purifiers. Write to any of those named below for their opinion of it; without even having asked one of them ourselves for their favorable opinion of our machine, we believe 99 per cent. of them will reply about as follows: "It is the Best Purifier made," etc., etc.

The Case Middlings Purifier!

A—The Fan spout, is reversible and can be made to blow toward either end of Purifier.

The Fan can be placed on top or end of Purifier—when on end it increases the length 39 inches, and diminishes the height 22 inches.

B—Air-valve upper Riddle.

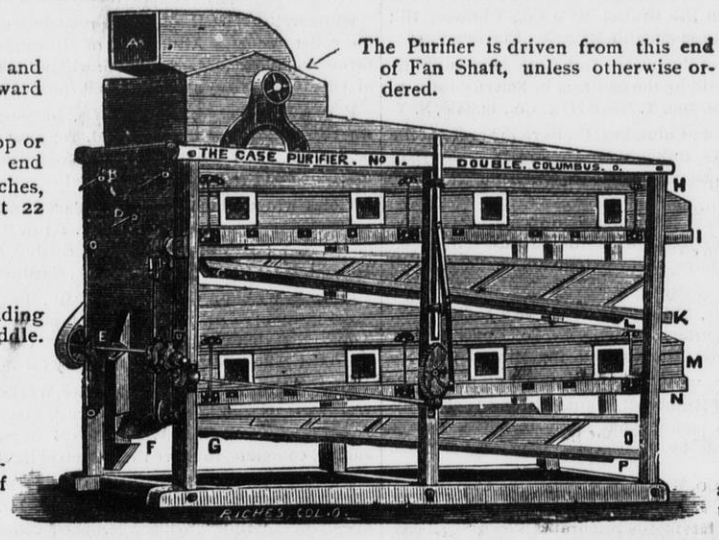
C—Cut-off for upper Riddle, sliding one-half the length of Riddle.

D—Air-valve, lower Riddle.

E—Upper Riddle tails off here.

F—Lower Riddle tails off here.

G—Cut-off for lower Riddle, sliding one-half the length of Riddle.



H—Feed Box for upper Riddle.

I—Bolting Cloth for upper Riddle.

K—Purified Middlings from upper Riddle.

L—Cut-off from upper Riddle.

M—Feed Box for lower Riddle.

N—Bolting Cloth for lower Riddle.

O—Purified Middlings from lower Riddle.

P—Cut-off from lower Riddle.

The upper and lower halves are each a complete machine, and can be run together, or separately, as desired.

We do not propose to be subdued or scared off from the manufacture of this noble machine, by money or by threats, and all we ask at the hands of our milling friends is their continued liberal patronage which we interpret to mean just two things, viz: 1st. That they appreciate a well-made, First-Class Purifier. And, 2d. That they are down on that kind of grasping, consolidated monopoly that would seek to wholly control the manufacture of so important a machine as the Middlings Purifier. We say it modestly, but truthfully, that but for ourselves every Miller wishing to purchase a Purifier would now be practically at the mercy of one manufacturer. We propose to give you the benefit of a healthy competition.

We shall also continue to make our now famous line of "Bismarck" Mills, giving a complete line of Gradual Reduction Machinery, the most popular we believe of any now on the market.

We append a few names from among the many who have lately ordered our Purifier, and invite Millers to write to any of them.

Dye & Weller ..... Troy, O.	J. P. Roberts ..... Eaton Rapids, Mich.	Leach & Reasoner ..... Halstead, Kans.
Carr & Bracken ..... Jamestown, Pa.	Mrs. H. Weisman ..... Logan, Mo.	Scott & Buell ..... Union City, Ind.
J W. Emisson & Co ..... New London, Mo.	Kloose & Bradford ..... Creston, Iowa.	Wm. Dial ..... Osawkee, Kans.
Dirks & Co ..... Marietta, O.	C. Harvey ..... Wilber, Neb.	Link Belt Machinery Co ..... Chicago, Ills.
J. Q. Holteman ..... St. Louis, Mo.	Armstrong & Son ..... Fayette, Mo.	Woods & Dunlap ..... O'Fallen, Mo.
W. V. Banks ..... Versailles, Mo.	J. M. & H. C. Allen ..... Grafton, Ills.	Wm. Sharaga ..... Pomona, Ills.
Nordyke & Norman ..... Indianapolis, Ind.	Great Western Mfg. Co ..... Leavenworth, Kans.	Baldwin & Osborne ..... Waupaca, Wis.
Wm. Annan ..... Morrison, Ills.	Ailes & Co ..... Ann Arbor, Mich.	A. L. Jacobs ..... Pana, Ills.
H. W. Stone ..... Morris, Minn.	J. H. Jones & Co ..... Jamesport, Mo.	R. Taate & Co ..... Columbia City, Ind.
S. M. Wenger ..... Lincoln, Mo.	I. R. Hopkins & Son ..... Eagle, O.	Brown Bros ..... Columbus, O.
J. L Slough & Son ..... Delaware, O.	J. K. Mullen ..... Denver, Col.	G. W. Nicewanner ..... Piqua, O.
J. Geib & Co ..... Louisville, O.	Lloyd & Bivens ..... Terrell, Tex.	C. T. Johnson ..... Flora, Ills.
Jas. Wellman ..... Flint, Mich.	N. Swift & Co ..... Ann Arbor, Mich.	R. A. Welch ..... Rome, Ga.
Spaulding & Miller ..... Montpelier, Ind.	Maxon & Robinson ..... Maxon Mills, Ky.	L. W. Taylor ..... Mt. Pleasant, Ia.
Smith & Lawther ..... Nickerson, Kans.	Crocker & Dodge ..... Rosburg, Oregon.	D. Thomas & Son ..... Newark, O.
Lucas & Aikens ..... Ulhrichville, O.	Courtney Wood ..... Kiosville, O.	White & Feather ..... Clark Mills, Pa.
Wm. Deubel & Co. ..... Ypsilanti, Mich.	Patterson & Donleavey ..... New Philadelphia, O.	I. B. Chambers ..... Rome, Ga.
McHase & Clark ..... Vassar, Mich.	I. F. McDonald ..... Oxford, Iowa.	Miller & Russell ..... Jamestown, Pa.
Mast & Troyer ..... Buenna Vista, O.	Miller & Co ..... Augusta, Ga.	Geo. E. Esmond ..... Ft. Wayne, Ind.
H. T Pendleton ..... Wentzville, Mo.	R. J. Patton ..... Means, O.	A. J. Klinger ..... Greenville, O.
J. P. Felt ..... Emporium, Pa.	Geo. Hyatt ..... Washington, Ind.	Matt Wolf ..... De Graff, O.
John Brinks, Jr ..... Amelia C. H., Va.	G. Wilkie ..... Lexington, Mo.	Coleman & Burnell ..... Denver, Col.

Case Manufacturing Co., Columbus, Ohio.

[Please mention the UNITED STATES MILLER when you write to us.]

W. H. Cord's mill, at Butler, Pa., burned.

Wilson & Holman's mill, at Dallas, Ore., burned.

Miles S. Cutting's mill, at Fisher's, N. Y., burned.

Z. Ames & Son have sold their mill at The Forks, Neb.

Solomon Lightcap, the miller at Hazel Green, Wis , is dead.

W.L. Davis' mill, at Jefferson, Tenn., burned; insurance $2,750.

Miller & Phoenix, Sterling, Neb., have quit the milling business.

Wheeler, Hensline & Co., Minneapolis, have dissolved partnership.

Edward O. Turner's mill, at Harvard, Minn., burned. Loss $12,000.

Leonard & Son, millers, at Loveland, Col., are closing out business.

John Wilson's mill, at Dundas, Ont., was recently badly damaged by fire.

B. S. Renbaugh & Son's mill, at Sedalia, Mo., burned. Partially insured.

Long Bros. & Gartland's mill at Stayner, Ont., has suffered damage by fire.

Thomas Bros. succeed F. W. Wolf in the milling business at Madison, Neb.

F. Goodenow & Co., Salina, Ks., are succeeded by the Salina Mill and Elevator Co.

O. O. Heasley's mill, at Delano, Minn., burned June 27. Loss $6,000. Insurance $3,000.

Nussbaum & Delancy succeed Bowers & Delancy in the milling business, at Bucyrus, O.

J. K. Mullen & Co., Denver, Col., have lately placed six No. 1 double Case purifiers in their mill.

M. D. & A. W. Hodge, of North Adams, Mass., are replacing their porcelain with Stevens' rolls.

J. P. Davis, of the milling firm of Woodward & Davis, of Shelbyville, Ill., has retired from business.

Armstrong & Sons, Fayette, Mo., have lately started up their mill on the Case system of gradual reduction.

H. T. Pendleton, Wentzville, Mo., has his mill now in operation on the Case system of gradual reduction.

Brown Bros., Columbus, O., will start up their mill on the Case system of gradual reduction, in a few days.

I. H. Jones, Jamesport, Mo., will start up his mill in a short time on the Case system of gradual reduction.

M. S. Crowley, Brookville, Kas., is running rolls and purifiers furnished by the Case Mf'g Co , Columbus, O.

Keller & Uhl, of Connersville, Ind., have ordered Livingston rolls from Stout, Mills & Temple, Dayton, Ohio.

Baldwin & Osborn, Waupaca, Wis, are putting in a No. 1 double purifier from the Case Mf'g Co., Columbus, O.

M. M. Snider, Cambridge, Iowa, is running a line of machines furnished by the Case Mf'g Co., Columbus, O.

Allen Zininger & Co., Brighton, Iowa, have put in a No. 2 double purifier, from the Case Mf'g Co., Columbus, O.

Stout, Mills & Temple, of Dayton, Ohio, have just shipped Livingston rolls to H. C. Dutton, Edmore, Mich.

A. H. Haun & Son's mill, at Thorntown, Ind., was recently damaged by fire to the extent of $700. Insurance $400.

William Brenner, Atlanta, Ga., has ordered of The Jno. T. Noye Mf'g Co. of Buffalo, N. Y., another Stevens roller mill

Miller & Co , of Augusta, Ga., will start up their 300 bbl mill on the Case gradual reduction system in a short time.

J. D Saunbay's mill, at London, Ont., was recently damaged to the extent of $12,000 by the washing away of the dam.

B. F. Gump, Chicago, Ill , has deposited an order with the Jno. T. Noye Mi'g Co. for two single Stevens' roller mills

Jos. Sulphin & Son, of Middletown, Ohio, is just in receipt of Livingston rolls from Stout, Mills & Temple, Dayton, O.

J. M. Corl, Navarre, O., is putting in more Stevens' rolls, to be furnished by the Jno. T. Noye Mf'g Co., of Buffalo.

The Case Mf'g Co., Columbus, O., have shipped J. D. Green & Co., Faribault, Minn., one additional break machine.

The Case Mf'g Co., Columbus, O., have lately shipped Scott & Buell, Union City, Mich., one No. 1 double Case purifier.

Stout, Mills & Temple, of Dayton, O., have an order from F. C. Traebine, Beavers, O., for six pair of Livingston rolls.

The Bolckow Milling Co., of Bolckow, Mo., have placed an order with Stout, Mills & Temple, Dayton, O., for Livingston rolls.

The City Mills & Elevator Co., Sioux City, Iowa, are running a Case purifier furnished by the Case Mf'g Co., Columbus, O.

The Case Mf'g Co , Columbus, O., have an additional order for break machines from Thos. Bradford & Co., Cincinnati, O.

Smith, Lawther & Co. Nickerson, Kansas, are running their mill on the Case system of gradual reduction with splendid results.

L. G. Baker, of Shippensville, Pa., has ordered of the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., a single Stevens' for germ smashing.

B. F. Gump of Chicago, Ill., reports his grinding and corrugating machine full of work; he says, however, he can do a little more.

George A. Dayton, Tonawanda, Pa., is putting in another pair of Stevens' rolls, to be furnished by The Jno. T. Noye Mf'g Co. of Buffalo. N. Y.

The Jno. T. Noye Mf'g Co., of Buffalo, N. Y., are letting the contract for the construction of very large additions to their already large works.

Beaumont & Freeman, of Springfield, Mo., have placed their order with Stout, Mills & Temple, Dayton, O., for a Gilbert combined roller mill.

C. O. McKrum, Garrett, Kas., has ordered of the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., a double Stevens roller mill, for bran and germ.

The Case Mf'g Co., Columbus, O., have shipped Barrett & Son, Spring Valley, O , one of their patent automatic feed for a double porcelain roll.

The Case Mf'g Co., Columbus, O., have the order of Joseph Gebhart & Son, Dayton, O., for one pair scratch rolls, with patent automatic feed.

Ellwood & Armstrong, of Rochester, N. Y., are putting in a single Stevens' roller mill to be furnished by the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

Geo. Hendre, for a time head miller at La Belle Roller Mill, Oconomowoc, Wis., has accepted a position at Wm. Notbohm's Delafield Mill, at Delafield, lately supplied with rollers. Mr. Hendre is recommended as a thorough workman by his late employers.

Gilbert & Jones, of Jamestown, N. Y., are putting in additional Stevens' roller mills, to be furnished by the Jno. T. Noye Mi'g Co., Buffalo, N. Y.

Geo. Esmond, Ft. Wayne, Ind., is shipping his Allis rolls to the Case Mf'g Co., Columbus, O., to have their patent automatic feed placed on them.

The Case Mf'g Co., Columbus, O , have lately furnished Taft & Gaiser, Linesville, Pa., with one four-roller Bismarck mill, with patent automatic feed.

A. Bames, Wailukee, Hawaiian Island, Sandwich Islands, has ordered a pair of Stevens' rollers of the John T. Noye Manufacturing Company, Buffalo, N. Y.

Terrill, Texas, will soon have a gradual reduction mill in operation; Lloyd & Rivers, proprietors. They expect to start up in a few days on the Case system.

Stout, Mills & Temple, Dayton, O., have a crew of Millwrights at the mills of Martin, Fismer & Ritter, Lancaster, Ohio, putting in Gilbert and Livingston rolls.

G. W. M. Keller of Middletown, Md., is putting in a double Stevens' roller mill, to be supplied by The John T. Noye Manufacturing Company, Buffalo, N. Y.

E W. Pride, of Neenah, Wis., has bagged an order from Kline Bros., Kaukauna, Wis., for ten Stevens' roller mills, for the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

The Case Mf'g Co., Columbus, O., have an order from E. P. Rhodes & Co., Bridgeport, O., for a Case patent automatic feed for their 9x18 double Allis roll.

The Case Mf'g Co., Columbus, O., have an order through A. F. Ordway & Son, Beaver Dam, Wis., for a line of breaks and rolls for Henry Petit, Kingston, Wis.

The Union Mills Co. of Detroit, Mich., have ordered of the John T. Noye Manufacturing Company, Buffalo, N.Y., four pairs of Stevens' rolls for grinding middlings.

L. C. Torrance of Gowanda, N. Y., has ordered of the John T. Noye Manufacturing Company of Buffalo, N. Y., a single Stevens' roller mill for grinding middlings.

Thos. Thornburg, of Toledo, O., is at work on J. P. Warner's mill, Fostoria, Ohio, putting in Gilbert and Livingston rolls, from Stout, Mills & Temple, Dayton, O.

The Novelty Iron Works, Dubuque, Iowa, has ordered of the Case Mf'g Co., Columbus, O., one Little Giant break machine, to be shipped to J.G. Botsford, Claremont, Iowa.

A. J. Klinger, Greenville, O., has shipped his Livingston rolls, paying freight both ways, to the Case Mf'g Co., Columbus, O., to have their patent automatic feed attached.

C. E. Goshert, has just ordered for M. Cosgro, of Virginia, Ill., one Gilbert combined mill and four pair of Livingston rolls from Stout, Mills & Temple, Dayton, O.,

J. B. Miller & Co., Ashley, O., who are running on the Case system of gradual reduction, write, "we are 700 bbls, flour behind on our orders from the town of Scranton, Pa."

W. T. Morse, La Fayette, Ind., has instructed the Jno. T. Noye Mf g Co., of Buffalo, N. Y., to ship him without delay a single Stevens' roller mill for germ. It will be done.

The Bloomington Mill Co., Illinois; are putting in Stevens' roller mills for grinding middlings. The John T. Noye Manufacturing Company of Buffalo, N. Y., will fill order.

Bird, Bridge & Co, Warren, Ill., have ordered of the Jno. T. Noye Mf'g Co., Buffalo, N. Y., four double and one single roller mill, having the celebrated Stevens' corrugations.

W. R. Dell & Son,, European agent for the Stevens roller mill at London, Eng. have instructed The Jno. T. Noye Mf'g Co. of Buffalo., N. Y., to ship them two single mills for bran.

The Case Mf'g Co., Columbus, O., have the order of G. A. Holes, Elizabeth, Pa., for one pair smooth rolls, with patent automatic feed, also a full line of other mill machinery.

C S. Thompson, Attica, N. Y., has lately placed his order with the Case Mi'g Co., Columbus, O., for one Little Giant break machine and scalper combined, making three separations.

The Jno. T. Noye Mf'g Co., of Buffalo, N. Y., have received a cablegram from Australia for four Round's sectional roller mills. Carry the news to the utmost corners of the earth.

J. G. Guthrey, of Miami, Mo., has ordered through Chas. Heuber, St. Louis, Mo., three double Stevens' roller mills. The Jno. T. Noye Mf'g Co., of Buffalo, N. Y., will fill the order.

J. J. Wilson of Algona, Iowa, has placed an order with The John T. Noye Manufacturing Company of Buffalo, N. Y., for two Rounds' sectional roller mills, and a double mill for germ.

Harris Bros., Mt. Pleasant, Mich., have ordered of the Jno. T. Noye Mi'g Co., of Buffalo, N. Y., a Rounds' sectional roller mill, with Stevens corrugations and two 9x18 double line mills.

G. W. Clark of Fairport, N. Y., has ordered of The John T. Noye Manufacturing Company, Buffalo, N.Y , a Rounds' sectional roller mill and a 9x18 double mill, all with Stevens' corrugations.

Ritchey Milling Co., of Ritchey Mo., have lodged an order with the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., through Chas. Huber, of St. Louis, Mo., for three Stevens' double roller mills.

B. F. Gump, the Chicago, Ill., representative of the Stevens' roller mills, has directed the John T. Noye Manufacturing Company of Buffalo, N. Y., to ship him three single stevens' roller mills.

Winslow & Conley, Lake Mills, Ia., have ordered of the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., a Rounds' sectional roller mill, with Stevens' corrugations, reel scalpers, and a double mill.

E. A. Van Arsdall, of Ontaria, N. Y., has ordered of the Jno. T. Noye Mf'g Co., Buffalo, N. Y., a Rounds' sectional roller mill with Stevens' corrugations, and a double 9x18 smooth roller mill.

G. W. Pearce, Valparaiso, Ind., has ordered a Rounds' sectional roller mill with Stevens' corrugations, and a double mill for bran and germ, from the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

Heabler Bros. of Attica, Seneca Co., Ohio, has planted an order with the John T. Noye Manufacturing Company of Buffalo, N. Y., for a double Stevens' roller mill for grinding middlings and bran.

Gorton & Meyers, of Lima, O., have quite recently ordered of the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., a Rounds' sectional roller mill, two pairs, with roll scalpers, all with Stevens' corrugations.

Stout, Mills & Temple, Dayton, O., are receiving every few days orders from Pray Mf'g Co., Minneapolis, Minn., for Livingston rolls in carload lots. The Pray Co. are having an immense trade for these rolls in the Northwest.

S. N. Hopkins, Castile, N. Y., is putting in his mill a Rounds' sectional roller mill with Stevens' corrugations, and two single mills, all to be furnished by the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

Chas. Huber, the St. Louis, Mo., milling expert, has secured an order of E. W. Bennett, Mechanicsburg, Ill., for five pairs of Stevens' rolls, to be furnished by the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

E. W. Pride, of Neenah, Wis , has placed an order with the Jno. T. Noye Mi'g Co., Buffalo, N. Y., for Henry R. Pietsch, Stockton, Minn., for a Rounds' sectional roller mill, a single mill for working bran.

A. S. Barnes, Ludlowville, N. Y., has decided to put in his mill a Rounds' sectional roller mill with Stevens' corrugations, and two single mills; all to be furnished by the Jno. T. Noye Mf'g Co., Buffalo, N. Y.

Jos Pollock & Co., Vincennes, Ind., have directed Jno. Webster, of Detroit, Mich., to ship them a double Stevens' roller mill for grinding low grade flour. The Jno. T. Noye Mf'g Co., of Buffalo, N. Y., will fill the order.

The Case Mf'g Co., Columbus, O., have been awarded the contract of Geo. Esmond, Fort Wayne, Ind., for a full line of breaks, rolls, purifiers, scalpers, centrifugals, etc., for a full gradual reduction mill on the Case system.

Noel & Kuhn, Hanover, Pa., tumbled to a Rounds' sectional roller mill with Stevens' corrugations, cylinder scalper and elevators, and a single germ mill, all to be shipped by the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

Mr. D. A. Wilcox, of Earlsville, Madison Co., N. Y., gracefully tumbles to the new improvements and orders the Jno. T. Noye Mf'g Co., Buffalo, N. Y., to ship him a Rounds' sectional roller mill, with Stevens' corrugations

J. T. Stiteler, Kittanning, Pa., has lodged an order with the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., for a Rounds sectional roller mill, with Stevens' corrugations, cylinder scalper and elevators, and a double mill for germ and low grade.

C. Bennet & Son, Louisville, O., have ordered the Case Mf'g. Co , Columbus, O., to ship one four-roller Bismarck mill with patent automatic feed and one Case centrifugal reel, to Greentown, O., to go in the mill they are remodeling at that place.

The Case Mf'g Co., Columbus, O., have been awarded the contract of A. J. Klinger, Greenville, O., for a full gradual reduction mill on the Case system, using a full line of breaks, rolls, purifiers, centrifugals, scalpers, etc., of the Case Co's manufacture.

I. H. Defrees & Son, at Goshen, Ind., have instructed The Jno. T. Noye Mfg Co. of Buffalo, N. Y., to ship them two pairs Rounds sectional roller mills with reel scalpers, and a double 9x18 mill for germ and bran; all with the celebrated Stevens' corrugations.

Dennis & Barr of Longwood, Colorado, have closed a contract with The John T. Noye Manufacturing Company of Buffalo, N. Y., for a complete outfit for their new mill which is to include nine pairs of the popular Stevens' rolls, Smith purifiers, and everything complete.

E. W. Pride, the gallant defender of Stevens' rolls, has gobbled an order from the Wambols Milling Co., of Appleton, Wis., for the Jno. T. Noye Mf'g Co., of Buffalo, N. Y., for six single roller mills. They, too, will soon experience thrills of unalloyed happiness.

D. Scott, of Macomb, Ill., is now running his remodeled mill successfully. He has no trouble, and is meeting and overcoming the sharpest competition in the country with his flour. He is using Gilbert and Livingston rolls. James McGraw, of Kankakee, Ill., using the same, with success.

Chas. Rakes, of Lockport, N. Y., is having an immense trade on Gilbert combined and Livingston roller mills. Among his recent orders, is one for a line of rolls for C. Sherman, Mottville, N. Y., and a Gilbert mill with Livingston finishing rolls, for Jas. R. Clark & Co., Baltimore, Md.

Stout, Mills & Temple, of Dayton, Ohio, have recently contracted with Lower Bros., of Princeton, Ill., to remodel their mill, using a Gilbert combined mill for breaks, and Livingston finishing rolls. The work is now under way, and in the hands of C. E. Goshert, their agent for Central Illinois.

After carefully investigating the different roller systems, E. E. Carpenter of Dover, O., placed his order with the Case Mf'g Co. of Columbus, O., for 10 pairs Case rolls in addition to breaks, purifiers, centrifugals, scalpers &c. of the Case Co's manufacture, for a full gradual reduction mill on the Case system.

A. A. Pearis, Bakersville, O., after running 1 double set of Case rolls for some time shows his appreciation of the same by placing his order with the Case Mf'g Co., Columbus, O., for a complete outfit for a gradual reduction mill on the Case system—using 8 pairs of their rolls, in connection with their purifiers, centrifugals, breaks, &c.

A disastrous fire recently totally destroyed the fine mill of H B. Eggers & Co., St. Louis, Mo., but with commendable enterprise, they already have under way a mill of about the same capacity. Chas. Heuber, the Hungarian milling expert, planned the mill, and the Jno. T. Noye Mf'g Co., of Buffalo, furnish six pairs of Stevens' rolls.

James H. Burdick, of Whitewater, Wis., has accepted a position as head miller for Brown, Douglas & Brown, at La Belle Roller Mills, at Oconomowoc. He was in their employ for many years at Whitewater, and is a gentleman who thoroughly understands his business. The reputation of La Belle Roller Mill will be enhanced by the acquisition.

Shuler & Co., of Minneapolis, Minn , the most popular mill builders in the West, have taken an order from Slaughter & Lindsey, Fullerton, Neb., for the construction of a roller mill in which will be used a Rounds' sectional roller mill with Stevens' corrugations and five pair of line rolls, all to be furnished by the Jno. T. Noye Mf'g Co., of Buffalo, N. Y.

The Case Mf'g Co., Columbus, O., have been awarded the contract of Crane & Pearson, California, Mo., for a complete outfit of breaks, rolls, purifiers, centrifugals, scalpers, etc., for a full gradual reduction mill on the Case system. Messrs. Crane & Pearson are in quite a hurry to have their mill completed, and the Case Co. will push their job with all the speed possible.

The Case Mf'g Co., Columbus, O., have lately been awarded the contract of Mat. Wolf, DeGraff, O., for a full gradual reduction mill, on the Case system, using 12 pairs of Case rolls in connection with their purifiers, centrifugals, scalpers, etc. This mill will come in competition with some of the best roller mills of other manufacture. The Case Co. are bound it shall be second to none.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently secured the contract for remodeling the mill of Messrs. Price & Wilkinson, at Taylorville, Ill, and are putting in twenty pair of Allis' rolls in Gray's noiseless belt frames, together with the machinery, necessary to complete the change. The mill will be driven with a 16x42 Reynolds' Corliss engine. When completed this mill will be capable of doing as good work as any mill in that part of the state.

Lewis Emery, Jr., of Three Rivers, Mich , has determined to increase the capacity of his mill to five hundred barrels, and has deposited an order with the Jno. T. Noye Mf'g Co., Buffalo, N. Y., for sixteen pair of Stevens' rolls, and the necessary machinery to accomplish the purpose. It is intended to use the centrifugal system exclusively, and J. S. Karus will boss the job.

Jno. Webster, of Detroit, Mich., reports the general outlook for business quite good. He has recently taken an order from G. W. Kennard, Champaign, Ill , to overhaul his mill to the roller system, and for that purpose has instructed the Jno. T. Noye Mf'g Co , of Buffalo, N. Y., to ship a Rounds' sectional roller mill, with Stevens' corrugations and six pairs of line rolls.

The Case Mf'g Co., Columbus, O., have lately been awarded the contract of E. Weaver, of Windsor, Mo., for a full gradual reduction mill on the Case system, using a complete line of breaks, rolls, purifiers, centrifugals, scalpers, etc., of the Case Co's manufacture. This mill will come in competition with some of the best roller mills in Missouri and Mr. Weaver can rest assured that in the hands of the Case Co. he will get a mill second to none.

Garret Reublin, Elyria, O., has been contemplating the remodeling of his mill to the roller system for some time, and has lately placed his order with the Case Mf'g Co., Columbus, O., for a complete outfit of breaks, rolls, purifiers, centrifugals, scalpers, etc. Mr. Reublin is one of the foremost millers of Northern Ohio, and thoroughly investigated the different systems before placing his order.

Among the many mills that are now changing to the gradual reduction system, is the one at Brownhelm, O., F. H. Bacon, proprietor Mr. Bacon has contemplated the change for some time, and after a careful investigation of the different systems, placed his order with the Case Mf'g Co., Columbus, O., for a complete line of breaks, rolls, purifiers, centrifugals, scalpers, etc., of their manufacture.

Stout, Mills & Temple, Dayton, Ohio, have recently received orders for their celebrated New American Turbine from the following parties: O. E. Merrill, & Co., Beloit, Wis., 36 in. wheel; Stormont Milling Co., Silver Reef, Utah, 48 in. wheel; A. A. Simonds, Dayton, O., 60 in. wheel; M. D. Keeny, Willmington, Ill., 60 in. wheel; Rock River Paper Co., Beloit Wis., 36 in. wheel; Sylvester Welon, St. Catherines, Ont., 60 in. wheel; G. S. Garg, Jr., Milford, Iowa, 30 in. wheel; Pray Mf'g Co., Minneapolis, Minn., 60 in. wheel, C. B. Gaskill, Niagara Falls, N. Y., 48 in. wheel; Pray Mf'g Co., Minneapolis, Minn., 48 in wheel; White River Lumber Co., Mason, Wis., 60 in. wheel.

The United States MILLER

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(Compiled for the UNITED STATES MILLER)

ON WATER-WHEELS, ANCIENT AND MODERN.

The water-wheels first used to drive corn-mills were horizontal; they were of small size, and revolved rapidly. The axle passed through the centre of the lower millstone, as the spindle does now. It turned the upper millstone by means of a cross-bar fixed in the eye or centre of the stone, whilst a current of water directed against the vanes of the wheel on one side of the axle, urged it round. Such water-mills are still used in India. A modern traveller informs us that "all the flour-mills upon the river Meles at Smyrna are constructed in this way, and necessarily answer well in countries where water power is abundant, their great simplicity preventing their readily getting out of repair, while costing but little also." Some of these simple mills may yet be found in remote parts of Italy and France.

The horizontal water-wheel is again coming into notice with many refinements and improvements of modern invention; and not far from the rude Indian model before mentioned might be seen the elaborate machine of Messrs. Fromont & Son, French engineers, made entirely of iron, capable of working to fifty horse-power, with a fall of two metres, or six feet seven inches, and susceptible of such nice adjustment, as to be adapted to spin cotton and silk as well as to grind corn: while the inventor states, from his experience of similar wheels already in action, that he can obtain more than 70 per cent. of the power expended, and that, in one instance, the effective power has reached 79 per cent.

The Romans also used conical mills for grinding corn. A very complete example of this kind was found in the excavations of Pompeii, where it had been buried for nearly seventeen centuries. The locality appeared to have been the shop of a wealthy baker; and the mill, which was of considerable size, was so fitted as to be worked by men or cattle.

The vertical water-wheel appears to have been known to the ancients at a very early period, but it was chiefly used to raise water for the purposes of irrigation. Examples of such wheels, in their original form and use, are still to be seen on the Nile and the Euphrates; and wheels are also employed by the Chinese to raise water for their rice fields and cane plantations; those of Egypt and Syria generally resemble each other. The water wheel used in China unites with the simplicity of all Chinese mechanism great ingenuity of construction and adaption. The only materials employed in the construction of this water-wheel, except the axle and the two posts on which it rests, are afforded by the bamboo. The rims, the spokes, the ladle boards or floats, the tubes or buckets, are made of entire lengths, or large pieces, or thin slices, or single joints, of bamboo; neither nails, pins, nor screws, nor any kind of metal, are used; the parts are firmly bound together by cordage of split bomboo or cane. These wheels are from twenty to forty feet in diameter, according to the height of the land on the river's bank and the consequent elevation to which the water must be raised. A wheel of thirty feet carries twenty tubes or buckets about four feet long and two inches inside diameter, each of them holding six-tenths of a gallon, or twelve gallons in the whole. With a stream of moderate velocity the wheel will make four revolutions in a minute, and lift forty-eight gallons of water, or 2,880 gallons in an hour.

The primitive application of water-power to turn mill-stones has been noticed above, and the employment of horizontal water-wheels, with vertical axles, is still considered by French engineers to be in many cases advantageous, as presenting great simplicity and economy, both in construction, maintenance, and application; as requiring but little space, and in being able to work in floods and in frosty weather. In driving corn-mills they need no toothed-wheel work, and in besieged towns they can be worked at all times without interfering with the defences, being either placed altogether out of harm's way, or costing but little to shelter them from the enemy's fire.

Such is the opinion of experienced officers of the French artillery, who have made an elaborate series of experiments, and given an excellent report on the useful effect of the ordinary horizontal water-wheel at present used in France. Those on which the experiments were made are at Toulouse, where the two dams (barrages) of the Garonne, and the abundance of water in the canal of the south, near its discharge into that river, have rendered disposable falls of water sufficient to put in motion a great number of corn-mills by means of horizontal water-wheels. These wheels are of two kinds: those situate on the rivers are called bucket-wheels (*a cuve,*) and are similar to what are used at Cahors, at Metz and other places; those which are placed on the canals are called whirl-wheels (*roues volants,*) and much resemble those which have existed from time immemorial, and are turned by the percussion of the water upon curved floats, which are here used instead of the ladles that are fixed round the axles of the mills of the Alps.

It may be remarked that in Northern Africa several rude mills are to be found in the same fashion as they have existed for ages, among a people the least advanced in the arts of industy; many of them are on the great falls of the Rummel, at Constantineh, and instead of ladles these have pieces of wood rudely driven into the upright axle, like spokes into the nave of a cart-wheel. A channel being made from the river, at an inclination of 30 or 40 degrees, the water is directed against the side of the wheel, and having done its work, it is returned to the river and employed again and again as it descends the hill to turn a series of such mills. In some of these the upper end of the vertical axle is fitted with a bent arm or crank, and the millstone, which, in such cases, is fixed in an inclined position of 10 or 15 degrees to the horizon, is forced round by it. With these mills they prepare the coarse meal, which, being cooked in steam, makes the couscouson, the common food of the natives.

The localities at Toulouse afforded many favorable circumstances for making experiments, besides the general employment of these two kinds of wheel, so that the results of both could be readily and exactly compared by the same dynamometers and other instruments used by the same observers.

The result of all the trials appear to be that on the horizontal water-wheels with buckets, the effects produced at ordinary speeds varied from 15 to 27 per cent. of the power employed when the mills and wheels were in good condition. The speeds were varied from 60 to 135 revolutions per minute; but the best effect seems to have been obtained at about 90 revolutions, with a total fall of water, measuring the difference of level above and below the wheel of from seven to eight feet. The wheels were about five and a half feet in diameter; that of the millstones is not stated in the report, but they appear to have been such as are in general use—probably about four and a half feet. The water which drove these wheels was discharged through an ordinary sluice, and passing through a channel of stone-work, was thrown obliquely on the wheel. The other kind of horizontal wheels experimented upon was distinguished by the name of "*roues volants*", here termed a *whirl-wheel*—for the term fly-wheel, as we now use it, is applied to a very different piece of machinery, namely the massy cast-iron regulator of steam-engines and other heavy works.

These wheels received the water directed upon them through an inclined pyramidal trunk of wood upon one side of the wheel; the larger end of the trunk being closed, or the entrance of the water regulated by a sluice, against which was a head of water of fourteen or fifteen feet; to which the inclination of the trunk, or about two feet more, may be added, so that the ladles af the wheel where acted upon by the weight and impulse of the water, and were so formed as to continue such action until the water escaped between them, and passed through the wheel. When these wheels made 102 and 108 revolutions per minute, the useful effect was from 29 to 33 per cent., and when the resistance of the work done reduced their speed to 90 and 85 turns per minute, their effect reached to 39 and 40 per cent. of the power expended, the useful effect of these wheels being nearly the same as that of the old undershot water-wheel.

The difference in construction between the two kinds of mills appears to be very slight, and their dimensions and cost to be the same, or nearly so; but the supply of water being abundant, the millers paid no attention to the quality expended in performing a given amount of work. The wheels are made of cast iron, and the pivot of the upright shaft stands upon a foot-bridge or lever, fixed at one end, and regulated at the other end by a second lever place in the mill above, so that the millstones may be adjusted to grind closer or otherwise in the usual way.

It is, however, well known to all millwrights that a much greater amount of useful effect is obtained when water acts by its impulse; and it has been found expedient in some places where the millers desired to retain the horizontal wheel and to economize the expenditure of water, to vary its construction, so that the weight of the water should act, and that without impulse. This has been effected by using, as it were, two wheels, one laid upon the other; the upper wheel being fixed and immovable, and serving only to direct the water against the vanes or buckets of the lower wheel, which is forced round by the pressure so directed against it. This mill is known in Germany and France as Koechlin's turbine. A cylinder is formed of cast iron, wrought iron plates, or wood strongly hooped, and is made open at the top, unless the millstone rest upon when the power is used to grind corn. The upper end of the cylinder is somewhat higher than the head of the column of water intended to act upon the wheel, the water entering it through an opening on one side, and the internal diameter as proportioned to the quantity of water to be used, there is a sluice to regulate the supply at top, fixed in the pentrough, and another at the bottom which regulates the expenditure; the pressure of the atmosphere on the top is supposed to render the whole column effective. The first wheel forms a bottom to the upper portion of the cylinder, which must be firmly secured to a foundation of masonry or timber. The upright shaft or axle is fitted into the moving wheel and turns with it, passing through a collar properly bored and lined with brass, in the centre of the upper or fixed wheel; it is steadied and secured by another collar formed on a frame or bracket, screwed to the top of the cylinder, which may be dispensed with if the nether millstone be used instead. The pressure of the water is directed by the vanes or guide-curves of the upper wheel into the buckets of the lower one, so as to bear upon them with the greatest effect, while by the regulation of the two sluices the cylinder is kept full, and the descending column of water passes like an eddy through the wheels with a force proportioned to the whole height, for the lower end of the cylinder is immersed in the water, which in ordinary times just covers the outlet opening, and in flood times rises above it, so that the power due to the difference between the surfaces of the dam and the tail of water may always be available.

The primitive form and use of vertical wheels for raising water for the irrigation of land in China and the Orient, has been already noticed. These, simply dipping their float into a river, were turned by the current with such velocity and force as the stream might impart to them. Yet, before quitting this part of the subject, it may be proper to mention two modes of applying these wheels, which have been practiced in America.

One of them was to place a strong axle across a boat, or some other vessel, of large dimensions, with a water-wheel at each end of this axle, like the paddle-wheels of a steamboat; and this vessel being moored in a current, the wheels revolved and gave motion to mill-stones and machinery for grinding and dressing flour on board the floating mill. The other was by means of a similar axle and a pair of wheels, thus mounted in a boat, to cause the boat so fitted to warp itself, and to tow other boats up a rapid by winding one end of a rope round the axle, the other end being made fast to an anchor, or other mooring above the rapid. This means of ascending rapids in our rivers has been generally superseded by the employment of powerful steamboats, but it is worthy of being recorded as an ingenious contrivance to derive from the existing medium itself a power to overcome it by duly proportioning the diameters of the wheels and axles.

The next improvement was an important one, and it rendered the vertical water-wheel a powerful mechanical agent.

By penning back the stream with a dam or barrier thrown across its channel, so as to accumulate and raise the water to a head; and by cutting a canal, or water-course, in the bank, communicating with the reservoir so formed, and re-entering the river by its side at a lower level; by erecting the wheel in this water-course, and by interposing a sluice between the wheel and the pent-up water, so as to stop or regulate its efflux, the whole power of the water heretofore spread over the bed of the river might be concentrated against the wheel, rushing through the opening of the sluice with a velocity and impulse due to its head and volume, and acting upon the float-boards with an amount of force and effect which could not be obtained in the open river; the water being now confined between walls of solid masonry, almost in contact with the wheel, and within which it revolved. These walls also served to support the axis of the wheel and to retain the sluice, while a pavement of heavy stones below, between the walls, prevented the water from escaping beneath the wheel until it had done its duty. When the sluice was shut down and the wheel stood still until the dam was filled to overflowing, the water passed over the barriers and rolled on as before, through its old channel in the river, or was discharged into it through a waste-water sluice, sometimes made self-acting by means of a balanced float or some similar contrivance; and, on adopting such apparatus, great ingenuity has often been displayed, especially in the Shaw's Waterworks, as well as by some of the French engineers. Arrangements like these, so simple, so effective and so easily made and managed, rendered the undershot wheel most useful and valuable as a means of obtaining mechanical power sufficient to drive extensive flour-mills, fulling-mills and forges, for which purposes it was, in the first instance, chiefly used to aid an agricultural population in more readily supplying themselves with bread, woolen cloth and iron—the principal requirements of a primitive community, with whom spinning and weaving were as yet domestic em-

ployments. From the numerous experiments made of John Smeaton, the most experienced and eminent engineer of his time, we deduce the following rules, or, as he calls them, maxims:—

"1. That the virtual, or effective head, being the same, the effect will be nearly as the quantity of water expended.

"2. That the expense of water being the same, the effect will be nearly as the height of the virtual or effective head.

"3. That the quantity of water expended being the same, the effect is nearly as the square of its velocity.

"4. The aperture being the same, the effect will be nearly as the cube of the velocity of the water."

It was not difficult to imagine that if a small stream of water descending from a hill-side, were directed into the mouths of the earthen vessels or wooden buckets of the wheels used for irrigation, the vessels so loaded would descend and the wheels revolve, so that rotary motion and mechanical power would be gained; the buckets emptying themselves at the lowest point, as they had before been emptied at the highest; the wheel turning in the opposite direction, because the weight or gravity of the water was now the moving power of this overshot wheel. In the undershot wheel the impulse of the water striking the floats drives the wheels; in the overshot wheel the weight of the water flowing into the buckets turns the wheel, and all impulse must be avoided; the water must flow with the same velocity as the wheel, or just so much in excess as will prevent the buckets from striking the water as they present themselves to be filled. Experience soon showed that the earthen jar or the suspended bucket were cumbrous and inconvenient, and as larger and more powerful wheels were applied to more copious streams, a series of simple wooden troughs formed across the face of the wheel were found to answer the purpose better. When the supply of water was ample and the wheels large, it was found that to fill these troughs well and regularly the stream should be made nearly as broad as the wheel, and shallow in proportion to its width. The wheel was then formed by placing two sets of *arms*, at a sufficient distance apart, upon the *axle*, and fixing to their ends *segments* of wood to form the circle; upon these segments across *the face* of the wheel, and equal to or somewhat exceeding in length the width of the stream or sheet of water, were nailed the *sole-boards;* on the end of these boards, and at right angles to them, so as to form a projecting rim or ledge on each side of the wheel's face, was fixed the *shrouding*, formed of stout plank generally from 12 to 18 inches broad; and between these shroudings, across the face of the wheel, were placed the *buckets*, made of lighter planking, and having their ends let into the shrouding, by which the ends were closed. The edge of the bucket-board meeting the sole-plank formed two sides of a triangular trough, the third being open to receive the discharge of water. Subsequently the bucket was made in two boards, one called the front and the other the bottom of the bucket, the latter taking off the angle and making the section of the bucket or form of the trough, that of a trapezium, which form it long retained, until the buckets of water wheels were made of iron-plate.

Since water-wheels have been made wholly of iron, and chiefly of wrought-iron, the form of the bucket has been either a part of a circle, a cycloid, an epicycloid, or an Archimedian spiral. Great pains are now taken by the best makers of water-wheels to form and adapt the curve of the buckets so that they may readily fill with water, retain their load as long as possible, and discharge it with facility when it has ceased to be useful.

LETTER FROM THE JOHN T. NOYE M'FG CO.

BUFFALO, N. Y., Aug. 28, 1883.

Editor United States Miller:

So many of our valued patrons have, of late, protested against the making public their private business matters, in the way of announcing the purchases they have made, and the once virtuous practice having fallen into such manifest misuse, we have determined from and after this date to discontinue the practice of furnishing you in such wholesale quantities for publication, what is known as trade notes. We confidently believe the time employed in preparing, and the space occupied in your journal in publishing them, could and should be devoted to purposes of greater benefit to your numerous readers.

Yours truly,

THE JOHN T. NOYE M'FG CO.

UNITED STATES MILLER.

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MILWAUKEE, AUGUST, 1883.

ANNOUNCEMENT:

☞ WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & Co., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞ *The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

ONE of our Milwaukee mills, the State Mills, was badly damaged by fire Saturday, Sept. 1. The insurance on the property is $55,000, and the damage is fully that amount. As soon as the damage is adjusted, the Company will rebuild, and in 60 days will have everything in order again..

THE COMPOSITION OF AMERICAN WHEAT AND CORN.*

(By Prof. CLIFFORD RICHARDSON, of Washington, D. C.)

Under my direction, during the last 10 years, more than 200 analyses of wheat and 100 of corn were made. Most of the wheat samples were of winter varieties from all portions of the continent, and as they were especially selected, it is probable the average is high, although some were remarkably poor, and show the extreme in that direction. The averages are all of American wheats. All of the American analyses have been made in the same laboratory (that of the chemical department, Washington) and by the same hands, and are therefore reliable.

THE FOLLOWING AVERAGES.

have been calculated.

Average composition of American wheat from all known analyses of samples grown in America. Average:

Composition of the same, omitting those analyses which are incomplete from non-deterioration of oil and fibre.

Average composition of American wheats, excluding the exceptionally rich wheats of Colorado and averages of the composition of wheat by states. For comparison several averages from foreign authorities.

It is apparent that while our wheats are but a trifle lighter in weight per 100 grains that the foreign wheats they contain less water, about the same ash, more oil, less fibre and less albumen.

The following is a table for the limit of variations:

	Lowest	Highest.	Variation.
Water	6.05	13.52	6.47
Ash	80	2.98	2.18
Oil	1.39	3 93	2 54
Starch, etc	67.94	78.94	11.00
Fibre	.44	2.76	2.32
Albumen	8.05	7.15	9.05

THE ALBUMINOIDS

are considered the most valuable portion of the wheat, and hence receive the most attention. The extremes, however, in this direction are not nearly so large in this country as have been found in other countries. It is probably not owing to any inherent characteristics of the wheats themselves, that less water is found in the American than in foreign wheats, but it is probably more dependent on the condition of gathering, preserving and grinding for analysis. In the ash the averages are alike, except in Colorado, where the new and rich soil has greatly increased it, and it is concluded that an ample supply of mineral food also increases the ash. The fibre is decidedly smaller in our wheats, as was found to be the case in our grasses when compared with those of foreign growth, the grasses, like the wheats, containing much less albumen than continental varieties. It seems, then, that a decrease in albumen is followed by a decrease in fibre. Among our own wheats only, those from Colorado, but perhaps Dakota and Minnesota, can equal in albuminoids and size of grain the European varieties.

THE WHEATS OF THE ATLANTIC STATES

are on the average much the poorest in nitrogen and albumen, and smallest in size. Those from New York and Vermont are large in size but not equal to the best in nitrogen, although cultivated to a high condition. The Virginia wheats have an extremely small weight and rather more nitrogen. Those of Maryland appear to be the best among them, and command three or four cents per bushel more than those from other sources.

Samples of wheat from all over the world give the following results of the average percentage of nitrogen albumen in wheats of the world:

COUNTRIES.	Per cent. of Nitrogen	Per cent. of Albumen	Highest Albumen	Lowest Albumen	Weight of 100 Kernels
Russia	3.12	19.48	24.56	10.68	.....
Russia	2.34	14.63	16.56	14.24	3.610
N. Germany	2.24	14.00	18.20	9.80	4.498
S. Germany	2.17	13.56	17.76	10.21	4.485
Germany	2 11	13.19	....	....	.....
Germany	2.08	13.09	....	....	.....
Spain	2.10	13.13	15.29	11.26	4.270
France	2.08	13.00	....	.....	.....
Scotland	2 01	12.56	....	.....	4.680
Australia	1.60	10.00	....	.....	.....
Egypt	1.47	9.19	9.92	8 75	5.540
America	1.92	12.00	17.15	8.05	.....
Amer. Excl. Col.	1.86	11.62	16.63	8.05	(3.532)
Colorado, 1881	2.14	13.40	15 94	11.19	4.833
Colorado, 1882	2.09	13.06	14.88	11.55	4 299
Minnesota	2.05	12.79	17.15	10.85	3.354
Michigan	1.92	12.00	14.47	9 13	(4.116)
Missouri	1.83	11.44	12.44	10.50	3.502
Oregon	1.46	9.17	10.63	8.05	4.800
Atlantic States	1.79	11.18	14.00	8.93	3.057
Pennsylvania	1.80	11.25	12.78	9.45	3.211
N. Carolina	1.67	10.46	12 43	8 93	3.782
Alabama	1.82	11.32	13.65	9.80	3.137

IN THE MIDDLE WEST,

Kentucky, Tennessee and Missouri wheat is produced which is much larger in size, and while slightly better than the Atlantic States, yet poor in quality. In Colorado, Minnesota and Dakota we first reach a wheat equal in nitrogen and albuminoids as we should desire. In Oregon, while the size is of the best, the quality of the albuminoids falls to the lowest point. It is a strange and as yet unexplained fact that while the wheat in Oregon and Colorado is almost equal in quantity of yield and size of kernel, yet there is a wide difference in composition. They vary in albuminoids thus: Colorado, 14.18; Oregon, 10.63. Climate and condition must be largely the cause. As an illustration the following analyses serve:

WHEAT FROM—	Va.	Col.	Ore.
Wheat of 100 grains	1.830	4.739	4 253
Yield per acre	7 bu	Large	Large
Water	6 45	10 17	7.80
Ash	2.45	2.02	1.75
Oil	2.18	2.13	2.31
Starch, Sugar, etc	73.02	70.10	77.68
Fibre	1.00	1.40	1.88
Albuminoids	14.	14.18	8.58

It was found that by cultivation and increase in fertility the wheat increased its fibre and also the ash by the addition of mineral matter, and it was clearly evident that cultivation had a powerful effect. Several experiments were cited to prove this. Out of 44 wheats from Colorado that were analyzed during 1881 and 1882, only one fell below 11.50 in the albumen contained, and only six below 12. In North Carolina, among 21 varieties, only two exceeded 12 per cent. It has been claimed that latitude made the difference in quality of wheat, but soil has been shown by experiment to be the main factor. From a farm in Maryland it was found that the fallow land produced a grain richer in nitrogen and of about the same size as the corn ground; but as observed the fallow crop was much larger. The analysis of corn shows that the average albumen in dry flint corn is 11.62, while in dry Dents it is 11.32. The northern flints thus present a trifling advantage over southern Dents. Corn is not so exhausting a crop as wheat, as it draws its nitrogen more from outside and deeper sources, and from its long season will succeed where a wheat crop fails. Corn contains, compared with wheat, more water, twice as much oil, less starch, rather more fibre and less albuminoids. The average amount of albumen in our cereals is as follows:

Wheat 14 8; barley, 14 8; oats, 13 8 9; rye, 13 9-25; corn 10.

* This article was read at a Session of the Social Science Congress at Minneapolis, during Aug, 1883. The author, Prof. Clifford, is first assistant Chemist of the Agricultural Department of the ited States.

A GRAPHIC DESCRIPTION OF THE BESSEMER AND BASIC PROCESS IN THE MAKING OF STEEL.

The following concise and comprehensive description of the making of steel under the Basic process, is from Andrew Carnegie's, new work entitled: "An American Four in Hand in England". Its perusal will impart much information not previously possessed; Mr. Carnegie writes:

"We were honored while here by the presence of Mr. Sidney G. Thomas and his sister, who came down from London and spent the day with us. Mr. Thomas is the young chemist, who, in conjunction with his cousin, Mr. Gilchrist, would not accept the dictum of the authorities that phosphorus, that fiend of steel manufacturers, cannot be expelled from iron ores at a high temperature. They set to work over a small toy-pot, which deserves to rank with Watt's tea-kettle, to see whether the scientific world had not blundered.

"Let me premise that the presence of phosphorus in pig iron to the extent of more than about one tenth of one per cent., is fatal to the production of good steel by the Bessemer, or open-hearth process. Do what you will, this troublesome substance persists in remaining with the iron. If there be phosphorus in the iron-stone you smelt, every atom of it will be found in the resulting iron; and if there be any in the lime-stone, or the coke or coal used, every atom of it also will find its way into the iron.

"It is essential, therefore, that iron-stone should be found practically free from phosphorous; but unfortunately such ore is scarce, and therefore expensive. The great iron-stone deposits of England, are full of the enemy; so are those of America; hence, both countries depend largely upon ores, which have to be transported from Spain and other countries. One authority estimates that, if all the high phosphorous ores in Britain could be made as valuable as those free from the objectionable ingredient, the saving per annum would go far to pay the interest upon the National Debt. Many have been the attempts to devise some tempting bait to coax this fiend to forego his strange affinity for iron, and unite with some other element; but no, his satanic majesty would cling to the metal.

Messrs. Thomas & Gilchrist, in studying some highly creditable experiments, made by my friend Lothian Bell, Esq., (for he was upon the right track), discovered an oversight, which seemed to qualify the results, which he reached, and to render his experiments inconclusive. It was possible, they thought, that his failure might have resulted from the fiend not being *kept* out when he was out; so they went quietly to work with their toy-pot, and Eureka! Their charm had not only exorcised the fiend, but they had discovered how to lead him away from the molten metal into the refuse and shut the door on him there. Here was a triumph indeed! I fancy they neither ate, nor slept till repeated experiments proved that the true charm had been found at last.

"Mr. E. Windsor Richards, the broad manager of the largest manufactory of iron and steel in the world, was soon acquainted by them with the discovery. He tried it upon a large scale, and announced the end of the reign of King Phosphorus; but he dies hard. This was some years ago; but I read the good news a few minutes after I had landed at Naples from the East, on my way round the world in the year 1879. Many obstacles had yet to be surmounted, but now every ton of steel manufactured at Mr. Richard's great works is made from iron-stone, which a few years ago was counted worthless for steel. Enough iron-stone can be had for three dollars to make a ton of pig iron suitable for steel rails. The same amount of low phosphorus stone at Pittsburgh cost last year sixteen dollars, and yet there are intelligent people who do not understand why we cannot make rails as cheap as the English.

"I wonder if I could explain to the general reader how Messrs. Thomas & Gilchrist succeeded. It always seems to me like a fairy tale—I will try. In making steel, ten tons of molten pig iron is run into a big pot called a converter, and hundreds of jets of air are blown up through the mass to burn out the silica and carbon, and finally to make it steel. Now, phosphorus has a greater affinity for lime than for iron when it reaches a certain temperature, and when the air blast brings the mass to the required heat, the million particles of phosphorous, like so many tiny ants disturbed, run hither and thither, quite ready to leave the iron for the lime. These clever young men first put a lot of lime in the bottom of the pot as a bait, and into this fly the ants, perfectly delighted with their new home. The lime and slag float to the top and are drawn off—but mark you, let the temperature fall and the new home gets too cold to suit these salamanders, although the temperature may be over 2,000 degrees, hot enough to melt a bar of steel in a moment if thrown into the pot. No, they must have 2,500 degrees in the lime or they will rush back to the metal.

"But here lay a difficulty: 2,500 degrees is so very hot that no ordinary pot lining will stand it, and of course the iron pot itself will not last a moment. If ganister or fire-brick is used it just crumbles away, and besides this, the plaquey particles of phosphorus will rush into it and tear it to pieces. The great point is to get a basic lining—that is, one free from silica. This has at last been accomplished, and now the *basic process* is destined to revolutionize the manufacture of steel, for out of the poorest ores, and even out of puddle-cinder, steel or iron much purer than any now made for rails or bridges can be obtained, and the two young chemists, patentees of the Thomas-Gilchrist process, take their rank in the domain of metallurgy with Cort, Nelson, Bessemer and Siemens. These young men have done more for England's greatness than all her kings and queens and aristocracy put together.

"It was this pale Gladstonian-looking youth we had with us for the day and for our Sunday evening dinner at Windsor. He wears no title—he is too sound a Radical and too sensible a man to change the name his honored father gave him—but nevertheless we felt we had one of the great men of our generation as our guest. If it be true, as it is, that he who causes two blades of grass to grow where but one grew before is a benefactor to his race, what is the magician who takes from the bowels of the earth a ton of dross and transforms it into steel before our eyes—strikes with his enchanted wand a hundred mines of worthless stone and turns it into gold, as the Prophet struck the dry rock and called water forth? The age of real miracles is not over, you see, it has only begun, and Thomas is our modern Moses; his miracle seems as much greater than that of his prototype as the nineteenth century is advanced beyond the Jewish dispensation."

THE THEORY OF CHIMNEY DRAUGHT.

The upward movement of warm air and gases of combustion in chimneys is caused by the difference in density of the external air and of the enclosed gases. All permanent gases expand 0,0020284 (or $\frac{1}{493}$ of their volume for each degree Fahr. difference in temperature, and the density in weight per unit of volume decreases as the volume increases—that is, if the volume is doubled the weight per unit of volume will be only one-half of the original weight. Suppose a parallel tube to be of one square foot of cross section and 100 feet high, filled with air of the same density and temperature as that surrounding it, the air pressure will then be in equilibrium inside and outside of the tube, namely, 14·7 pounds to the square inch, or 2116·8 pounds to the square foot which is the pressure at the base. All gases exert pressure equally in all directions, so that the downward pressure of the air at the bottom of the tube is balanced by the upward pressure of the surrounding air, consequently no motion will ensue. The weight of a cubic foot of dry air at 60° Fahr. is 532 grains; or the air in the tube (100 cubic feet) would weigh 53·200 grains, or 7·6 pounds—that is to say, the pressure per square foot at the top of the tube would be only 2116·8—7·6= 2109·2 pounds, the force with which the enclosed air presses upwards at the top, and is balanced by the pressure of the air above, so that no motion will ensue. Now let us heat the air in the tube from 60° to say 360° Fahr., a difference in temperature of 300°. The enclosed volume of air will be expanded to

$$1 + 300 \times 0{\cdot}0020284 = 1{\cdot}60852 \text{ volumes.}$$

The actual volume in the tube is 100 cubic feet expanded to 160·852—that is 60·852 cubic feet will be ejected from the tube by the force of expansion of the heated air, but the weight of the remaining 100 cubic feet of air in the tube will be only

$$\frac{7{\cdot}7}{1{\cdot}60852} = 4{\cdot}714 \text{ pounds}$$

or 7·6 − 4·714 = 2·886 pounds less than the upward pressure of the surrounding air at the base. The heated air in the tube will consequently be set in motion upwards by this motive force of 2·886 pounds by the cool air entering under the base. This is the principle upon which the so-called "draught" is generated in chimneys, which in reality is no draught, but a pushing of the cold air under the fire-grate, by expansion of the heated air, which drives the mixed gases of combustion up through the chimney. In our first illustration the cold air from underneath the tube will soon drive out the heated air and establish an equilibrium of pressure by which the upward motion is stopped. But in a furnace the enclosed air and other gases are continually heated, which results in a continual motion upwards in the chimney.

The intensity of draught is independent of the size, and depends upon the difference in weight of the outside and inside columns of air. The intensity or degree of heat produced by fuel varies in proportion to the rate at which it burns. The greater the draught a greater amount of work will be produced from the same fuel. This goes to show the importance of a high chimney.

The power of the draught is directly proportioned to the height of the chimney, and the velocity with which the external air flows in to supply the draught depends upon the temperature of the ascending gases. The higher the temperature is the lighter will the gases be, and consequently create a stronger draught through the grate-bars. This velocity is proportional to the square root of the height of the chimney. Air at 520° expands to double its volume at 32°. At this temperature, therefore, within the chimney, the velocity with which the external air will pass through the grate-bars would be proportional to the square root of half the height of the chimney, which, expressed in feet per second, is equal to eight times the square foot of half the height of the chimney, or

$$V = 8\sqrt{\frac{H}{2}}$$

Example.—The height of a chimney is H = 128ft., and the temperature of the gases T° = 520°. What will be the velocity of the air through the grate-bars?

$$V = 8\sqrt{\frac{128}{2}} = 64 \text{ ft. per second}$$

As a general rule for calculating the draught at any temperature the following is near enough for all practical purposes:—

$V = 8\sqrt{H\ a\ (T° - t°)}$ in which

H = the height of the chimney in feet.

V = velocity of the escaping gases in feet.

T° = the temperature of the warm air.

$t°$ = the temperature of the cold air.

a = the coefficient of expansion of air for one degree of the thermometer at 32° will be $\frac{1}{493}$ = 0.002028 under constant pressure.

The area of a chimney for ordinary purposes may be determined by the following formula:—

$$A = \frac{0.3\ HP + 10}{VH} \text{ or } \frac{G + 10}{VH}$$

HP = horse-power of boiler.

A = area of chimney in square feet, at the smallest part.

G = area of grate in square feet.

The constant 10 allows for the difference in friction between large and small chimneys. Height and area are the only elements necessary to consider in an ordinary chimney.

Unlike solids, gases expand equally for an equal increase of temperature, as measured by a thermometer. The experiments made by Rudberg, and confirmed by Regnault, show that atmospheric air, heated from the freezing to the boiling point, expands at the rate of $\frac{1}{493}$ or 0.0020234 fore ach degree Fah., being the increase of volume under constant pressure.

If we wish to ascertain the volume of $v = 200$ cubic inches of a gas at $t° = 60°$ would occuby at T° = 100 degrees, we must remember that it does not expand $\frac{1}{493}$ of its bulk, at 60° for each degree, but $\frac{1}{493}$ of its bulk at 32° and so on.

$$V = v\left(\frac{T° - t°}{493} + 1\right) \text{ and } T° - t° = \frac{493\ (V-1)}{V}$$

V and v = volume of dry air of temperature $t°$ and T°.

$$V = 200\left(\frac{100-60}{493} + 1\right)$$

THE TARIFF.

False Statements and False Prophecies by British Free Traders.

BY JOHN W. HINTON, OF MILWAUKEE.

[For the UNITED STATES MILLER.]

A recent number of a Chicago Free Trade organ contains an interview with the Earl of Onslow on Free Trade &c., with the following: "He is heartily in favor of free trade, like most of his countrymen, though he says there is some dissatisfaction with it in England, but it is confined to the agricultural classes, against whom the present system militates, because they cannot compete with American food products. As they are but a small portion of the British public, he does not look for any great change of sentiment on this question."

Accepting the report of the Earl's views as fairly given, I wish to point out the facts—the truth, as to "the great change of sentiment upon the question of free trade in England."

From an excellent work "Protection and Free Trade," recently published, I copy the following as clearly pertinent to the issue:

"Until recently Free Trade was regarded by most Englishmen as the worship of Brama is by the Hindoos, a matter of devout contemplation only—too sacred for discussion. But the fair trade movement has recently decided five important elections; and Mr. Ritchie's motion in March 1882, in the British House of Commons, which Free Traders turned into one of Fair Trade against Free Trade, was lost by only 51 votes, there being 140 against it, and 89 for it; a change of 26 votes would have carried it."

False statements are as common as false prophecies by free traders.

John Bright, at the Cobden celebration in 1877, prophesied thus:

"If we look into France we see that protection is becoming weaker. If we look at the United States or consult any intelligent American, we shall find that there it is shaken and tottering to its fall."

Ten years previous, to wit, in 1867, Mr. Bright wrote to the Chicago Tribune, and then prophesied:

"All the countries of Europe are tending to freedom of trade."

In one of his speeches in 1844, Richard Cobden said in reply to doubts as to the benefits to accrue to England from her adoption of free trade (?), and the dangers, if other nations became protectionists, passing tariffs for their own benefits, so much feared:

"You have no more reason to doubt that the sun will rise in the heavens to-morrow, than you have to doubt that in less than ten years from the time England inaugurates the glorious era of free trade every civilized community will be free-traders to the backbone."

And he also said:

"Adopt free trade and there will not be a tariff in Europe that will not be changed in less than five years, to follow your example."

Thirty-nine years have passed, and every one of them has shown how false have been both prophecies.

Thirty-nine years have gone by since Sir Robert Peel said:

"Depend upon it, your example will prevail. Reason and common sense will induce relaxation of high duties. I see symptoms of it already."

"Reason and common sense" have, since that time, enacted every tariff now in existence. As an irrefutable fact, we assert, that scarcely a single assertion, or prophecy, made by either Sir Robert Peel, Richard Cobden or John Bright, has ever been verified. Bread, it is true, has been made cheaper to the British operative. But there stares him in the face that cruel conclusion of British free traders, that "in order to give capital a fair remuneration the *price of labor must be kept down*".

"Foreign countries" have seen the fallacies and falsehoods of British free traders, and, hence, have passed tariff laws for their own protection, and as Mr. Beaufort Hurlbert says:

"When foreigners see manufacturers dying out under free trade in England, and springing into vigorous life under protection in France, Germany, Belgium, America and Canada. When they see the ruin of industry, the depression of all manufacturing interests, operatives emigrating, capitalists preferring investments in foreign countries to those of their own; they do not look much further for arguments against free trade."

Even Mr. Gladstone, a free trader said:

"Gentlemen, have compassion on me while a minister of the crown, and after that I will go with you strong on the *abstract* principle, although utterly impracticable in the affairs of terrestrial kingdoms. *I warn any terrestrial government against adopting free trade.*"

Other Englishmen, while in Chicago, gave different views. The Earl of Latham was asked:

"Are you a free trader?" He replied:

"No; I think personally that England has too much free trade. It is wrong that England should stand alone with free trade against the protectionist policy of the rest of the world. We are losing by it daily."

A Scotch Lord, Elphistone, said:

"If we all had free trade it would be very well. But inasmuch as we have tried for thirty-three years to bring about free trade by showing an example of it, and free trade has been most unsuccessful and made no converts, I think it is high time we should endeavor to pull down the prohibitory duties the United States and other countries are puting on our manfactured goods, and put on something in the way of retaliatory duties upon their products—excepting always our own colonies—so as to bring about a bond between England and the colonies that would make them more of a united empire than we have at present."

A member of the British Parliament from London, Lord Stovely Hill, was singularly emphatic, in his reply, saying:

"England has had the worst of it ever since she adopted the policy of free trade. Imports from other countries have been admitted free, while our exports to the United States and other places have been subjected to onerous duties, sometimes so high as to be actually prohibitory. There is a growing sentiment in England now in favor of taxing imported manufactured articles instead of admitting them free to compete with the products of our home manufacturers. Why, you can now buy a shawl at Glasgow, which is only a short distance from Paisley, the great shawl manufacturing place of the world, for less money than you can buy one at Paisley. Germany is actually exporting shawls to Scotland, and, these being admitted free of duty, the Germans can of course undersell us in our home products."

The truth is, no Englishmen are satisfied with the condition of England as brought about by free trade. *If*, momentuous word indeed, all other nations had adopted free trade, and fulfilled, instead of falsifying the prophesies of British free traders, and opened their markets to the influx of British goods, as was expected, and England had remained "the workshop of the world," English cupidity would have been satisfied. Nor would they now be found moving "heaven and earth," nor her Cobden Club be found "sending money wherever it may do good" to try and cause the repeal of the American Tariff.

We have Mr. Brigh'ts own testimony to the marvellous prosperity of this country; its wonderful wealth, the remarkable, though singular spectacle of a nation so rapidly paying off its war debt, as to excite the wonder and admiration of the leading free traders of the world; and to have elicited the remark from the present Premier of Britain that "America is passing us with a bound;" and this notwithstanding Mr. Gladstone was the first Englishman of note to say publicly in 1861, "Mr. Jefferson Davis has made a nation of the Southern States," a statement loudly cheered by the listening free traders.

Judging from the desperate efforts of English free traders and their American helpers in the press, the universities, colleges, and sometimes in our pulpits, we are forced to the conclusion that the American Protective Tariff is a national blessing to the people of the United States, and *per contra*, English Free Trade is a curse to England. No sensible nation, or people, or honest party, ever seek to change that which has proven beneficial—never!!

The truth of the whole matter is, "we are passing England with a bound." It is our successful honest rivalry, our marvellous progress and prosperity in manufacturing, etc., the well paid labor of the United States, tempting so many skilled mechanics of other countries to come here; our extensive export of manufactured goods into England and her colonies, where we undersell the English themselves, that excites the animosity, and causes the Cobden Club to redouble its efforts to accomplish what the *London Times* asserted and several of the leading members of the club avowed, "never to rest contented until they had subdued America."

The Marquis of Salisbury stated the whole of the case in a nutshell when he said: "The United States keeps an opposition shop in the same department as ourselves." That's all there is of it.

JOHN W. HINTON.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, SEPTEMBER, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California 209; Colorado, 52: Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

DEAD—John Shamleffer, of the milling firm M. A. Shamleffer & Co., Council Grove, Kas.

THE Kentucky Millers' Association will meet in the Board of Trade building in Louisville, Ky, Sept. 6th, 1883.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

A good machine is always worth a good price. So called *cheap* machinery is always dear at any price. Remember this when buying machinery.

THE Wisconsin State Fair will be held at Madison, from Sept. 10th, to Sept. 15th, inclusive. It is expected that the display will unsully attractive.

THE name of the *Grain Cleaner* has been changed to "*The Modern Miller.*" We wish its publisher a change of luck—from "purty fair luck," to a "regular bonanza."

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

WE are sorry to hear that the mill of W. Trow & Co., at Madison, Ind., has again been destroyed by fire. This firm has been especially unfortunate in having heavy losses by fire during late years.

THE milling capacity of the Pacific Coast is constantly increasing, and the export of flour is much greater than heretofore. California millers predict that the time is not far distant when flour exports will almost entirely take the place of wheat.

THE *Southern Miller* says :

The smell of fresh paint in a room may be effectually gotten rid of by placing therein a pail of water in which a few onions have been sliced.

That 's all very well, Bro. Wright, but then there is the smell of the onions—you know.

THE Case Manufacturing Co., of Columbus, O., will have a full line of their machinery on exhibition at the Chicago Exposition. It will be in charge of W. E. Catlin & Co., of Chicago. All millers visiting the Exposition will find this a good opportunity to examine the Case machinery.

WE call attention of our readers to the advertisement of T. C. Alcott & Son, Mt. Holly, N. J., manufacturers of turbine water-wheels. This firm has had a large demand for their wheels this year, and they always give satisfaction.

AUGUST 15th the Geo. T. Smith Middlings Purifier Co., of Jackson, Mich., took all of its employes off for an excursion to Detroit. It took 14 coaches to carry the employes and their families. Upon reaching Detroit the excursionists went by steamer to Grosse Isle, where lunch was served. The party reached home at 10 p.m., and serenaded Geo. T. Smith at his residence. It was a happy day for all concerned.

MANUAL OF AMERICAN PROTECTIONISTS.—The American Protectionists' Manual is a well-written book of about 200 pages, to which the student desiring informatton on the Tariff Question can refer for information and readily find the facts set forth clearly and briefly from the highest authorities. The work is just what is needed at this time, when the subject of Tariff, &c., is so prominent before the public. It can be procured of its author, Giles B. Stebbins, Detroit, Michigan, for 75 cents, postage included.

A WAUPACA correspondent writes us as follows, under date August 28.:

St. Mark's Church to-day was the scene of a double wedding, the contracting parties being H. W. Rowe and Miss Florence Taylor, and Wallace H. Lord and Miss Nellie Rowe. The ceremony was performed by Rev. George Gibson, of Marquette, Wis., and was witnessed by a few relatives and intimate friends of the parties interested. Mr. Rowe is deputy sheriff of Waupaca County. His bride is the eldest daughter of Dr. Geo. R. Taylor, one of the oldest physicians in the county. Wallace H. Lord is the manager of the Waupaca Star Flouring Mills. His bride is the daughter of Sheriff O. H. Rowe. The young folks left this afternoon for Milwaukee and Chicago, where they will enjoy their honeymoon.

A well-known Methodist clergyman, also a newspaper publisher, residing at Oconto, Wis., recently received a telegram, stating that an old friend of his at North Prairie was lying at the point of death, and that he had expressed a desire that he (the Oconto clergyman,) would preach his funeral sermon. He started for North Prairie at once, and when he arrived in Milwaukee called at this office at noon and received a dispatch stating that the North Prairie man was not yet dead. "Very well," said the clergyman, when he had finished reading the message, "that will give me all the afternoon to canvass for advertising for my paper. The fellow will probably die to-night, and I can attend to his case, and get back in time to get my new ads. in the next issue."

MR. G. BUCHHOLZ, of Frankfort, Germany, has been in Milwaukee for several days during the past month, and has conferred with Secretary Seamans, of the Millers' National Association, in relation to roller mill patents. The Sub-Executive Committee have called a meeting to consider the matter, which seems to be of some consequence, and in due time a report will be made.

LATER.—The Sub-Executive Committee met in Milwaukee, Aug. 28th, to consider the above mentioned matter, and expected Mr. Buchholz to be present, but he failed to make his appearance. After the meeting adjourned the committee learned that Mr. Buchholz had returned to New York City without notifying them.

THE statistician of the New York Produce Exchange, E. H. Walker, furnishes the following interesting information concerning the consumption of wheat in the United States:

"The consumption of wheat in the United States was uncertain. In New England some wheat flour, but mostly rye flour and corn meal, were used. In the Southern States 5,000,000 colored people consumed mostly maize bread. In portions of the country settled by Germans rye was used. The average wheat crop of the United States for five years, ending 1882 had been 424,525,189 bushels; average exports 144,303,236 bushels; average seeding 46,785,396 bushels; leaving 233,439,552 bushels for home consumption and reserves. The average population for the five years was 50,199,616. Dividing the amount left for home consumption and reserves by the population, would give 4.65 bushels per capita for the average consumption. The country grew 24,000,000 bushels of rye, most of which was consumed at home. Buckwheat and oat-meal were also used in the place of wheat flour. The 4.65 bushels per capita included reserves. Computing the fraction of 65-100 of a bushel as reserves would give only 32,629,750 bushels, which would be small reserves for the population. Considering all the facts, 4 bushels was a liberal estimate for the per capita consumption of wheat in the United States."

C. H. SEYBT, Esq. of Highland, Ill., member of the Executive Committee of the Millers' National Association, visited Milwaukee, Aug. 28th, and in replying to a question relating to the cry of small crops, expressed his fear that the cause for alarm about a scarcity of wheat was well founded. "Between now and the first day of next January," said the gentleman, "the entire world will be brought to a realization of the painful fact that there is a short crop. There is a shortage of over 100,000,000 bushels in this country, while France will show a deficit in the wheat crop of fully that amount. England also will be largely short in this year's yield, and this alarming shortage is bound to tell, sooner or later, in the breadstuff market all over the world. The shortage in this country is confined entirely to the winter wheat region."

Mr. Seybt was not prepared to express an opinion on the outlook for the spring wheat, but Mr. Seamens volunteered the information that the spring wheat crop is good, but not materially larger than last year's yield. Wisconsin and Dakota will have rather larger spring wheat crops than the previous season. Mr. Seybt, upon being further interrogated about his observations on his journey through the Southern States, resumed: "All the winter wheat in Missouri appears to be confined to six or seven counties, which have a phenomenal crop, and will make a good showing, but as soon as that is exhausted I don't know where the great surplus will come from. That is the question which we will all be debating before very long. All my European crop reports by letter and cable from week to week, are growing thinner. Now I am neither a bull nor a bear," said Mr. Seybt, impressively, "I am engaged in a legitimate business, and I am speaking of my candid opinion, the result of extensive and careful observation. There is no wheat-growing country in the world that will make a favorable showing with their present crops. Neither Russia, Hungary or Austria will go above their average, if they reach it. In the winter wheat belt, however, the outlook for corn is most excellent. Kansas will have a tremendous corn crop, and all the farmers are seriously considering the enlargement of their corn cribs."

UNITED STATES EXPORTS OF MERCHANDISE.

From advance sheets, furnished us by the United States Treasury Department, we make the following interesting extract:

The value of the exports of merchandise from the United States during the year ended June 30, 1883, amounted to $823,805,819, as against $750,542,257 during the preceding fiscal year, showing an increase of $73,263,562.

The effects of the short crops during the season of 1881, consequent upon the protracted drought, and other unfavorable meteorological influences which prevailed during that season, not only tended to diminish the exports of the agricultural products of the country the year ended June 30, 1882, but also projected themselves far into the year ended June 30, 1883. It was not until the month of October, 1882, that the exports of domestic merchandise from the country began to exhibit any material increase over the export of the corresponding month of the preceding year. The influence of the crops upon our exports of merchandise is evident from the fact that during the ten years ended June 30, 1882, 78 per cent. of our exports of merchandise consisted of products of agriculture.

The leading articles of exportation during the last fiscal year were, as during preceding years, cotton, breadstuffs, meat products, and petroleum, cotton being very largely the leading commodity.

It appears that during the year ended June 30, 1883, the value of the exports of cotton amounted to $247,326,621, as against $199,812,644 during the preceding fiscal year, an increase of $47,513,977; and that the value of the exports of wheat and wheat-flour amounted to $174,703,830, as against $149,304,773 during the preceding fiscal year, an increase of $25,399,057. It also appears that the value of the exports of corn and corn-meal amounted to $27,736,880, as against $29,840,031 during the preceding fiscal year, a decrease of $2,103,151; that the exports of meat products and dairy products amounted to $99,644,621, as against $114,463,726 during the preceding fiscal year, a decrease of $14,819,805; and that the exports of petroleum amounted to $44,913,028, as against $51,232,706 during the preceding fiscal year, a decrease of $6,319,678.

In this connection it is a matter of interest to advert to the large increase in the crops of the season of 1882, as compared with those of the season of 1881. This has led to a large increase in our exports during the fiscal year just closed, as compared with the exports of the preceding fiscal year. The increase in the crops is shown as follows:

Comparative statement showing the relative magnitude of the crops of *cotton, wheat, corn, rye, oats* and *barley* in United States during the seasons of 1881 and 1882, respectively.

Commodities.	Season of— 1881.	1882.	Increase.	Per cent. of increase.
Cotton....bales	*5,456,048	†7,025,000	1,568,952	28.8
Wheat..bushels	380.280,090	504,185,470	123,905,380	32.6
Corn...bushels	1,194,916,000	1,617,025,100	422,109,100	35.3
Rye ... bushels	20,704,950	29 960,037	9,255,087	44 7
Oats....bushels	416,481,000	488,250,610	71,769,610	17.2
Barley..bushels	41,161,330	48,953,926	7,792,596	18.9

*Crop season of 1881-2.

†Crop season of 1882-3, estimated from information furnished by Mr. H. G. Hester, secretary of the New Orleans Cotton Exchange. The magnitude of this crop will not be accurately ascertained until the close of the commercial year, August 31, 1883.

The cotton crop produced during the season of 1882 was larger by about 400,000 bales than any crop previously produced in this country. The wheat, rye, oats and barley crops were also larger than ever before, and the corn crop was only once before exceeded, namely, by the crop of the season of 1880.

The prospect at the present time (August 6, 1883), is that the aggregate of the crops of the season of 1883 will be quite as large as the aggregate of the crops of the season of 1882.

THE CAPACITY OF MINNEAPOLIS MILLS.

The present milling capacity of Minneapolis is shown in the appended table:

Name of mill.	Operated by	Bbls.
WEST SIDE.		
Anchor	C. A. Pillsbury & Co	900
Cataract	D. R. Balber & Son	600
Columbia	Columbia Mill Co.	1,000
Crown Roller	Christian Bros. & Co.	1,700
Dakota	H. F. Brown & Co.	250
Excelsior	E. V. White & Co.	800
Galaxy	Cahill, Fletcher & Co.	1,000
Holly	F. S. Hinkle.	250
Humboldt.	Hinkle, Greenleaf and Co.	775
Minneapolis	Crocker, Fisk & Co.	600
National	W. F. Gunn	150
Northwestern.	Sidle, Fletcher, Holmes & Co.	1 300
Palisade	L. Day & Son	1,500
Petit.	J. A Christian & Co	1,300
St. Anthony	Hinkle, Greenleaf & Co.	450
Standard.	E. V. White & Co.	1,500
Union	G. W. Goodrich & Co.	310
Washburn A...	Washburn Crosby & Co.	3,200
Washburn B...	Washburn Crosby & Co.	1,000
Washburn C...	Washburn Crosby & Co.	2,000
Zenith	Day Rollins & Co	600
EAST SIDE.		
Pillsbury A	C. A. Pillsbury & Co.	5,200
Phœnix	Stamwitz & Schober.	275
	Total capacity.	26,660

A year ago at this date the daily capacity was 21,250 barrels. Since that time the North Star and Model mills, with 600 barrels capacity, have been burned, while the Columbia and Minneapolis and Excelsior mills, with a total capacity of 2,400 barrels have been completed and put in operation. The Palisade mill has been thoroughly remodeled, and the capacity increased from 550 to 1,500 bbls. per day. Other less notable increases have been in the Washburn A., Galaxy and National mills. Another source of increase has been from the mills, while really no machinery was added to them, being able to make more flour on the wheat last fall in a given time than ever before, thus simply giving them a higher record. Of course it is understood by all that in giving the capacity of a mill, the maximum figures are universally used; but we must say that the amounts opposite the mills as above set down are nearer the real working figures than is usually the case with statements of the kind, it being our aim to get as near the exact truth as possible. —*Northwestern Miller.*

FLOUR MILL OWNFRS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water power, or both.

BY the new Constitution of the State of Louisiana, the capital, machinery, and other property employed in the manufacture of textile fabrics, leather, shoes, harness, saddlery, hats, flour, machinery, agricultural implements and other articles of wood, marble or stone, where not less than five hands are employed, are exempted from taxation for the period of ten years.

A FEW WORDS ON FOUNDATIONS.

The importance of a good foundation in building, as in most other things, will not, we presume, be disputed. A structure, like an argument in logic, that is ill-founded, carries in it the germ of inevitable failure, if not of total annihilation.

There is seldom great scope for choice in the selection of sites for building purposes; and a man takes a plot of ground, as he takes a wife, for better or for worse. The nature of the subsoil in any district may generally be ascertained by inquiry with tolerable accuracy, but contingencies may often arise which will involve the builder in greater expense than he has reckoned upon. A loose bottom necessitates extra digging, or an influx of water involves pumping and consequent delay. We have known contractors to be very hardly treated at times by architects, in the matter of foundation. The modern iron-hearted practitioner, "conscientiously acting in the interests of his client," sternly declines to allow extras for unforseen calamities such as the above which ought, he thinks, to have been taken into account in tendering, while he as strictly insists upon exacting deductions for any unexpected advantages that may accrue to the builder; such, for example, as the fortunate discovery of sand on the site, which can be used for mortar.

The nature of the subsoil is best ascertained by sinking a well on the site. Clay is so liable to expansion and contraction from the alternate moisture and dryness of the weather, that it is no trustworthy bottom; and dry gravel is not only shifty, but subject to cavities which render it unreliable. In such cases, an artificial foundation of concrete should be provided. Too much moisture may kill the lime in the concrete, and in some cases, necessitate the use of a hydraulic lime. The mention of concrete leads us to reflect upon a popular superstition, which is very deep-rooted.

It is generally assumed that in order to secure a sound, compact bottom, the concrete ought to be thrown in from a staging at least six feet above the level of the trenches. This "long drop" is solemnly prescribed in specifications, and rigidly enforced in practice. We have known an architect insist on the resurrection of some twelve cubic yards of concrete, which had been peacefully deposited in the trenches *non requiescat in pace!*—because, forsooth, he declined to take the builder's word that it had been thrown in from a "proper height," and would not be content until he had seen the operation with his own eyes.

To what purpose? If six feet is a good heighth, twelve would be a better, and so on, until—what would be the effect of dropping concrete into a trench from a balloon, say five hundred feet above the level of the ocean? Would not the mixture be a trifle scattered before it reached its destination?

Throwing in concrete from a height is supposed to consolidate it, but does it really do so?

If two bodies of unequal weight in proportion to their bulk be let fall from a height at the same time, the heavier body will reach the ground first, and the greater the height—that is, the longer they are exposed to the action of gravity—the greater will be the *difference of time* in which they will reach the ground. Now the ballast, or gravel, which forms the principal ingredient in concrete, is just twice as heavy as the lime with which it is mixed; and it follows, therefore, that the greater the height of the staging from which concrete is thrown, the greater is the tendency to *unmix* it by sending all the ballast to the bottom, and all the lime to the top.

Let there be no "long drop" then; but let the concrete be thoroughly mixed, wheeled in at a level, and well rammed.

Of all bottoms for building perhaps a coarse, wet gravel is the best—a good, firm gravel, that shows a clean and almost vertical side when cut into with the spade—and with such a bottom concrete is rarely required. Of clay we have already treated; but there is a kind of blue shale, which forms an excellent foundation so long as it is preserved from the action of the weather by a layer of concrete, but if left open to the atmosphere it will slake and become quite soft.

Underground watercourses are occasionally to be met with, and are exceedingly dangerous to all foundations. Sometimes they can be conveyed away in drain-pipes, and occasionally it is necessary to arch over them; but it is never advisable to interrupt their course without providing some means of passage for them, as they are liable to unsettle the surrounding soil to an incalculable extent.

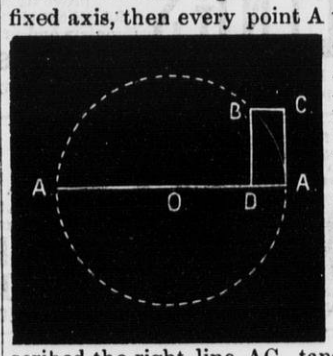
It is generally supposed that no foundation better than a rock is anywhere obtainable, and Scriptural authority instances the "wise man who built his house upon a rock." No doubt there are rocks *and* rocks, and although we do not question the stability of the Eddystone rock, still the question arises, with some rocks, as to what is underneath them? Small masses of rock usually lie in loose shifty beds composed of their own fragmentary *debris;* and, in large masses, where the strata dip considerably, there is danger of their cracking and slipping. Here concrete will come into requisition to bring the bottom up to one level. A great difference in depth should never be made suddenly between two parts of a building, either in brickwork or masonry; as the greater number of mortar joints in the deeper portion will cause such an appreciable reduction of height in setting as to cause cracks in the walling above. Where there is a change of depth in the foundation of a wall it should be made gradually in steps of about 4 feet high, so as to divide the difference in the number of joints.

A totally unyielding bottom, such as a solid rock, is at times undesirable. Suppose we have a wall of brick or rubble faced with ashlar. The greater number of joints in the former will cause a greater reduction of height in setting, and the facing may thus have to sustain a superincumbent weight which should have taken its bearing upon the walling behind, and which may crush the ashlar if the bottom be yielding, but if the bottom yield the ashlar will sink so far as to find its level with the hearting or walling behind it.

Above all, in foundations let the materials be solid and good. Eschew burrs or place bricks, and remember that good stock brickwork in mortar will safely carry between eight and nine tons for every square foot of sectional area.—*Building and Engineering Times.*

CENTRIFUGAL AND CENTRIPETAL FORCES.

These are usually defined as the forces which urge a body to avoid (*fugere*) or seek (*petere*) a centre. Owing, however, to a prevalent vagueness in the use of these terms, it will be well to illustrate their meaning in one special case. Suppose a body to rotate with a constant angular velocity around a fixed axis, then every point A will describe a circle ABA, in a plane perpendicular to that axis, of which the centre O will be a point in the axis itself. If perfectly free, the point A would described the right line AC, tangential to the circle, but not being permitted to do so it exerts a certain constant strain in the direction of the radius OA_1, which strain calls forth an equal resisting force. The strain in this case is called the *centrifugal* force, the force of resistance the *centripetal.* To measure the latter, and therefore also the former, it is only necessary to consider the space AD through which the body has been urged by it during the time-element required for the description of the elementary arc AB.



Calling F the accelerating centripetal or centrifugal force, we have on the one hand (Acceleration) $F = \frac{2\ AD}{t^2}$ and on the other, by geometry, $AD = \frac{AB^2}{AA_1} = \frac{AB^2}{2r}$, where r is the radius of the circle; consequently

$$F = \frac{1}{r} \cdot \frac{AB^2}{t} = \frac{V^2}{r};$$

V being the velocity with which A moves in the circle. Hence the centrifugal force in a given circle is directly proportional to the square of the velocity.

If the time in which a complete rotation is made be represented by s, then

$$V = \frac{2 \times 3.14 \times r}{s} \text{ and } F = \frac{4 \times 3.14^2 \times r}{s^2};$$

that is to say, the angular velocity being the same, the centrifugal forces in two circles are proportional to their radii. Thus, considering the earth as a sphere of radius R, the radius of the circle described by a body at a point whose latitude is Λ will be R cos. Λ, and F and f being the centrifugal forces at the equator and at the point in question, we have $f = F \cos. \Lambda$. If moreover f be resolved into two components, one horizontal and the other vertical, the latter will have the magnitude $= f \cos. \Lambda = F \cos^2 \Lambda$ will be derectly opposed to gravity, and thus tend to diminish the weight of the body. At the *equator* the diminution of gravity owing to centrifugal force amounts to $\frac{1}{289}$th of what gravity would be were there no rotation; so that if the earth rotated with $17 = \sqrt{289}$ times its present velocity, bodies at the equator would have no weight whatever. The above result may also be expressed by saying that the force of gravity at the poles, where there is no centrifugal force, exceeds that at the equator by $\frac{1}{289}$th of the former. This is under the assumption that the earth is a homogeneous sphere; its actual form, however, is that of an oblate spheroid, in consequence of which the force of gravity at the poles is still further increased and the above ratio augmented to about $\frac{1}{200}$th.

By the term centrifugal force as applied to a body describing any curve in space, is usually understood the force in virtue of which it is deflected from a restilineal path. At the instant under consideration we may in fact conceive the body to be moving in the circles, which osculates its actual trajectory, so that, if p denote the principal radius of curvature of the latter, and v the velocity of the body, $\frac{v^2}{p}$ will be the expression for the centrifugal force.

KANSAS CITY'S MILLING INTERESTS.

It has been stated that before the close of twelve months from the present time the addition of much capital to the milling enterprises of the city will have been made. Although the city will progress at its usual rate, the material increase in this particular branch of industry will be in greater ratio than that in other lines. Agencies are now at work that will make Kansas City one of the best milling marts in the country, and the reasons upon which this belief is based are not occult.

The opening up of the Kansas City, Fort Scott and Gulf road to Memphis is one of the best things for the wheat and hog product of this part of the country that ever occurred. It is confidently asserted that it will place the city in a pre-eminently favorable position and give it advantages of a particularly superior kind.

A group of gentlemen were discussing the prospects yesterday in one of the halls of the board of trade building. They were men experienced in regard to the subjects upon which they spoke, and they agreed in saying that if the future milling interests of the city would not in a comparatively short time achieve the position of the packing interests, indications were very deceptive.

"It will be about the middle of September when the road is opened," said one, "and" he continued, "Kansas City will then have direct access to the Southern States east of the Mississippi river, a thing we have never before enjoyed. It will open up a great market. The people who live in these States are great consumers of the flour product and have made St. Louis the milling center that it is. Now we will come in for a large share of the trade. The market for packing-house goods will also be benefitted.

The opinion was also advanced that the road would not open any great export outlet to New Orleans, but the reason given was that New Orleans was not at present a grain market of much consequence. Better grain equipments would be provided, however, at New Orleans, and the place would come into more prominence as a grain mart.

Kansas City is a great storage point, much wheat being in the elevators here. The amount in store at present, however, is quite small, for this place at this season. The reports show that at the beginning of the present week the number of bushels of wheat in store was 197,000, and the quantity of corn 100,000 bushels.

This city is a good commercial market for wheat, and not exclusively a millers' market like that of St. Louis. The position of this city will always give it the advantage by from eight to fifteen cents a bushel over St. Louis because of the nearness of Kansas City to the great wheat producing regions. The facilities for conducting the milling business are on a par with those of other places, and the great advantage to be gained in the price of the grain at the city, should insure unprecedented improvement.

One mill, a West Kansas one, manufactures now almost exclusively for the southern trade, but its territory might be said to be confined to Texas.

"Kansas City is already a more steady commercial market for wheat than St. Louis," said a well-informed gentleman, "and it is better that it should be. There the millers control everything, and if they stand out of the market it demoralizes matters generally. Here it is quite different, and the accession of more millers to the market would greatly better matters."

New mills may be expected to be put up in the west and the east Kansas bottom, and those already established will be compelled to have the capacity enlarged and increased, should no discouraging circumstances arise.

The present large crop returns throughout the West have been regarded as the most auspicious sign, and an indication that the coming season will be one of unusual prosperity.—*Kansas City Times, Aug.* 14.

CARLINVILLE ROLLER MILL CO.

On Thursday last the Secretary of the State issued a certificate of incorporation to the Carlinville Roller Mill Company. The incorporators are: S. S. Woodward, David Gore, Peter Heinz, W. M. Chiles, George Siegel, John Kessinger and H. W. Weer, with an authorized capital stock of $16,000 divided into shares of $50 each. It is the intention of the company to purchase the present Weer mill of Messrs. Farrel & Flint, which can be secured for $16,000, including both the real and personal property connected therewith. Another story and an attic will be added to the mill building during the present season, preparatory to introducing the roller process, which will be put in next spring. It is agreed upon the part of the stockholders that the board of directors shall be instructed to employ H. H. Weer as manager of the company for the next five years at the reasonable salary, to be fixed annually, and to allow him as further compensation all the net annual profits of the business of the corporation in excess of 6 per cent. interest on the capital stock for the first year, 7 per cent. the second, 8 per cent. the third, 9 per cent. the fourth, and 10 per cent. fifth, provided, said Weer shall conduct the business of the company in a manner satisfactory to the board of directors. The previlege is also given to Weer to purchase the stock of the company at any time within five years from date of commencing business, at a price not to exceed the face of the stock and 10 per cent. per annum premium, all dividends received to be deducted from the premium; the board of directors to be instructed that whenever Weer shall signify his desire to purchase any of the stock to determine by lot whose stock shall be sold and delivered up to him in case no holder or holders shall voluntarily sell the full amount desired; and no holder of stock can transfer his stock to any other person except by endorsement, whereby the right of Weer to purchase the same shall be made a condition of such assignement.

The books of the company for receiving subscriptions to the capital stock are now open, and it is necessary that the full amount should be subscribed and paid in within the next thirty days, in order to complete the organization.—*Carlinville, Ill. Democrat, July* 7, 1883.

A SCHOOLBOY ON CORNS.—Corns are of two kinds, vegetable and animal. Vegetable corn grows in rows, and animal corn grows on toes. There are several kinds of corn; there is the unicorn, the capricorn, corn dodgers, field corn and the corn you feel most.

It is said, I believe, that gophers like corn, but persons having corns do not like to "go far," if they can help it. Corns have kernels and some colonels have corns.

Vegetable corn grows on ears, bnt animal corns grow on feet at the other end of the body.

Another kind of corn is the acorn; this grows on oaks, but there is no hoax about the corn. The acorn is a corn with an indefinite article indeed. Try it and see. Many a man when he has a corn wishes it was an acorn.

Folks that have corns sometimes send for a doctor, and if the doctor is corned, he probably won't do so well as if he isn't. The doctor says that corns are produced by tight boots and shoes, which is probably the reason when a man is tight they say he is corned. If a farmer manages well he can get a great deal of corn on an acre, but I know of a farmer that has one corn that's the biggest achre on his farm.

The bigger crop of vegetable corn a man raises the better he likes it; but the bigger crop of animal corn he raises, the better he does not like it. Another kind of corn is the corn dodger. The way it is made is very simple, and it is as follows—that is if you want to know: You go along the street and meet a man you know has a corn, and a rough character; then you step on the toe that has the corn on it, and see if you don't have occasion to dodge. In that way you will find out what a corn dodger is.

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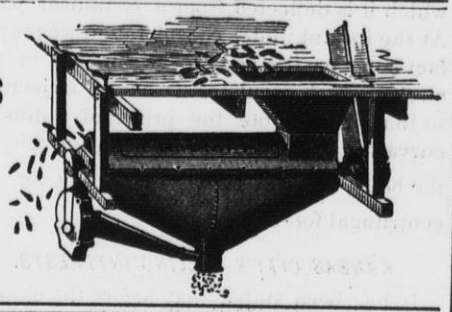

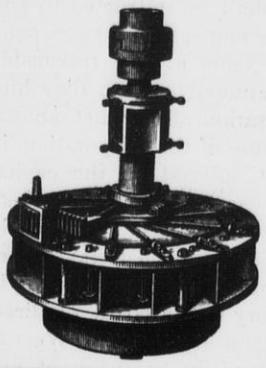

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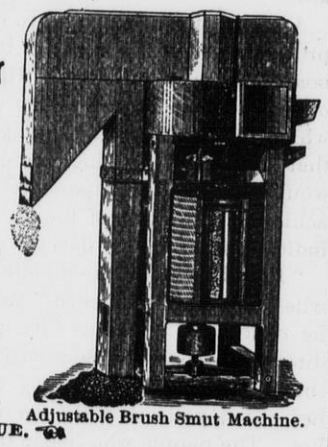

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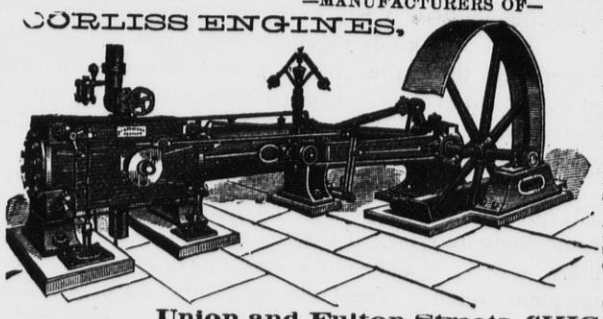

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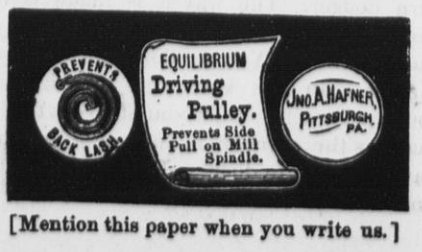

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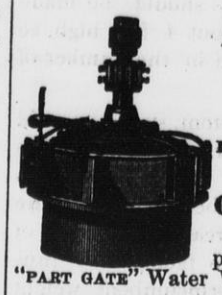

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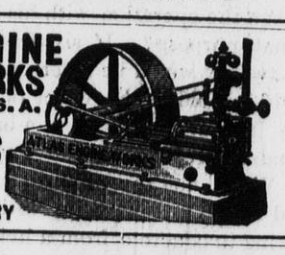

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Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and 'Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms.

The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine.

The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Proprietor.

[Mention this paper when you write to us.]

THE MILLERS
MUTUAL INSURANCE COMPANY
OF WISCONSIN,

is now issuing Policies of Insurance on all approved applications received so far. The Company has now sufficient members to allow it to increase the risks on any one Mill from $1.000 to $3.000.

All matters relating to Insurance should be addressed to

JOHN SCHUETTE, Sec., Manitowoc, Wis.

[Please mention the United States Miller when your write to us.

A SUPERB MILL.

The New Crescent Mills at Grand Rapids, Mich.

A little more than a year ago Messrs. C. G. A. Voigt and Wm. G. Herpolsheimer under the firm name of Voigt's Milling Company, bought the Crescent Mills at the west end of Pearl street bridge and decided to rebuild it and make a first-class mill of it, one that should have no superior in the quality of work done, in the United States. They wanted perfection, so far as humanity is able to furnish it. So they secured the services of Mr. Henry Crow, who built the mill originally, and who had subsequently remodeled the Star mills for them, told him what they wanted, and that they desired a roller mill with a maximum capacity of 400 barrels of flour daily, and that the whole matter of rebuilding and fitting the mill would be under his control, the money would be furnished and he must do his best. On the 7th day of August, 1882 the work began. The time has been fully occupied since and on the 9th inst., a year and two days from the outset, the new mill was put in operation. It is, as stated in the head of this article, a superb mill, one of the largest in the State—there are but two or three others as large—and one of the best in its workings, designs and products in the world.

An *Eagle* reporter learned these things this forenoon as he made a careful and critical examination of the mill in company with Mr. Voigt and Mr. Crow—for ye reporter, though not a miller, has had the benefit of a critical inspection of the largest mills on the continent in company with gentlemen who could make their processes so plain a child could understand them, and hence is not wholly a novice in such matters. The new Crescent Mills are properly gradual reduction or roller mills, the only mills in town that can be so denominated, technically. The motive power, water, is furnished by four American Turbine wheels from Dayton, Ohio, with a capacity of 125 horse power, and so arranged that all or any or none of them can be used; they are so arranged steam may be used to propel the main shaft, and one of these days it will probably be put in, to use when extremely low or high water prevents the use of water power. The grinding—that expression is almost obsolete now, in modern milling—is done by twenty-eight pairs of Gray rollers, made by E. P. Allis & Co., of Milwaukee, and by three runs of stones. These are assisted in the process of reducing wheat to flour of different grades and to middlings, ships and fine middlings, by eight of the Geo. T. Smith and two of the Gray patent middlings purifiers, by a "scalper" with ten rolls, by two chests of bolts of eight reels each and one of six, and by two of the patent Silver Creek Centrifugal reels. Of course these are aided by a full set of machines for cleaning and scouring the grain, taking out all cockle, oats and other foreign substances, all of the latest and most approved patterns and designs, and perfect in the performance of their allotted tasks.

As stated above, the mill has a maximum capacity of 400 barrels of flour daily, but will probably not be run to a speed of more than 300 or 350 barrels, as an average. This will keep eighteen millers and other employes busy, besides the proprietors. The mill has a capacity of storing 35,000 bushels of grain and about 150 tons of feed. The processes of the mill might be fully described in these columns, how after the grain is fully cleaned it goes to the first set of rollers or breaks and there is split at the seam when it goes to the "scalper" and the dirt which the scourer or polishing machine could not remove is brushed away; how it then goes to the second set of rollers or breaks, then to the third, each time some of the flour stock being separated from the middlings by the purifiers, then to the fourth, fifth, sixth and seventh breaks, and some to the stones, and then to the packers; how the product is graded and classified by the head miller and so much, say 30 per cent., is put into patent, 62, per cent. into "bakers'" or second grade and the balance into the lowest or cheapest grade; how the grain, some of it, travels through over 3,000 feet of spouting, a thousand feet of elevators, and nearly a thousand feet of conveyers at the different reels; how in fact it starts in from the clean wheat in one corner of the mill, then through all the rolls, purifiers, reels or bolts, conveyers, bins and chests it goes from the basement to the fifth story and back down, back and forth, until it finally reaches the flour chest from which the packers take it—but to the uninitiated all these things would be Greek, and to the practical, modern miller, such explanations would be useless.

But there are some things about this mill that are worthy of special mention, that but few mills have. In the first place, so perfect is the adjustment of the machinery, so admirably are the bearings arranged, there is scarcely a particle of vibration of the walls or frame of the structure. The machinery is so noiseless you could not tell from the sound whether the mill was running or not, thirty feet from it. Of course when machinery is admirable in action its results must be perfect. Again the mill is remarkably well constructed for keeping clean. It is well known that insects and vermin are liable to infest a mill and if they get into its product, spoil it. This mill has plastered walls, its conveyers, spouts, bolts, everything are so tight, no dust flies from them, and men can get all about them or through them to thoroughly inspect and clean them. And every part of the mill is light, another effective preventative of vermin. In this respect the mill is the most perfect the writer has ever seen, and would gladden the heart of any miller in the land. Of course this is another advantage as to the product.

The mill is a monument to the business energy and good sense of its owners, and to the great skill of its designer and builder, Mr. Crow, who is undoubtedly one of the most accomplished millwrights on the continent. The very first time the machinery was set in motion the mill worked perfectly—there wasn't the slightest hitch or fault in any part, and no imperfection of product. This fact, to practical millers, tells the whole story, and will give the public a pretty good idea of how excellent its product will be. Of course the mill will be taxed to its capacity so soon as its brands of flour are put on the market, and will be another of the institutions which make Grand Rapids famous throughout the country. —*Grand Rapids Eagle*, (*August* 11).

THE MANUFACTURE OF LEATHER BELTING.

Thorough scouring is one of the indispensable requisites in good belt making, for by this operation the "bloom" from the bark liquors, with other coloring and resinous matters, not actually adding to the strength of the leather are washed out. For this purpose the leather, having been thoroughly wet, is placed—either a whole or half hide as may be desired, at a time—upon the movable bed of the scouring machine, which may be easily and quickly moved from side to side, or forward and backward, as necessary. Over this bed, and attached to an arm from a shaft, is a sort of box, in which are fixed scouring stones similar to those used by curriers. There are two of these stones, one in each side of the box, and as the arm moves forward one of them makes a stroke on the leather, while with the backward movement the other gives a similar stroke. These stones are accompanied by stiff brushes, a small jet of water at the same time constantly directed to where the stoning and brushing are being done. The workman is all the time moving the table on which the leather is spread out, so that this scouring may be effected on every portion, and he can make the strokes of any desired force. This machine will do as much scouring as it would be possible for three or four men to do by hand, and it is thought to do the work far better for leather to be used in making belts, as the powerful strokes it gives are very effectual for the thorough "setting out," or smoothing of the leather, making it to lie flat and even.

The "stretching," is of especial importance in the making of a belt which is expected to run without giving trouble, for the necessity of having frequently to "take up" belts which stretch so as to become too loose is a serious inconvenience in a factory, where, oftentimes, a number of hands must stand idle until the difficulty is remedied. The stretching is accomplished by making fast each end of a pricc of leather in clamps, then, with a lever, putting on all the strain which the leather will bear, and allowing it to stand under this strain for several hours. In this way the stretch is generally so well taken out that a new belt, where it has been properly put up, may often be run for months without requiring any attention.

"The "jointing" or "cementing" embrace departments of the business which formerly received very little attention, but are now recognized as of great importance. In the jointing, the ends having been made perfectly square, they are beveled and skived down, so that, where the laps occur, the belt shall be of an even and uniform thickness, and the fitting as nice and true as if the whole belt where cut out of one piece of leather. It is especially important that this work be well done, for the smoother the surface of the belt is made the less air will pass between it and the pulley, and the closer the contact of the belt and pulley the more machinery will the belt drive. The cementing of these ends or laps together is said to contribute much more to the strength of the belt than the riveting, and we have seen tests of belting, in which only cement was used for fastening the different lengths, where the leather gave way at other places rather than where the joint was made.

It is impossible, however, to make good belts without having a first rate selection of just the right kind of leather—to obtain which the hides should be selected and the tanning operation conducted with that end in view. The tanning process is not hurried, as it is in many cases with sole leather, and no hides are "worked in" which have any brands or cuts that would injure a belt. The best hides for this purpose are those from cattle four or five years old, as the hides of animals of that age have not been repeatedly stretched or shrunken, from changes in their condition, as is often the case with older ones, and the leather made from such hides is more likely to permanently remain straight. "I give it as my judgment, of thirty years of observation and experience," said the Hon. Marshall Jewell, "that the best and cheapest belt in the world is one made from the hide of a four or five year old bullock, that has been fed on grass, the hide being tanned thoroughly with bark, and a long time given to the process, and the belt then being run with the grain or hair side to the pulley.

ITEMS OF INTEREST.

MEXICAN TIN.—The first ton of Mexican tin has lately been received in the United States. It came from the Durango district, near the mountains of the same name; and is said to be bright, clear, and of good texture. It was discovered by Mr. Hans Freeman, of Australia, who has for more than a gear been searching for evidence of the tin lodes and placers spoken of by the old Spanish settlers.

THE mere making of the governor weights light enough so that by the use of high steam-pressure and every other element of coaxing the engine will experimentally get up a desired maximum rate of revolution, does not signify that the engine is a high-speed engine. A high-speed engine must be properly proportioned and balanced, so that it will not only give the speed of revolution, but will do so without appreciable jar and tremor, and will possess the properties of strength and stiffness, so that continuous work of the engine at high speed will not require abnormal repairs or be significant of short life.—*Ex.*

WEEVILS, COCKROACHES AND MOSQUITOES.—A. T. Elliott says: Adjacent to my office is a ware-house filled with wheat. This spring the grain weevils therein began to migrate and infested my premises. We therefore sprinkled some buhoch or insect powder over the grain and swept the insects up by the quart. Those which migrated to my office were treated with a sprinkling and it cut short their career. I am convinced that a judicious use of this powder on board each grain ship would save an immense amount of loss.

I have seen the insect powder used in a large mill, and it brought cockroaches out in quantities that astonished the miller. A friend of mine, who cannot sleep if a mosquito is within a mile of him, tells me he has only to put a little powder on some burning paper in his room and there is "perfect peace."

BRAZILIAN IMPORT DUTY ON FLOUR.—The Consul-General at Rio gives the following information concerning the imports of flour into Brazil:

In my annual report I stated that the duty imposed by Brazil on the import of wheat flour amounted to 64 cents per barrel. I will now state that if the same flour be shipped to the interior province of Minas Geraes it would in addition be subject to a provisional duty of $1.32 per barrel. The freight charge on a barrel of flour a distance of 200 miles on the Government railroad leading from this city into that province, being as far as the road is now completed, $1.26. As Minas Geraes contains a population of over two millions it can be seen that its heavy tax can affect American flour trade very much.

AIR-PROOF CEMENT.—According to a foreign contemporary, M. C. Pascher finds that the only substance which is really efficacious for rendering cements unalterable by the air is a cold solution of one part of sulphate of iron in three parts of water. The cement articles are left in the solution for 24 hours; at the end of this time they take a greenish-black tint, due to the hydrated protoxide of iron. The absorbed solution is decomposed in the interior of the cement; the weight of the cement is increased 10 per cent.; all the pores of the mass are thus stopped by the hydrate, and as this combination is not attacked by the air, the cement itself becomes unalterable. Cement facings may be whitewashed with several coats of the solution. After drying, the cement may be covered with a wash of ochre, or by a solution of 10 per cent. of sulphate of alumina in three parts of water. For a greenish-white coating, the surface may be first washed with a solutien of chrome alum, and then with soapsuds. Either of these coats may be painted in distemper. When oil colors are used, inconvenience may be avoided by washing the cement with soapsuds, letting it dry, and rubbing with a brush or linen cloth until the surface shines.

THIS is a description in *Le Genie Civil*, of July 1, of a floating grain-elevator. The structure was made at Bordeaux and placed in the harbor to unload the vessels arriving with cargoes of grain. It contains apparatus for weighing, cleaning, and sacking the grain. From the ship's hold it can unload, weigh, clean, weigh again, put into sacks, and reload into trucks 150 tons of grain per hour. The elevator is mounted on a barge, which is propelled by a screw worked by a compound surface-condensing steam-engine that furnishes the motive power for all of these operations.

A NEW SMOKE CONSUMER.—Mr. John S. Barwell, engineer of William Glenn & Sons, of Cincinnati, has the latest and most simple smoke consumer. On the bridge-wall he constructs a section of tubes of fire-clay, the tubes two feet in length, with a diameter of two inches. He starts the fire with coke, and the tubes soon get red-hot, and then, no matter what fuel is used, the smoke disappears in passing the fire-clay tubes, and beyond them is pure white flame. The cost of the reconstruction of a furnace is about $15. The new smoke inspector has seen this "device," and is surprised at the efficacy of so cheap and plain a method of smoke prevention.

THE steamer Great Eastern, after lying idle for many years is about to be employed again. "A company has been formed," says the *St. James Gazette*, "to purchase the vessel for the coal trade between Queen's Ferry (Firth of Forth) and the Thames. It is intended to put 20,000 tons of coal on board, in sacks at each voyage. The vessel is described as being in splendid order, having been carefully and expensively maintained."

A second electric boat, 46 feet in length and capable of carrying fifty passengers, has just been launched on the Thames. The motive force lies concealed in seventy boxes, each of 1-horse power, stored under the floor of the boat, and at the end there is a Siemens' dynamo, the spindle of which is continued so as to form the screw without intermediate gearing. A speed of nine miles an hour can be maintained for six or seven hours, when the secondary batteries have to be replenished. There is no noise nor heat, nor smoke, nor waste, and the machinery takes up so little room that practically the entire boat is available for passenger accommodations.

MILLING AND AGRICULTURE IN MEXICO.—Millions of bushels of corn and wheat are raised in Mexico, and as nearly all cultivation of soil is done by irrigation, crops are much more certain than in the United States. The ploughs used are wooden ones, like those used in ancient Egypt, made of a straight piece of mesquite timber, a yard long, pointed at one end, and wedge-shaped at the bottom. On top of this is set, at an angle of, say, 25 degrees, a long pole, which, going forward, is attached to a cross-bar, which is tied to the horns of oxen; on the rear end a single upright stick serves for the handles, by which the peon guides his plough. With this primitive instrument the husbandman ploughs a gutter about three inches deep and five inches broad at the top, and his work, except sowing and covering, is done. When the wheat is cut and housed and stacked (and this is done in April and May) it is spread upon an adobe floor surrounded by a wall of adobe six feet high, and upon this are turned in a number of wild horses from the range. Young boys keep them running around until the grain is trodden out, and then the mass is thrown upon another floor on a level with the top of the wall. Here it is cast up with wooden paddles into the air, and the grain separated from the straw and chaff by the wind. Nearly all the food eaten by the thousands of people in this country consists of grain. There are no small mills, very few mills of any size, and no mills for grinding corn. All the poor and most of the well-to-do eat corn, and to reduce it to meal they must, each for his own family, pound the corn with one rock upon another. —*British Mail.*

The Livingston Belted Roller Mill

WITH EITHER OUR

PAT. NON-CUTTING OR SHARP CORRUGATIONS.

THIS MILL

is the Outgrowth of over 4 Years' Experience with Roller Mills; is Neat, Strong and Durable; has no Delicate Parts to get out of order; has More and Better Adjustments than Any Other Roller Mill in Market.

We have Secured a Patent for Non-Cutting Corrugations which make a Large Percentage of Middlings and Broad Bran.

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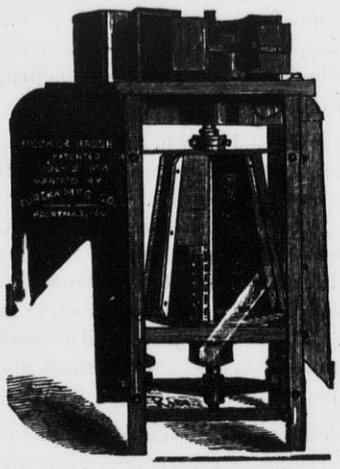

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Galt's Combined Smut and Brush Machine.

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

ADJUSTABLE WHILE IN MOTION.

Nearly 1,000 of these Machines in Use

In the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

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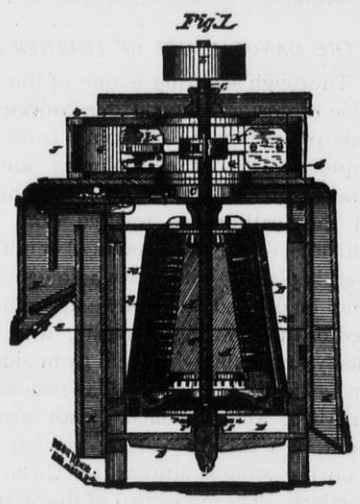
Fig. 1.



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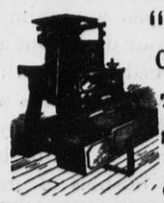

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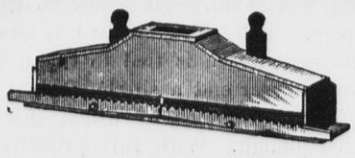

It insures a perfectly even distribution of the middlings over the entire width of the cloth. Every miller will appreciate this. Fits all purifiers. Address,

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—OF—

MILL PICKS!

NO. 456 ON THE CANAL.

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I have had twenty-two years experience in the manufacture and dressing of Mill Picks, and can and do make as fine Mill Picks as can be made by anybody anywhere. I use only the **best imported Steel** for the purpose. My work is known by millers throughout the country, and is pronounced to be **first class** by the very best judges.

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The RICHMOND MILL WORKS, and RICHMOND MILL FURNISHING WORKS are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore to save delay or miscarriage, all letters intended for this concern should be addressed with care to

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Two Through Connections Daily.

Steamer **CITY OF MILWAUKEE**, Side wheel, leaves her dock at 2:30 P. M. daily, (Sundays included,) and makes the run to Grand Haven in five hours, connecting with 9 P. M. through train for **New York, Boston,** and all **Eastern Points.** This is strictly a Passenger Steamer and carries no Freight.

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N. B.—This entire fleet of PALACE IRON STEAMERS is now owned and controlled by the Railway Company.

Ticket Office, No. 99 Wisconsin Street, and at dock foot of West Water Street, Milwaukee.

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BUDGETT, JAMES & BRANTH,

Flour Merchants,

BRISTOL, ENGLAND.

[Mention this paper when you write us.]

NEWS.

Burned—Charles Embler's flour mill at Walden, N. Y.

Geo. L. Hays, Piketon, O., is now operating his mill on the Case system of gradual reduction.

Lucas & Aikens, Uhrichsville, O., will start up their mill on the Case system in a few days.

Meyerhoff & Bickings' mill, at Hawthorne, Ill., burned recently. Loss $8,000; insurance $4,500.

Burned, Aug. 26th, the Huntsville steam flour mills at Huntsville, Ala. Loss $50,000; no insurance.

L. N. Crill, Richland, Dakota, has a No. 1 double purifier in operation, furnished by the Case Mfg Co.

J. W. Bard, Mt. Union, O., is running rolls and purifiers furnished by the Case Mfg Co., Columbus, O.

The Case Mfg Co., Columbus, O., have furnished James Allen, Greenport, N. Y., with purifier and rolls.

W. E. Brain, Oxford Mills, Wis., has ordered 1 single purifier from the Case M'fg Co., of Columbus, O.

The Case M'fg Co., Columbus, O., have an order from C. Seely, Crete, Neb., for 2 No. 2 double Case purifiers.

L. Clisby & Sons, Parker, Dakota, are running rolls and breaks furnished by the Case Mfg Co., Columbus, O.

D. C. Briggs, North Bend, Mich., has purchased a porcelain roller mill of Messrs. Allis & Co., Milwaukee.

The Case Mfg Co., Columbus, O, have lately furnished Wm. V. Banks, Versailles, Mo., with one Case purifier.

J. S. Bristol, Auburn, N. Y., has put in rolls, breaks and scalpers purchased of the Case Mfg Co., Columbus, O.

The New London Mill Co., New London, Mo., are running rolls furnished by the Case Mfg Co., Columbus, O.

The Geo. T. Smith M. P. Co., have received an order from W. T. Pyne, Louisville, Ky, for one No. 3 purifier.

H. B. Powell, Shawneetown, Ill., is putting in a centrifugal reel, furnished by the Case Mfg Co., Columbus, O.

The Case Mfg Co, Columbus, O., have furnished Banks & Sweeny, Blackburn, Mo., with breaks, rolls, purifiers etc.

The Case Mfg Co., Columbus, O., have lately furnished Allen & Co., Lenox, Iowa, with a line of rolls, purifiers, etc.

The Geo T. Smith M. P. Co., have recently shipped two car loads of purifiers to the Pray Mfg. Co., Minneapolis, Minn.

A. C. Godshell & Bro., Lansdale, Pa., recently ordered a porcelain roller mill from Messrs. Allis & Co., Milwaukee.

The Case M'fg Co., Columbus, O., have an order from D. P. Scott, Blair, Neb, for 3 pairs rolls with patent automatic feed.

Thos. Bradford & Co., Cincinnati, O., have placed an order with the Case Mfg Co., Columbus, O., for breaks and rolls.

J. B. Harrison, of Evansville, Ind., has ordered of the Jno. T. Noye Mfg Co., of Buffalo, N. Y., a double Stevens roller mill.

W. H. C. Kemp, Williamsport, Md., recently purchased a Gray's noiseless belt roller mill from Messrs. Allis & Co., Milwaukee.

The Geo. P. Smith M. P. Co., have received orders from Messrs. Rambo Bros., Dresden, O., for three No 2 Geo. T Smith purifiers.

Simon Gebhardt & Son, Dayton, O., have ordered 2 pairs rolls with patent automatic feed, from the Case M'fg Co., Columbus, O.

John Ochsner, Waumandee, Wis., is operating a No. 1 double Case purifier, purchased of the Case Mfg Co., Columbus, Ohio.

Edw. P. Allis & Co., of Milwaukee, Wis., lately sold one of their Gray's noiseless belt roller mills to Jno. D. Sheaver, Monrovia, Md.

The Case Mfg Co., Columbus, O., have furnished O. Crisman, Denver, Col., with smooth rolls, with patent automatic feed.

Smith, Lawther & Co., Nickerson, Kans., are operating their mill on the Case system of gradual reduction with splendid results.

Loeser, Clark & Co., Cuyahoga Falls, O., have ordered 4 feed boxes from the Case M'f'g Co., Columbus, O., for their Smith purifiers.

S. P. Warner of Fostoria, O., whose mill is being remodeled by Stout, Mills & Temple of Dayton, O., will start up about Sept, 5th.

Baily & Rush, Marengo, Iowa, are remodeling their mill, putting in breaks and rolls from the Case Mfg Co., Columbus, Ohio.

H. V. Line, Springfield, Pa., is putting in another pair of Stevens rolls, to be furnished by the Jno. T. Noye Mfg Co., Buffalo, N. Y.

The Case Mfg Co., Columbus, O., are furnishing the Montgomery Oil works, Montgomery, Ala., with a line of their machinery.

P. Rainey, Petersburg, Ill., has ordered two automatic feed boxes for his Garden City purifiers, from the Case Mfg Co., Columbus, O.

Bidstrup Bros., Carrolton, Mo., recently purchased a Gray's noiseless belt roller mill of Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

The Case M'fg Co., Columbus O., are furnishing M. S. Bacon, Tiffin, O., with 3 additional pairs of Case rolls with patent automatic feed.

Caps & Schertz, Hilton, Ill., have put in one pair smooth rolls with patent automatic feed, furnished by the Case Mfg Co., Columbus, O.

The Rathbun Co., of Deseranto, Ont., are putting in additional Stevens roller mills, ordered of the Jno. T. Noye Mfg Co., of Buffalo, N. Y.

Crouch Bros., of Erie, Pa., have added a No. 3 Geo. T. Smith purifier to the large number of these machines they already have in use.

E. H. Brooks, Carroll, Iowa, has lately put a No. 2, double purifier in his mill, same being furuished by the Case Mfg Co., Columbus, O.

Stammwitz & Schoeber, of Minneapolis, Minn., are placing in their mills one No. 1 and one No. 2 Geo. T. Smith middlings purifiers.

The Case Mfg Co., Columbus, O., have an order from C. S. Thomson, Utica, N. Y. for one pair smooth rolls with patent automatic feed.

The Geo. T. Smith M. P. Co., are furnishing Jno. D Shearer, of Monrovia, Md., one No. 5 Martin centrifugal reel and two No. 0 purifiers.

Kloose & Bradford, Creston, Iowa, are remodeling their mill and putting in breaks, rolls, purifiers, etc., from the Case Mfg Co., Columbus, O.

The Geo. T. Smith M. P. Co., have shipped one of their No. 0 purifiers to L. P. Sharpless, Oxford, Pa., on the order of the Barnard & Leas Mfg. Co.

C. Templeton, Sharpsville, Pa., has ordered of the Jno. T. Noye Mfg Co., Buffalo, N. Y., a double roller mill with Stevens patented corrugations.

Edw. P. Allis & Co., Milwaukee, Wis., recently sold G. W. Woodruff, Columbus, Ga., four pair more of Allis rolls, in Gray's noiseless belt frames.

Edw. P. Allis & Co., Milwaukee, Wis., lately received an order from M. D. Hammon & Son, Logan, Utah Ter., for a Gray's noiseless belt roller mill.

Edw. P. Allis & Co., of Milwaukee, Wis., recently sold Messrs. Willy & Co., of Appleton, Wis., another Gray's noiseless belt roller mill.

The Geo. T. Smith M. P. Co., have recently filled an order for the Fargo roller mills, for one No. 3 double purifier and one No. 1 centrifugal reel.

The Case Mfg Co., Columbus, O., have furnished Northrup Bros., Wyandott, Kans., with two pair smooth rolls, with patent automatic feed.

The Geo. T. Smith M. P. Co., have received orders for one No. 3 centrifugal reel and two No. 1 purifiers, from Wm. H. C. Kemp, Kemp Station, Md.

B. F. Gump, of Chicago, Ill., has telegraphed the Jno. T. Noye Mfg Co., of Buffalo, N. Y., to ship him a single Stevens roller mill for bran bruising.

The Weed & Gumaer Mfg Co., Weyawega, Wis., recently purchased a Gray's noiseless belt roller mill of Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

Baker & Co., Winchester, Pa., are putting in a Gray's noiseless belt roller mill, purchased recently from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

The Geo. T. Smith M. P. Co., are in receipt of an order from the Great Western Mfg. Co. for one No. 1 Martin centrifugal reel and one No. 3 purifier.

J. M. Yenson & Co., of Lowell, Neb., have given their order for one No. 1 Geo. T. Smith middlings purifier, through the Great Western Mfg. Co.

B. F. Gump, of Chicago, Ill., calls for another Stevens roller mill, and the Jno. T. Noye Mfg Co., of Buffalo, N. Y., will see that the call is answered.

The Case Mfg Co., Columbus, O., are furnishing the Model Roller Mills Co., North Middletown, Ky., with a line of purifiers and centrifugal reels.

The Geo. T. Smith M. P. Co. have an order from Smith, Hill & Co., of Quincy, Ill., to ship one of their No. 0 purifiers to Zeigler & Co., Shelbina, Mo.

On July 26th, the Geo. T. Smith M. P. Co., shipped twelve No. 0 purifiers and four No. 1 purifiers to Messrs. Wm. R. Dell & Son, London, England.

The Geo. T. Smith, M. P. Co. have received orders for two No. 00 purifiers to be shipped to the Eagle Mill Co., St. Joseph, Mo. From Sam Kaucher.

The Iowa Elevator Co., Peoria, Ill., lately ordered an 18x48 Reynolds Corliss engine from the Reliance Work of Edw. P. Allis & Co., Milwaukee, Wis.

The Case Mfg Co., Columbus, O., furnished H. G. Hartwell, Irving Mills, Wis., with one Case purifier, which he says, "beats all the purifiers he ever saw."

The Geo. T. Smith M. P. Co. have recently shipped one No. 3 purifier to O. J. True & Co., Port Clinton, O. on the order of Barney & Kilby, of Sandusky, O.

F. A. Howland, of Lambton Mills, Ont., has ordered of the Jno. T. Noye Mfg Co., of Buffalo, N. Y., a single roller mill with Stevens patented corrugations.

The Geo. T. Smith M. P. Co., have shipped one No. 3 centrifugal reel to H C. Sherman, Moltville, N. Y., on the order of Chas. Rakes, Esq., Lockport, N. Y.

The Geo. T. Smith M. P. Co, have received orders from the Heywood-Nivins Mill Co., of Constantinople, Turkey, for two of their No. 6 middlings purifiers.

Case Mfg Co., Columbus, O., have an order from J. N. Stull, Veedersburg, Ind., for two pairs of rolls with automatic feed, and one Case centrifugal reel.

S. F. McDonald, Oxford Mills, Iowa, has remodled his mill, and put in the Case system of gradual reduction. He expects to be in operation in a few days.

The Sunflower Oil Mill, at Clarksdale, Miss., is putting in a 14x42 Reynolds Corliss engine, purchased from Messrs. Edw. P. Allis & Co, Milwaukee, Wis.

The Geo. T Smith M. P. Co. have recently filled an order for four No. 0 purifiers from Messrs. R. G. Shuler & Co., for Slaughter & Lindsay, Fullerton, Neb.

The Geo. T. Smith M. P. Co., have recently received an order from B. F. Gump, of Chicago, Ill., for two No. 0 purifiers and one No. 3 Martin centrifugal reel.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have recently sold Messrs Gardner & Seymour, Fulton, N. Y., a Gray's noiseless belt roller mill.

The Geo. T. Smith M. P. Co., have supplied Eisenmayer & Co., of Halstead, Kas, with one No. 2 Martin centrifugal reel, on the order of Messrs. Ladd & Gehman.

The Geo. T. Smith M. P. Co., have lately shipped one of their No. 0 Martin centrifugal reels to M. M. Wright, Danville, Ill., on the order of the Hutchinson Mfg. Co.

The Case Mfg Co, Columbus, O., have an order from A. J. Meiklejahn, Little Wolf, Wis., for two pair rolls with patent automatic feed, and one Case centrifugal reel.

C. T. Dodge, Lapier, Mich., has ordered of the Jno. T. Noye Mfg Co., Buffalo, N. Y., a double roller mill with Stevens patented corrugations, for grinding middlings.

F. L. Ellis & Co., of Hopkinsville, Ky., has planted an order with the Jno. T. Noye Mfg Co, of Buffalo, N. Y., for a single Stevens Roller mill for grinding middlings.

Marshall, Kennedy & Co., of Pittsburgh, Pa., have ordered of the Jno. T. Noye Mfg Co, Buffalo, N. Y., a double roller mill with Stevens patented corrugations.

John Walterhouse, of Vincennes, Ind., representing the Jno. T. Noye Mfg Co., of Buffalo, N. Y., has ordered a double Stevens roller mill for Major Collins, at Brazil, Ind.

F. J. & J. W. Schupp, Concordia, Mo, recently placed an order with Messrs. Allis & Co., Milwaukee, Wis., for a Gray's noiseless belt roller mill for one of their customers.

The Geo. T. Smith M. P. Co., have received orders from Messrs. A. Root & Co., Hersey, Mich., for one No. 3 Smith purifier and one No. 1 and one No. 4 Martin centrifugal reels.

Baggett & Greathouse, Temple, Tex., are operating their mill on the gradual reduction system, using breaks, rolls, purifiers, etc., furnished by the Case Mfg Co., Columbus, Ohio.

Joseph Schmick, Blue Earth City, Minn., is improving his mill and putting in a No. 2 four break reduction machine, ordered of Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

The saw, grist and starch mills, owned by J. L. Ripley & Co., also the paint and repair shops owned by Mr. Ripley in Anver, were burned recently. Loss about $6,000; no insurance.

M. B. Sheffield, Fairbault, Minn., lately ordered an 18x36 Reynolds' new style engine, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis., to run his flouring mill at that place.

Chas. Huber, the Hungarian expert, of St. Louis, Mo., has instructed the Jno. T. Noye Mfg Co., of Buffalo, N. Y., to ship Cowgill & Hill, of Carthage, Mo., five Stevens double mills.

Jno. Webster, the veteran millwright of Detroit, Mich., has ordered a double Stevens roller mill of the Jno. T. Noye Mfg Co., of Buffalo, N. Y., for W. J. Green, Waterford, Mich.

The Geo. T. Smith M. P. Co., are in receipt of an order from the Slater Mill Co., of Blanchester, O, for one No. 3 and one No. 8 purifiers, to be shipped Wm. L. Oliver, Camp Point, Ills.

The Geo. T. Smith M. P. Co., are in receipt of an orde from Mr. A. R. Ennis, to ship one No. 4 Martin centrifugal and No. 0 purifier to the Bolckow Milling Co., of Bolckow, Mo.

E. D. Munger is building a mill at Kilbourn City. It will have a capacity of about 75 bbls. per day. He will use 4 16-inch water-wheels manufactured by G. M. Marshall & Sons, of Kilbourn City.

Edw P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have furnished Messrs. Fitzsimmons & Kreider, recently, with a Gray's noiseless belt roller mill for their mill at Jacksonville, Ill.

Patterson & Donleavey, New Philadelphia, Ohio, have about completed the remodeling of their mill, putting in the Case system of gradual reduction. They expect to be running in a few days.

The Geo. T. Smith M. P. Co. have received orders from the Noye Mfg Co. for two No. 0 purifiers, from G. W. M. Keller; and one No. 1 and one No. 2 purifiers for C. Lowndsburry, Oswego, N. Y.

The Eagle Mill Co., St. Joseph, Mo., are remodeling their mill and have placed an order with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for five pairs Allis rolls, in Gray's noiseless belt frames.

Berratz Bros., of Ft. Atkinson, Ia., have ordered of the Jno. T. Noye Mfg Co., Buffalo, N. Y., a five break concentrated roller mill, with Stevens patented corrugations. F. R. Fletcher took the order.

Donahue & Hennebery, of Chicago, Ill., recently contracted with Messrs. Wardell & Hinckly, of Chicago, for a 14x36 Reynolds Corliss engine, made by Messrs. Edw. P Allis & Co., Milwaukee, Wis.

W. R. Dell & Son, of London, Eng., have cabled the Jno. T. Noye Mfg Co, of Buffalo, N. Y., to ship them a concentrated roller mill, and write that the mill is having great success in that country.

G. M Cresswell, Petersburg, Pa., has deposited an order with the Jno. T. Noye Mfg Co., Buffalo, N. Y., for a Rounds sectional roller mill and single mill, all with Stevens patented corrugations.

Edw. P. Allis & Co., Milwaukee, Wis., are furnishing the machinery for refitting the mill of Thos. Jones & Son, Columbus, O., and have shipped a porcelain roller mill, purifiers, centrifugal reels, etc.

The Haxtun Steam Heating Co., of Kewaunee, Ill., recently placed orders with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a 16x42 and 14x36 Reynolds Corliss engine.

Eastman, Laird & Co., Washua, Iowa, have ordered of the Jno. T. Noye Mfg Co., Buffalo, N. Y., a Rounds four break sectional roller mill and a single mill, all with Stevens patented corrugations.

A Dehner & Co., of St. Louis, Mo., recently placed an order with Messrs. Edw. P. Allis & Co, of the Reliance Works, Milwaukee, Wis, for a 14x36 Reynolds Corliss engine for parties at Seneca, Mo.

Edw. P. Allis & Co., Milwaukee, Wis., recently received an order through Messrs. Pond Engineering Co., of St. Louis, for a 16x42 Reynolds Corliss Engine, for Messrs. H. B. Eggars & Co., of same place.

The Case Mfg Co., Columbus, O., have furnished the C. A. Gambrill Mfg Co., Baltimore, Md, with twenty-two of their automatic feed boxes, to be used on as many different purifiers of other manufacture.

Edw. P. Allis & Co., Milwaukee, Wis., have secured the contract for remodeling the mill of Gilbert & Bro., at Fulton, N. Y., and will furnish a full line of Gray's noiseless belt roller mills, purifiers, etc.

Shuler & Co., of Minneapolis, Minn., have the contract for building a mill for A. G. Seeney, Sioux Falls, D. T., and have ordered four Stevens roller mills of the Jno. T. Noye Mfg Co., of Buffalo. N. Y.

Wm. F. Piel & Co., have recently ordered a 26x60 Reynolds Corliss engine from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for their extensive starch works at Indianapolis, Ind.

The Plano Mf'g Co., of Plano, Ill., have placed their order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for a 26x48 Reynolds Corliss engine, to drive their works at that place.

The Case Mfg Co., Columbus, Ohio, are furnishing Benjamin Noble, Aberdeen, Md., with two pair rolls with automatic feed, and one "Little Giant" break machine with scalping reel making three separations.

The Geo. T. Smith M. P. Co., have recently supplied G. W. Clark, Fairport, N. Y., with two No. 0 purifiers, and E. A. Van Arddall, of Ontario, N. Y., with three No. 0 purifiers on the order of the Jno. T. Noye Mfg. Co.

The Case M'fg. Co., Columbus, O., have just shipped R. W. Mehard of East Brook, Pa., 1 Little Giant break machine making 3 separations, to go in the mill he is remodeling for Swogger Bro's, Nesshasmack Falls, Pa.

L. A. Funk, Sigourney, Ia., has lodged an order with the Jno. T. Noye Mfg Co., of Buffalo, N. Y., for a three break Rounds sectional roller mill, and a double mill for bran and tailings, all with Stevens corrugations.

J. M. Cole's 250-barrel roller mill at Rochester, Minn., was destroyed by a tornado, Aug. 21st, and Mr. Cole was killed. A large portion of the city of Rochester was laid in ruins; and 24 persons killed and many wounded.

The Geo. T. Smith M. P. Co., have recently received orders from the Nordyke & Marmon Co., of Indianapolis, Ind., as follows: One No. 3, two No. 2 and one No. 1 double and ten No. 0 Geo. T. Smith middlings purifiers.

F. R. Fletcher, the veteran millwright, of Decorah, Ia., has lodged an order with the Jno. T. Noye Mfg Co., of Buffalo, N. Y., for a Rounds four break roller mill with Stevens patented corrugations, for Bell Bros., Osage, Ia.

The Wamego Milling Co, of Wamego, Kas., have placed an order with Messrs. Edw. P. Allis & Co., for the entire machinery to run their mill on the full roller system, including a 24x42 Reynolds Corliss engine to drive same.

J. C. Painter, of Osceola, Ia., has ordered of the Jno. T. Noye Mfg. Co, of Buffalo, N. Y., a five break concentrated, and a single mill, all with the Stevens corrugations. F. R. Fletcher, the popular millwright, captured the order.

The Slater Mill Co., Beauchester, Ohio, recently secured an order from H. M. Oliver, Camp Point, Ill., for a Gray's noiseless belt roller mill, which was promptly sent to Messrs. Edw. P. Allis & Co., Milwaukee, Wis., to be filled.

O. H. Hastings & Co., of Oswego, N. Y., have deposited an order with the Jno. T. Noye Mfg Co., of Buffalo, N. Y., for five Stevens double roller mills, as well as other mill machinery required to convert the mill to the roller system.

The Geo. T. Smith M. P. Co., are in receipt of an order from the Springfield Foundry and Machine Co., of Springfield, Mo., to ship one No. 2 purifier and one No. 1 Marti centrifugal reel to the Queen City Milling Co., of Springfield.

Replogle & Brown, Farragut, Ia., recently placed an order with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for a No. 2 four break machine, Gray's noisless roller mills, centrifugal reels, etc., to remodel their mill to the roller system.

G. G. Dutton, Chester, Pa., is making extensive improvements in his mill and adding a No. 2 four break reduction machine and Gray's noiseless belt roller mill, purchased from Messrs. Allis & Co, Reliance Works, Milwaukee, Wis.

Mr. Jas. K. Scribner, Eldorado, Wis., is adding another Gray's noiseless belt roller mill, centrifugal reel, etc., to his mill at Eldorado, and when completed will be prepared to compete with the other roller mills in that section successfully.

J. D. Edge, of Minneapolis, Minn., reports considerable business in that section, and recently placed an order with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for a Gray's noiseless belt roller mill, for A. D. Ellsworth, Minnesota City, Minn.

Smith & Daley, Sturgeon Bay, Wis., have ordered a 14x36 Reynolds Corliss engine of Messrs. Edw. P. Allis & Co., Milwaukee, Wis., to drive their flour mill at that place, they also ordered the machinery for their mill of Messrs. Allis & Co.

E. W. Pride, of Neenah, Wis., has forwarded an order to the John T. Noye Mfg Co. of Buffalo, N. Y., for a four break Rounds sectional roller mill, and a single mill with Stevens patent corrugations to go in the mill of G. F. Dawley, Royalton, Wis.

Edw. P. Allis & Co, Milwaukee, Wis., recently shipped Messrs. Manro & Neyhart, Auburn, N. Y., a Wegmann's porcelain roller mill, an 8' centrifugal reel, etc. Same was ordered through Mr. James Miller, the popular salesman for Messrs. Allis & Co.

The Case Mfg Co., Columbus, O., have been awarded the contract of John Whrich, Gratis, Preble Co., O. for a full gradual reduction mill on the Case system, using eight pair Case rolls in connection with their breaks, purifiers, centrifugals, scalpers, etc.

The Brinkley Oil Co., of Brinkley, Ark., will put in a 18x48 Reynolds Corliss engine, and has placed an order to that effect with Messrs. Edw. P. Allis & Co, of Milwaukee, Wis. This makes several of these engines sold for oil mills the past month. 'Tis well.

Horn & Dill, Gahanna, Ohio, have contracted with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for the entire outfit for remodeling their mill to the roller system and will use eight pair of Allis rolls in Gray's noiseless belt frames, centrifugal reels, purifiers, etc.

W. G. Gage & Co., Fulton, N. Y., are enlarging the capacity of their mill and have placed contract with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for nine pair of the celebrated Allis rolls, purifiers, centrifugal reels, and other machinery used in the change.

The contract for overhauling the mill of Herrick & Son, at Watertown, N. Y., has been let to the Jno. T. Noye Mfg Co., Buffalo, N. Y., who, besides other machinery required, will furnish a five break concentrated mill and three double mills, all with Stevens corrugations.

D. Scott of Macomb, Ill., is so well pleased with his North mill recently remodeled by Stout, Mills & Temple of Dayton O, that he has given them an order to remodel his other mill near the Square in Macomb. They will use the Gilbert combined and Livingston mills, as in the first.

Kanute & Burts, Flintville, Wis., recently placed orders with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for an outfit of Allis rolls in Gray's noisless belt frames, a No. 2 four break reduction machine, centrifugal reels, etc., making their mill on the roller system, when completed.

Shuler & Co., the well established mill builders of Minneapolis, Minn., have instructed the Jno. T. Noye Mfg Co., of Buffalo, N. Y., to ship them a four break Rounds sectional roller mill, and a double mill for bran and middlings, to Dassal, Minn., where they are building a mill.

Ford & Charbin, Harmony, Ind., have contracted with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for the necessary machinery to change their mill to the roller system, which will consist of six pair of the celebrated Allis rolls, in Gray's noiseless belt frames, centrifugal reels, etc.

Richards & Butler, Indianapolis, Ind., are remodeling Messrs. Elliott, Messick & Co's. mill at Shelbyville, Ind., and are using six pair of the celebrated Allis rolls, in Gray's noiseless belt frames. They have also ordered six pair in Gray's noiseless belt frames, for another job which they have under consideration in Ind.

H. Schnebley & Co., Dartford, Wis, are remodeling their mill to the roller system, and have contracted with Messrs. Edw. P. Allis & Co., Milwaukee, Wis, for the complete outfit, including six pair of the celebrated Allis rolls and two pair of Wegmann's porcelain rolls, in Gray's noiseless belt frames, centrifugal reels, purifiers, etc.

Hush & Pritchard, Indianola, Iowa, are remodeling their mill and have recently placed their order with Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for a No. 2 four break reduction machine, two double, "style B.," machines, purifiers, etc. Messrs. Allis & Co. will soon be prepared to fill all orders promptly for these new "style B." machines.

The Wamego Milling Co., Wamego, Kansas, have awarded contract to Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for the erection of a complete mill, with a capacity of 150 bbls. in 24 hours. Messrs. Allis & Co. furnish everything, including a full line of the celebrated Allis rolls, in Gray's noiseless belt frames, and a 14x42 Reynolds Corliss engine, to furnish power for the mill.

F. W. Kickbush, Wausau, Wis., is remodeling his mill and has placed contract with Messrs. Edw. P. Allis & Co, of the Reliance Works, Milwaukee, Wis., for the entire outfit, including fourteen pair of the celebrated Allis rolls, in Gray's noiseless belt frames. The mill will be driven by a Reynolds Corliss engine, also purchased from Messrs. Allis & Co.

The Geo. T. Smith M. P. Co. are in receipt of the following orders from the Stilwell & Bierce Mfg Co., of Dayton, O.: Two No. 0 purifiers and one No. 2 Martin centrifugal reel, to be shipped to S. M. Greely, Foster's Crossing, O.; five No. 00 purifiers to be shipped to themselves at Dayton, O., and three No. 0 purifiers to be shipped to Amos Phelps, Delavan, Wis.

The Stilwell & Bierce Mfg Co. have shipped two pair of 9x18 rolls to Scott & Williams, St. Louis, Mo.

Hardesty Bro's, Canal, Dover, O., have recently placed their order with the Stilwell & Bierce M'fg Co. for the Odell rolls.

The Stilwell & Bierce Mfg Co. have recent orders from the Richmond City Mill Works for twenty pair of Odell roller mills.

Four pairs of Odell rolls have been ordered from the Stilwell & Bierce M'fg Co., for the mill of C. Dobson & Son, Charyvale, Kan.

Fathias, Hous & Frazen, Marytown, Wis., have ordered four pair of Odell rolls for their new mill, which they are thoroughly overhauling.

Odell rolls have been ordered by McMahan Bro's, Burlington, Kan. They have also placed orders with the Stilwell & Bierce M'fg Co. for other mill machinery.

The mill which is to be built at Richmond, Ind., by the Richmond City Mill Works, and which is to be the model mill of the State, will use fourteen pair of the celebrated Odell rolls.

C. & W. Beeber, Clarkstown, Pa., have instructed the Jno. T. Noye Mfg Co., Buffalo, N. Y., to ship them a Rounds sectional roller mill, all with Stevens patented corrugations.

D. Kunkle & Son, Oregon, Mo., have placed their order with the Stillwell & Bierce Mfg Co., of Dayton, O., for four pair of Odell rolls and other machinery. They also furnish the diagram.

Jno. Webster, of Detroit, Mich., has planted an order with the Jno. T. Noye Mfg Co., Buffalo, N. Y., for three double roller mills with Stevens corrugations, for A. N. Hart, Lansing, Mich.

Chas. Huber, the St. Louis, Mo., milling engineer, has ordered of the Jno. T. Noye Mfg Co., of Buffalo, N. Y., two double roller mills with Stevens corrugations, for A. Dehner & Co., St. Louis, Mo.

J. F. Schoellkopf, of Buffalo, N. Y., has purchased one of the Buffalo Mills at that place, and will improve the same by the addition of two single roller mills with Stevens patented corrugations.

Chas. Huber, St. Louis, Mo., reports trade quite good. He has recently sent in an order to the Jno. T. Noye Mfg Co., Buffalo, N. Y., for two double Stevens roller mills for H. B. Eggers & Co., St. Louis, Mo.

Three pairs smooth rolls with patent automatic feed, one three-roll break machine and one No. 1 double purifier have been ordered from the Case M'fg Co., Columbus, O., for J. H. Dearborn, Silver Lake, Kans.

Courtney Wood, Kiousville, O., put in a Case purifier a short time ago, and writes as follows: "The purifier is working well and has improved the flour 25 per cent. or more in quality, and also in quantity."

The mill of T. J. Bloom, New Madison, O., is to be remodeled to the Odell system by the Stillwell & Bierce Mfg Co., Dayton, O. They will use twelve pair of the Odell rolls; they also furnish all the machinery.

The Stilwell & Bierce M'fg Co. have an order from C. F. Dumke & Co., New Holstein, Wis., for 10 pairs of Odell rolls, and are to furnish plans and system for their mill, which is to be changed at once to a full roller mill.

Raymond Mill Co., of Osceola, Iowa, have ordered a concentrated roller mill with Stevens patented corrugations of the Jno. T. Noye Mfg Co., Buffalo, N. Y. F. R. Fletcher, the stalwart millwright, captured the order.

The Stilwell & Bierce M'fg Co. have a recent order from Reblitz Bro's, Chilton, Wis., for a pair of Odell rolls for their mill which is to be remodeled at once. They also furnish them plans and programme on the Odell system.

Crouch Bros., of Erie, Pa., have determined to put rollers into their mill, and for that purpose have directed the Jno. T. Noye Mfg Co,, of Buffalo, N. Y., to ship them eleven pairs of rolls with the Stevens patent corrugations.

Mrs. Dortha Gerlach, North Amherst, O., has placed an order with the Case M'fg Co., Columbus, O., for 1 Little Giant break machine and scalper combined, making 3 separations and 2 pairs Case rolls with patent automatic feed.

The Stilwell & Bierce Mfg Co., have orders from C. F. Espenhain, Lyons, N. Y., for eight pair of Odell rolls; also for a water wheel. Their mill is to be changed over without delay, according to plans furnished them by Mr. Odell.

The Case M'fg Co. of Columbus, O., have been awarded the contract of J. Terry & Co., Amanda, O., for a full gradual reduction mill on the Case system, using 8 pairs of rolls in connection with their breaks, purifiers, centrifugals, scalpers &c.

E. W. Pride, the Neenah, Wis., agent for the Jno. T. Noye Mfg Co., Buffalo, N. Y., ordered two single roller mills and Rounds three break sectional roller mill, with Stevens patented corrugations, for the mill of J. H. Dunham, at Juneau, Wis.

Northrup Bros., Wyandott, Kans, put in 2 pairs Case rolls some time ago, and they are so well pleased with them that they have now placed their order with the Case M'fg Co., Columbus, O., for a line of breaks, rolls, centrifugals, scalpers, &c., for a full gradual reduction mill on the Case system,

The Case M'fg Co., Columbus, O., have received an order from Randall, Rankin & Co, Leetonia, O., for 1 Little Giant break and scalper combined, and 3 pairs smooth rolls with patent automatic feed. This firm have been running some of the Case rolls for some time past with the best of satisfaction.

The Stilwell & Bierce Mfg Co. have just secured the order to remodel the Eufaula Mills, Eufaula, Ala., to the Odell system. This mill is now one of the finest in the State, and when finished will have no equal in the South. Twenty pair of Odell rolls will be used. The milling diagram will be furnished by Mr. U. H. Odell.

The Case M'fg Co., Columbus O., have been awarded the contract of Frederick Placier, London, O., for a full gradual reduction mill on the Case system, using 8 pairs of rolls in connection with breaks, purifiers, scalpers &c. Mr. Placier, is one of the foremost millers in Central Ohio, and carefully investigated the different systems before placing his order.

The Bass Foundry and Machine Works, Ft. Wayne, Ind., are remodeling a number of mills to the roller system, among which are the following: Shirk & Friend, Tipton, Ind., putting in a Gray's noiseless roller mill; Union Mills Flour Co., Van Wert, O., one Gray's noiseless belt roller mill; orders for these machines being placed with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

Chisholm Bros. & Gunn, Minneapolis, Minn., are changing the mill of Messrs. Lee & Herrick, at Crookston, Minn., to the roller system, and will use fourteen pair of Allis rolls, in Gray's noiseless belt frames, order for which has been placed with Messrs. Allis & Co. They are also remodeling a mill at Denver, Col., in which they are using thirty-six pair of Allis rolls, all in Gray's noiseless belt frames.

Clyde Mill Co., Clyde, Kas., one Gray's noiseless belt roller mill; Arkansas City W. P. Co., Arkansas City, Kas., twelve pair of Gray's noiseless frames, with Allis rolls.

The Richmond City Mill Works, of Richmond, Ind., have recently placed orders with Messrs. Edw. P. Allis & Co., of the Reliance Works, as follows: V. M. Ayers, Arkansas City, Kas., one Gray's noiseless belt roller mill.

The Geo. T. Smith M. P. Co., have supplied the following named machines on the order of the Great Western Mfg Co., of Leavenworth, Kansas: one No. 00 purifier to David Close, Norton, Kan., one No. 1 Martin centrifugal reel to Kelley & Liske, of Leavenworth, Kan., and one No. 2 purifier to Peerless Mill Co., Council Grove, Kas.

The Geo. T. Smith M. P. Co., have recently received orders from the Gratiot Mfg. Co., as follows: two No. 1 purifiers to be shipped to Geo. Ingersoll, Marshall, Mich., one No. 4 Martin centrifugal reel to be shipped to W. H. Herry, Celina, O., one No. 1 purifier to be shipped to J. H. Plain & Co., North Aurora, Ills., and one No. 1 purifier to be shipped Aylsworth & Co., Fostoria, O.

The Geo. T. Smith M. P. Co., have recently supplied H. Schemebly & Co., of Dartford, Wis., with one No. 2 double purifier. The Nashville Mill Co., of Nashville, Tenn., with three No. 1 and three No. 0 purifiers. Thos. Jones & Co., of Columbus, O., one No. 2 purifier to replace a Case purifier, and two No. 2, one No. 1 and one No. 00 purifiers for Wm. G. Gage & Co., Fulton, N. Y. All the above on order of Messrs. E. P. Allis & Co., of Milwaukee, Wis.

The following are amongst recent orders received by the Geo. T. Smith M. P. Co. from I. Q. Halteman & Co., St. Louis, Mo.: One No. 3 purifier, to be shipped to S. B. Poor & Co., Dongola, Ill.; one No. 2 purifier, and one No. 1 Martin centrifugal to be shipped to themselves, at St. Louis, Mo.; one No. 0 purifier to be shipped as above, and one No. 1 and one No. 2 Martin centrifugal reels, one No. 0, one No. 1 and one No. 2 purifiers to be shipped to St. Louis.

The following are some of the more recent orders received by the Geo. T. Smith M. P. Co from the Simpson & Gault Mfg Co., Cincinnati, O.: One No. 2 Martin centrifugal reel to be shipped to Bush Bros., Proctorville, O.; one No. 0 purifier to be shipped to W. P. Smith, Mt. Juliet, Tenn.; one No. 8 Martin centrifugal reel to be shipped to Rogers & Bostain, Carlisle, Ky., and one No. 3 Martin centrifugal reel to be shipped to Depot Mills Co, Columbia, Tenn.

Edw. P. Allis & Co., of Milwaukee, Wis., recently captured quite an important contract, namely, a pair of pumping engines for the Allegheny City Water Works, Allegheny, Pa. The high pressure cylinders of these engines will be 31x48, and low pressure cylinders 43x48. The engines are guaranteed to pump six million gallons of water 220 feet high every 24 hours. Notwithstanding very low bids by the Holly Mf'g Co. and Quintard Iron Works, Messrs. Allis & Co. were awarded the contract, the committee recognizing the superiority of their engines.

Stout, Mills & Temple of Dayton, O., the old reliable mill-furnishers, have received orders for Gilbert & Livingston mill the past 30 days, as follows: From J. & P. W. Anderson, Bolekow, Mo., 2 pairs of Livingston rolls; A.C. Wilson, Springfield, Mo. 9 pairs of Livingston rolls; J. R. White & Co., Mitchell, D. T., 1 Gilbert combination mill; D. Scott, Macomb, Ill., 1 Gilbert combined mill, 2 double Livingston mills; Cory Flour Mill Co, 7 pairs of Livingston rolls; Bennett & Reas, West Plains, Mo., 1 double Livingston mill; J. M. Bradbury, Bunker Hill, Kas., 1 double Livingston mill; Queen City Milling Co., Springfield, Wis., 3 double Livingston mills; Zoar Society, Zoar, O., 1 double Livingston mill; Pray M'fg Co, Minneapolis, Minn., 1 car-load—(6 double mills) Livingston rolls.

Some of the recent orders which the Geo. T. Smith M. P. Co., have received from the Jno. T. Noye Mfg. Co., are as follows: one No. 2 purifier, one No. 2 double purifier, one No. 1 and one No. 3 Martin centrifugal reels for D. P. Hamilton, White Pigeon, Mich., two No. 0 purifiers and one No 3 reel to be shipped to Bell & Forster, Mansfield Valley, Pa., one No. 0 purifier for Geo. N. Beach, Brillion, Wis., one No. 1 purifier and one No. 1 Martin centrifugal reel to be shipped to J. H. Defrees, Goshen, Ind., and two No. 0 purifiers to be shipped to Norton & Meyers, Lima, O.

The Geo. T. Smith M. P. Co., are in receipt of orders from the Jno. T. Noye Mfg. Co.; to ship ten No. 1 Martin centrifugal reels, two No. 3 and one No. 2 purifiers, to Lewis Emery, Three Rivers, Mich These are for the new mill which the Noye Co. are building for Mr Emery, and in which a complete centrifugal bolting system will be used.

THE EUREKA SMUT AND SEPARATING MACHINE WORKS OF HOWES & EWELL AT SILVER CREEK, N. Y.

[From the *Journal*, of Dunkirk, N. Y.]

The village of Silver Creek is a little paradise of handsome homes and contented people. Passing through any of the streets, one is struck by the uniform elegance and comfort of the residences, the well-kept lawns, the shaded streets, and every evidence of thrift and prosperity. There seems no dwellings for the poor, and Silver Creek must be one of the places where they have them not always with them. If one looks for the causes of all this it is easy to find in the numerous factories which supply the means for the wealth and refinement which is characteristic of the place. And these factories are in the hands of men who appreciate the value of intelligent and contented labor, and endeavor to cultivate a pride in good citizenship. Silver Creek produces no less than a dozen machines which are important to the milling interests, nearly all of which are inventions of Silver Creek mechanics. They are in demand and sold all over the world, and the Ganges and the Nile, the Australian streams, the Holland canals, and England, France and Russia know them as well as our own country millers, among whom they are in universal use. We shall endeavor only at this time to give some idea of the largest and most prominent of these factories, that of the Eureka Smut and Separating Machine Works, owned by Howes & Ewell, and which are model shops in every respect, and worthy of imitation by manufacturers who would know the secret of successfully managing a large force of men, and inspiring them to work in their interests.

Their shop is a handsome brick building 214 feet through all. The old shop, erected in 1873, was 110x44, three stories high and beyond, a foundry. In this space last year a new addition was erected, 44x66 feet, four stories high and a basement, which relieves present necessities, but in the rapid growth of the business will probably not long afford room enough. One notices immediately on entering the neatness of everything, from machine shop to blacksmith shop and foundry and wood-working shops. The tools are all clean and polished, the floors are clear of refuse, and there is a place for everything and everything is in its place. The arrangements for the comfort and convenience of the men are first-class and deserve attention, as so few shops show this care on the part of employers. In the machine shop, a long iron sink contains bright wash-basins under water-faucets, and above a row of clean towels gives good facilities for personal cleanliness. On each floor are closets and toilet rooms, as neat and well arranged as in the best of private houses. The proprietors consider their workmen something more than mere machines to make money out of, and make a common interest with them in the good name of the works. Better and more accurate work and a common pride in their work is the result, and the effect is shown in the many conveniences which have been added to the shops by the men themselves. Many of the tools used adapted to peculiar uses of cheapening the cost of production of the work are the result of their ingenuity. For instance, much work of perforating sheets of steel and brass was required in making the screens and cylinders for brush machines, so Mr. C. A. Lamphier, foreman of the machine shop, invented one that perforates an entire sheet of metal at a time. At present he is perfecting a little machine for cutting the key-slot in pulleys, and he has added many improvements to the milling machinery made there. Stirling had the job of corrugating the steel rolls of the buckwheat shucker, a slow operation on a planer, but he just geared his planer over so it would do the work automatically itself, and more accurately than could be done by hand. Mr. J. B. Martin, foreman of the wood-working department, has added several improvements to the machines made, and indeed the present smut and separating machine has little relation to the original patent, so constantly have improvements been made, almost entirely the result of study and interest of proprietors and men.

Many of the employes have been with the company for eighteen years, learned their trade there, and have grown up with the business. Nearly all own their homes, and the pretty residences of Silver Creek are the outcome of the wages paid at these shops. There are none of the transient class of workmen, but the system pursued has been to encourage permanency of the force. The company under all its changes of partners has kept this in view, and given its men a fair share of its prosperity. Their trade is so extensive, reaching around the whole world, that it is not affected by financial depressions in any one section. During the long panic of 1873, this shop worked full hours and paid its men full wages. This shows the animus of the employers. Workmen everywhere were begging for work, and they could have procured labor at their own figures, but instead, they made no reduction of wages, paid their men almost twice what the same class of labor was getting elsewhere, and kept their old force at old wages. Their business could afford it and they would not enrich themselves at the expense of their employes. They let them share in their exceptional prosperity while all other manufactories were depressed. You couldn't get up a strike in that shop, for the employes have the same interest as the employers.

This concern makes six machines of value to the milling interest, viz: The Eureka Smut Machine and Separator; the Separator, Brush Machine, Magnetic Separator, the Flour Packer, and the Buckwheat Shucker. Of all kinds they have made one thousand since Jan. 1 of this year. The Smut Machine is the original machine, and was the outcome of cleaner processes of manufacturing flour. It is perfect in its way, and small mills often rely on this alone, but as the milling business became more advanced, other machines were also required, and in 1875 a Separator and Brush Machine were also added to further perfect the process of cleaning the grain before it was made into flour. Later, the self-binding reaper was invented, which bound the sheaves as they were cut with wire, and bits of this wire getting into the wheat, caused the invention of the Magnetic Separator, an ingenious little machine, consisting of horse-shoe magnets, protected by an armature. The grain passing this, every bit of metallic substance is securely caught. The latest reaper uses a twine binder, but it is found that the Magnetic Separator is still useful, and the amount of mineral it finds in grain is astonishing. Another machine which is perhaps even more ingenious than the others, is the Flour Packer, which packs flour closely into the barrels, putting in about four times as much as in the ordinary process of simply filling the barrel and heading it up, and so reducing the cost of shipping. Besides this, there is Cranson's Buckwheat Shucker, which has revolutionized the manufacture of buckwheat flour, and made it more healthful and palatable. Formerly, shuck and all was ground into the flour, but this leaves only the true kernel of wheat, and disposes of the hard shuck, which was the principal source of cutaneous diseases by lovers of the itch-provoking buckwheat cake.

"Our foreign trade," says Mr. Howes, "is increasing rapidly, and is now a large part of our business. We have an agent at London who is busy all the time. We are sending machines to Scotland, England, Wales, Sweden, Denmark, a large amount to the Black Sea country, Austria and Russia. The South of France makes a particularly large demand. Italy is a good customer, and a large trade is being developed in Algeria and the north of Africa. The old Bible countries, which the Scriptures give accounts of particularly primitive milling facilities, are large wheat countries, and improved mills are being constructed through the Valley of the Nile. Australia is another excellent customer, and the South American countries have long been supplied by us. To say nothing of the universal demand in this country, from Maine to California, orders from the latter state being exceptionally large. Our foreign business alone would keep an ordinary shop busy." The visitor is particularly struck by this in the shipping department. Boxed machines are constantly passing out, and a good force is employed in simply packing and shipping.

Another branch of the business is making up bolting cloth for millers' use. This is under charge of Mrs. Fairchild. Several double-needle sewing machines, run by steam power, are employed in this, and the seams are laid smooth and strong by the process. Bolting cloth is of pure silk. It is nearly all made in Switzerland, being woven by hand by the peasantry of that country. It is of different sizes of mesh, the finest being beautiful in its pearly sheen, and but for its great expense, would be coveted by the ladies for their dresses.

A brief history of the business may be of interest. Mr. Simeon Howes, the present senior proprietor, has been connected with it, with few intermissions, from the first, and to him is largely due its unprecedented success, although he has been fortunate in always having associates who were valuable aids. Mr. Howes came to Silver Creek in 1856, and became one of the firm of E. Montgomery & Sons, to whom he had sold the patent of the combined smut and separating machine some years before. In 1857 he sold his interest to his partners, and in 1864 Norman and Alpheus Babcock became interested. In 1865 Mr. Howes became interested with them, radical changes were made in the machine, making the basis of the present Eureka, and under the firm name of Howes, Babcock & Co., the machine obtained a world-wide celebrity. In 1867 Mr. Carlos Ewell became a partner. Recently, Mr. Babcock has retired from the firm, and it is now Howes & Ewell. Every prospect is favorable for the continued growth of the business, and as there are still portions of the world to conquer, the limit is not yet reached. Wherever wheat grows and mills are established, some product of Silver Creek industry will be found.

The United States MILLER

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THE PRINZ PATENT DUST COLLECTOR.

The importance both to the health of the miller, the safety of the building, and several other reasons, made it necessary that as much of the ambient dust of the mill as possible should be collected into a receptacle specially adapted to hold it. Several attempts have been made to do this within the past twenty years or so, and many patents have been issued on contrivances having this object in view, but only with partial success until the perfect machine known as the Prinz patent dust collector was introduced. The cuts on this page will give a good idea of the principles on which this machine works.

Fig. 1.

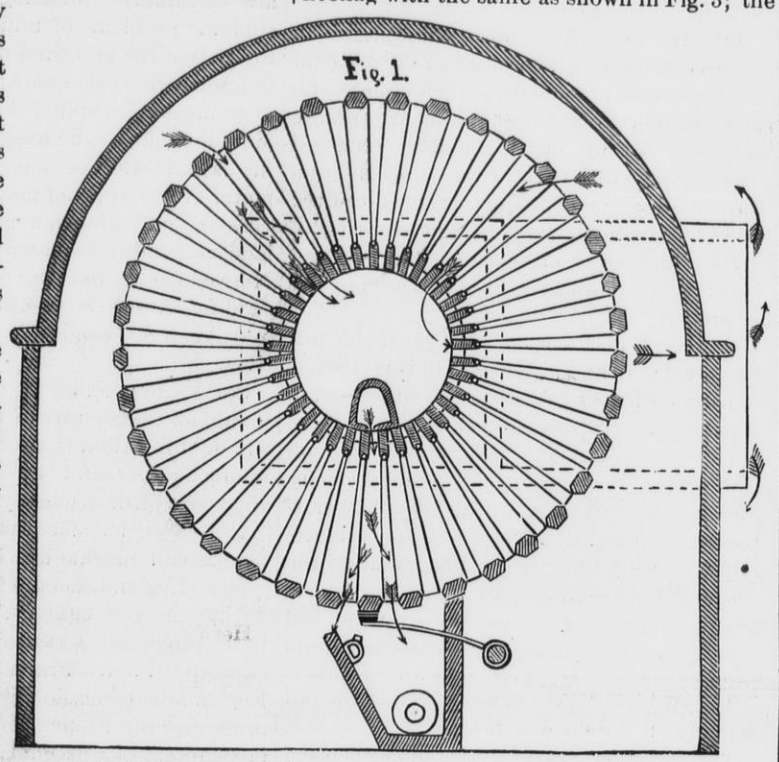


Fig. 1 shows the operation of the machine. By sucking the air through the collector it is drawn to the center of the balloon through all the sections, which are covered with woolen flannel. The dust and impurities are carried off with this air, strike the cloth, and adhere to it. As the section that is being cleaned passes under the air tube, a current of clean air is drawn into the tube, and passes down into the section on the reverse side of the cloth where the impurities are lodged, serving with the aid of the repeated knocking of the hammer to effectually clean the cloth; many small particles of the dust and chop become so firmly attached to the cloth that the mere shaking or jarring of the cloth would not remove them, but by forcing a current of air back through the cloth from the opposite side, the adhering dust will be driven loose from the cloth and dropped into conveyors underneath to be conveyed away. Figs. 2 and 3 illustrate the connection of the dust collector with any purifier, but Smith's being the one in most general use the cut of that machine is the one used in describing the working of the dust catcher. In describing the mode of operation the manufacturers say:

Remove the fan from purifier and place the dust collector in its place. The fan can then be put on the rear or front of dust collector, as most convenient to drive the same, the connection being made as shown in cut, by spout to each side of dust collector, boxes being placed there for this convenience.

When the location is such that collectors can not be placed on the top of the purifier and the connections be made as described in the foregoing, a collector with fan attachment can be used and located where most convenient to make trunk connections for one or more purifiers, as shown in Fig. 3.

In such cases the fan or fans remain on purifiers in their original position and a spout is drawn from them to the dust collector, connecting with the same as shown in Fig. 3; the fans of purifiers blowing, while the fan on dust collector is sucking the air through. It is understood that the principle of our dust collector is that of drawing through and not blowing in. However, by the above mentioned operation, the results accomplished are the same.

A great many millers find it to be a great improvement to use collectors on stones, as it prevents moisture from accumulating around the curb. It is also found convenient in rolls, and it aids bolting considerably, besides removing all the fine material that lodges around the base of the roll, and prevents any dust from escaping when the slides and covers are raised, thus aiding in the cleanliness of the mill and its freedom from dust. The removal of the dust from the grain cleaning machinery has become a desideratum, and this machine has been found a perfect success for this purpose by connecting it in a simular manner, as shown by Fig. 3. The power required to run it is very little, the fans requiring no more power than ordinary fans. The machine is one of the necessary adjuncts of the improved and advanced system of milling, and no mill can be considered fully equipped with modern machinery that is without it. Further particulars may be obtained by addressing Milwaukee Dust Collector Co., Milwaukee, Wis.

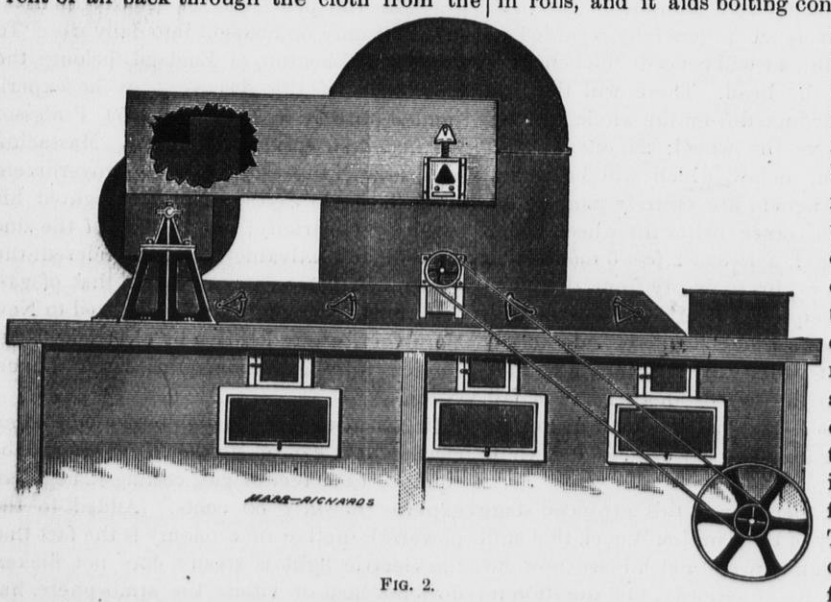
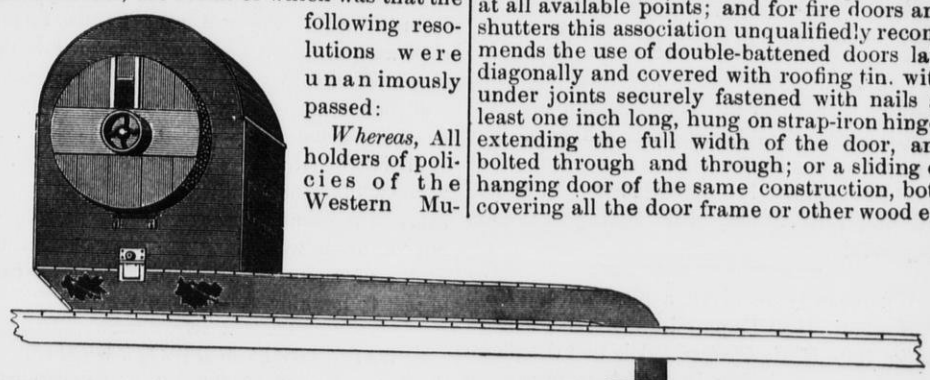


Fig. 2.

INSURANCE.

A meeting of Mutual Underwriters, at which resolutions looking to a decrease of risk on mills and factories and a proportionate decrease of premium, took place at the Grand Pacific Hotel, in Chicago, Sept. 15. The following gentlemen were present: Messrs. H. G. McPike, P. A. Montgomery, George S. Roper, C. P. Shove, Charles B. Funston, W. E. Smith, Henry A. Staats, William B. Ferguson, Charles H. Spencer, E. C. Gay, J. A. Barnes, J. F. Clann, C. E. Worthington, J. S. Dumbach, J. S. Montgomery, John Schuette, P. B. Armstrong, representing the following companies: Illinois Mutual, Alton, Ill.; Western Manufacturers' Mutual, Chicago; Mississippi Valley Manufacturers' Mutual, Rock Island, Ill.; Millers' and Manufacturers' Mutual, Minneapolis, Minn.; Manufacturers' Merchants' Mutual, Rockford, Ill.; Corn City Mutual, Toledo, O.; Van Wert Mutual, Van Wert, O.; Delaware Mutual, Delaware, O.; Capital City Mutual, Columbus, O.; Forest City Mutual, Cleveland, O.; Mutual Mill, Chicago; Millers' Mutual, Manitowoc, Wis.; Canton Mutual, Canton, O.; Mutual Fire, New York city; Commonwealth, Decatur, Ill.; Phœnix Mutual, Cincinnati, O., and Monitor Fire Association of Cincinnati.

The meeting was called to order by the chairman, and after some routine business the annual election of officers was proceeded with and resulted in the unanimous re-election of Mr. H. G. McPike of Alton, Ill., as president of the association; Mr. C. P. Shove of Minneapolis, as vice-president, and Mr. W. B. Ferguson of Rock Island, as secretary and treasurer; Messrs. P. A. Montgomery, William E. Smith and George S. Roper, were appointed to act as an executive committee. A long and important discussion took place as to the best means of preventing heavy losses by fires in mills and manufacturing establishments, the result of which was that the following resolutions were unanimously passed:



Whereas, All holders of policies of the Western Mutual Underwriters' Association are aware, without any special statement, that they are prorated on the losses of each; therefore,

Resolved, That the executive committee and secretary be and are hereby requested to correspond with the different manufacturers of mill machinery with a view to have them build fire-proof machinery; and that they are hereby authorized to give their recommendation to the manufacturers making the most fire-proof machinery of any kind, in the name of the Western Mutual Underwriters' Association.

Resolved, That from and after this date the companies members of this association will not write or renew any policy of insurance on or in any building not fully equipped with an adequate supply of pails kept filled with water for fire purposes only, in each and every room of each story of the premises insured (galvanized iron or approved paper pails preferred).

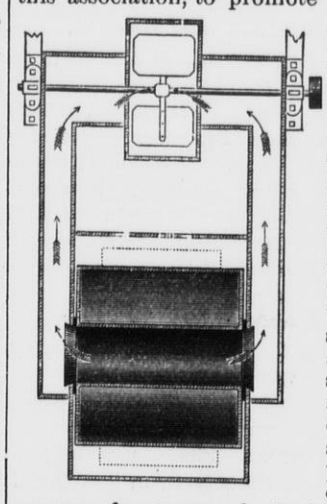
Resolved, That the companies members of this association will not write or renew any policy of insurance on or in any building using steam for heating or power in which the pipes are not fully protected where they come in contact with wood or other combustible material on passing through floors or partitions or in any drying-house or heating or veneer boxes. All drying-rooms or heating boxes should be lined with galvanized iron or roofing tin.

Resolved, That the companies members of this association will not write or renew any policy of insurance on or in any building wherein the oily waste or rags are not deposited in self-closing, fire-proof cans when not in actual use, such cans to be emptied daily. (To enforce this rule it is recommended that employes be fined for the first offense, and discharged upon a second. Construction of can: Five gallon, galvanized iron, riveted seams, lid to be closed with spring; on legs not less than three inches in length.)

Resolved, That the use of open and movable lights be strictly prohibited. A bull's-eye lantern is recommended in place of the old flaming torch.

Resolved, That the companies composing this association will not write or renew any policy of insurance on any manufacturing establishment wherein thorough and honest sweeping is not enforced daily, and all floor-sweepings and accumulated rubbish removed from the building before closing at night.

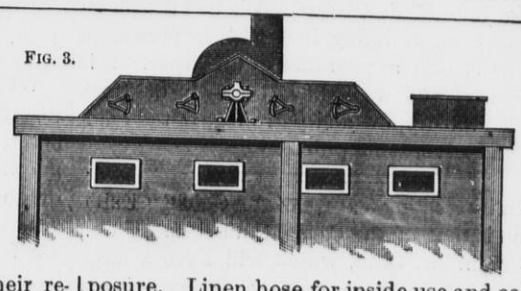
Resolved, That the companies members of this association, to promote and encourage the introduction into mills and other buildings of automatic sprinklers of approved construction and pattern, with automatic fire-alarms attached, will make the following reductions in the rate of insurance: With an adequate supply of pipes and one source of water supply, at constant pressure, 15 per cent.; with two sources of water supply, both reliable, 25 per cent.



Resolved, That the report of the inspectors of companies members of this association be reduced to writing, and in all cases a copy of such report be mailed to the respective parties insured.

Resolved, That this association recommends to owners of mills and factories the use of perforated water-pipes for outside protection at all available points; and for fire doors and shutters this association unqualifiedly recommends the use of double-battened doors laid diagonally and covered with roofing tin. with under joints securely fastened with nails at least one inch long, hung on strap-iron hinges extending the full width of the door, and bolted through and through; or a sliding or hanging door of the same construction, both covering all the door frame or other wood exposure. Linen hose for inside use and cotton rubber-lined hose for outside use, is earnestly recommended.

Fig. 3.



Resolved, That we recommend to all manufacturers using steam power that they should attach a chain to the safety-valve, passing to the outside of the building in such manner that in case of fire the valve can be opened from the outside, thus flooding the boiler-house with live steam and averting the danger of explosion.

Resolved, That the executive committee be requested to suggest to the association at its next meeting some method by which a bureau of information can be established on behalf of the companies represented, the object of the said bureau being to accumulate inspectors' reports on all desirable manufacturing property in the United States.

Resolved, That these resolutions be printed and copies sent to each policy-holder of the respective companies.

The meeting adjourned until the third Wednesday in March, 1884, when Chicago will again be the rendezvous.

It will be seen that sixteen of the mutual companies of the northwest voted to reduce the rate to mill and factory owners 25 per cent., provided that they laid in automatic sprinklers with an adequate supply of pipes and water. Another suggestion offered was that the safety-valves of engines have a chain connected with the outside of the building, so that in case of fire the boiler-room could be flooded with steam and the risk of explosion diminished. The decrease of risk is proportionate to the decrease of premium, and the association utterly refused to insure property insufficiently protected.

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ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & CO., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞ *The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

ATTENTION FLOUR MILL OWNERS.

We desire all flour-mill owners to write to us, giving us their correct address, with post-office, county and state. Please state also capacity of mill in barrels per day of 24 hours, what kind of power is used, and whether stones or rollers or both stones and rollers are used. Your compliance with above request will confer a benefit not only on us and the mill-furnishers and flour dealers, but on yourself. Address, as early as convenient,

E. HARRISON CAWKER,
Pub. of Cawker's American Flour Mill Directory,
116 & 118 Grand Ave.,
Milwaukee, Wis.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

THE Pennsylvania Millers' Association will hold their Sixth Annual Convention at Harrisburgh, Pa., Oct. 9th, 1883. Pennsylvania millers generally are earnestly invited to be present. B. F. Isenberg of Huntington, Pa., is President, and Landis Levan, Sec'y of the Association.

THE Insurance Companies have adjusted the loss by fire on the Star Mills of Milwaukee, owned by the H. Nunnemacher Co. The amount of insurance paid was $23,000. The total loss is figured at about $25,000. The mill will be put in running order again just as soon as possible.

WE recently received a pleasant call from Clifford F. Hall Esq., editor of *The Modern Miller*, (late *Grain Cleaner*). We had the pleasure of congratulating Bro. Hall in person on the handsome appearance of his paper. It is a beauty, and we believe honestly deserves the liberal support and patronage of the reading and advertising public.

An interesting feature of the Chicago Exposition is that of the Case Manufacturing Co., of Columbus, Ohio, which will have a large display of their machinery on exhibition, nearly all in operation. Their "Bismarck" four-roller mill will be in motion, and will have an elevator conveying up and constantly pouring into the feed-box a stream of middlings, so as to show the method of operating this feed, about which so much is being said. This will be an interesting feature to all visiting millers. Wm. E. Catlin & Co., the agents in Chicago, will have charge of the display.

A correspondent writing from Minneapolis, Minn., under date of Sept. 21, says:

The milling year closed August 31, and the simple statement of the product of the mills for the first eight months of the year as compared with 1882 will give a good idea of the activity in this line. Total number of barrels produced in 1883 (eight months), 2,183,157; total number of barrels produced in 1882 (eight months), 1,442,589. During the first four or five months prices of flour gave a good return to manufacturers, but since that time until the decline in wheat the business was not remunerative. The new crop year opens, however, with better prospects for manufacturers, and by the 1st of October wheat will be arriving in large quantities. All the mills have been put in perfect order for fall business. If speculation does not run the price of wheat above its legitimate value for milling a very active fall may be looked for in the milling district, and the year's product will reach 4,000,000 barrels, and may exceed that. Mill owners are in good heart and prepared for the fall run.

QUERY:

Do Farmers Have too Little or too Much Rest?

The writer of this, not long since had a conversation with a veteran and successful farmer in Waukesha county, one of the most beautiful counties in the "Badger State." "Why is it," I asked, "farmers are almost always accused of the pernicious habit of growling about the state of their affairs? I know, from experience, that this is true, and no matter how well their crops or dairy have succeeded that there is, with few exceptions, that everlasting growl."

"Well, my friend," said he, "I have often thought about that myself, and I will tell you my opinion about it. The business of the farmer in many respects is very disagreeable, while I admit, with pleasure, that there are many pleasant episodes in it. You know that when our seeding time comes in, we have got to rush. We have no time to eat, sleep or amuse ourselves in any manner, and that in itself is enough to organize a growling disposition. Then we, of course, have our world of troubles with our stock and poultry incident to the spring season, and then comes haying, berries, and if you live in the neighborhood of a town of any importance, your "garden truck" must be continually looked after. During this time you are alway nervous about the weather and the insects that may or are attacking your crops, and it is no more than natural that after looking over, for instance, your "potato patch" and sprinkling it thoroughly with poison, or yet worse, knocking the bugs off from the vines with a stick into a pail, that you will return to the house, and, to use plain words, d—n farming, anyway. Your neighbors are having the same experience as you are, and whenever you meet them it is only perfectly natural that your conversation should turn to those subjects which have most aggravated you, and if there is any subject that a man will talk about it is one that has annoyed him. Now, the greatest part of the practical farmer's work must be done in a short space of time, and during that time everybody in connection with the farm are *compelled to do without the amount of rest that Nature requires.*

"As any physician will tell you, if you disturb the natural amount of rest that a person should enjoy he must and will, without exception suffer therefrom. There is no escape from it. All these troubles affect the farmer class and too often they have little else to talk about when they meet each other, or dealers, and that is the reason, I think, why they are so often accused of being chronic growlers.

"It is true that a good farmer may have a variety of information and amusement, but there is a great proportion of them that do not "know how," and until that can be aided by the newspapers, Mr. Editor, you must not object to hearing an occasional growl."

WATER POWER AND WATER WHEELS.

[By T. C. Alcott, of Mt. Holly, N. J., Manufacturer of Water Wheels.]

When or by whom the gravity of water was first made use of for mechanical purposes, will, in all probability, ever remain unknown. But from far away in the past, until the present time, it has been the favorite servitor of man. Thousands upon thousands of our fellow beings derive a livelihood through its agency, and its effect of wealth is presented in unmistakable signs all over our land. The work of properly utilizing the power of this agent is one of great importance. From the rude wheels of the Asiatics, down the course of time for more than three thousand years, the water wheel, like all other motive machines, has been the subject of thousands of modifications. One of the most primitive structures for this purpose of which we have any knowledge was the flutter-wheel. Near akin to the flutter-wheel, we had the undershot-wheel, rather more pretentious in its fitting apron which held the water to its work, but which could not, however, prevent its too rapid escape from the blades, and was left to continue its downward course, yielding but about 35 per cent. of power.

With buckets curved with radius and inclination, for the water to strike them more favorably, and to be acted upon for a longer period, 55 per cent. was afterwards developed. Next the overshot and breast-wheel found approval,—indeed a few years ago it was difficult to find mills or factories driven with any other kind of wheels; but they are now losing ground very rapidly on account of their many objectionable features, of which we name the following:

1st. As the power of water is its weight, many persons believe that in using the overshot they utilize the full weight of the water. But it is a mistake, as will be readily seen. You lose, first, a head of water equal to half the head of the gate; second, the depth of the bucket on the wheel itself; third, the space below the wheel necessary to give a proper clearance to the discharge.

2d. Its efficiency is largely diminished by an unavoidable waste and loss of a part of the fall, by water leaving the buckets before the lowest level is reached.

3d. Another defect in the overshot appears when applying the power of the wheel to its work. Its slow motion requires a great amount of heavy and cumbrous gearing in getting up the required speed—which not only causes a great loss of power arising from so much friction, but makes it very expensive in its first cost, and attendant disadvantage of constant wear, and its liability to accident.

4th. The wheel travels in precisely the opposite direction from the current in the tail-race, and instead of its being free to pass away from the wheel at once, it is drawn under, causing the annoyance of "back-water."

5th. On account of their usually exposed position, the great liability of being loaded with ice in the winter.

6th. In most cases wood is employed in their construction; and owing to the constant alternation of wet and dry, cold and heat, sun and air, and from various other causes, are seriously thrown out of balance, rendered unfit for purposes requiring a steady and uniform motion, and consequently are short-lived and liable to many stoppages and repairs.

7th. Back-water either stops the overshot entirely or clogs it so it cannot be used to any advantage.

On the other hand, in the use of the turbine every inch of head and fall is utilized.

The turbine wheel wastes no water—all of it passing through the wheel.

The turbine having a very rapid motion (for instance, a wheel 21 inches in diameter under a 20 foot head giving over 22 horse-power, makes 259 revolutions per minute) requires very little gearing, and that of the simplest kind,—gaining the power lost by the heavy, cumbrous gearing of the overshot, and saving the heavy expense connected therewith.

The turbine wheel runs as well in the tail water, as it does above it.

The turbine is never frozen up, or affected by the frost in any way.

The turbine is never in the slightest degree affected by the "back-water," save in the loss of head and fall; which gives it a decided advantage over the overshot-wheel.

For example, with a 15½ foot overshot on a head and fall of 18 feet, it is usual to allow a head of water 2 feet above the overshot-wheel, and to prevent it from wading in the tail water it is necessary to allow a clearance of at least six inches, the wheel therefore for this fall cannot exceed 15½ feet diameter. The head above the overshot is generally regarded as wholly lost, but we will concede the benefit of one-half of the head. There will then remain to be deducted from the whole fall: 1st, one foot above the wheel; 2d, one foot for depth of rim, below which will be a line where the buckets are entirely empty; 3d, six inches clearance below the wheel, which makes together a loss of 2 feet 6 inches, and as the water begins to empty from the buckets not unfrequently nearly on a level with the shaft of the wheel, it will be safe to say that the waste from this source will be fully equivalent to the loss of another foot of fall, which makes a total loss of 3 feet 6 inches out of 18 feet, or about 20 per cent. of the whole fall.

Assuming, therefore, at this advanced stage in the history of the Turbine Wheel, that mill owners, manufacturers and all are now acknowledging its superiority, the question no longer is, "Shall I use a turbine?" but, "*Which turbine* shall I use?" Some wheel builders are claiming for their wheels 90 per cent. and over. It is absurd for them to claim more for their wheels than it is possible to attain. The power of water is fixed by the laws of gravity, and there is no machine—however effective—that can make it any greater. The whole theoretical power is represented by one hundred parts; the loss from friction of the water, from the inertia, the friction of the wheel itself, together with the loss from leakage, in practice is not less than fifteen hundredth of the whole power; this leaves us but 85 per cent. as the highest that can be expected under ordinary circumstances. It is obvious, therefore, that the proportion of effective power of the water which is brought to bear upon the wheel, depends wholly upon the correctness of its construction, together with the fine workmanship and close joints. And when we consider the variety of Turbines now offered for sale, and the pertinacity with which their several claims to superiority are urged, we fully appreciate the perplexities which beset the purchaser in attempting to select the best wheel.

INVENTIONS AND SCIENTIFIC PROGRESS.

The nineteenth century is rich in scientific research. Scientific information is widely diffused, and scientific associations are rapidly increasing. Inventors quickly turn every discovery to profit. It is only five years since the first whisper of the telephone was heard, and now it is in common use.

American inventors are far ahead of all other nations, both in the number and the value of their inventions.

One cause of this is the Patent Law of 1790, which has, without question, done much to stimulate inventions. A patent can be obtained in this country for only thirty dollars. In England, it costs from $800 to $1,000. In fact, we may reasonably look upon our patent office as a public educator—for inventors are men of thought; the mechanics of America are essentially a reading, thinking people, studying problems of utility. Is it too much to say that the great reason for the difference in intelligence between American and European mechanics is that the former is spurred on to thought by the hope of a reward which the laws of Europe have placed beyond the power of her working men to attain?

A boot and shoe manufacturer in Switzerland not only purchased his machinery in Massachusetts, but was then compelled to send for American workmen. Both Russia and Australia send to America for locomotives.

Some are looking to China as the great manufacturing centre of the future; but they will doubtless find that a nation which has remained passive for 4,000 years will lack the vigor and push necessary to invent.

It is a curious fact that only among a free people can mechanical invention make progress. England was the freest nation of any during the last century, and she made the most progress. In this century, we have far outstripped her. France, not a whit behind England in education, made no inventions until after the French revolution and the establishment of a patent law in 1791. Germany gives the world patient, painstaking scientists and philosophers; but, in spite of her fine school system, no inventors, for her government is a military one. Austrians, Russians, Spaniards, etc., are none of them inventors.

During the next fifty years the advance in mechanical inventions will doubtless far exceed that of the last fifty years. As yet, we know very little of what may be called the "energy of nature."

Probably the next important application of it will be the perfecting of the electric light, so that it may be brought into daily use. To Professor Wheaton, of England, belongs the first honor of this discovery, as he experimented with it in 1840. In 1859, Professor Farmer, then resident in Salem, Massachusetts, now in the employ of the government at the Torpedo Station, Newport, lighted his room by electricity; but the cost of the zinc used in the galvanic battery rendered the light much more expensive than that of gas.

Professor Edison has now removed to New York City, where lighting by electricity is becoming fully tested under his careful supervision.

It has already been demonstrated that an electric light can be produced which will be equal to 1,000 feet of gas, costing $2.50, at an expense of only 50 cents. Added to the powerful motive of economy is the fact that the electric light is steady, does not flicker, does not heat or vitiate the atmosphere, has no odor, can be instantly lighted without the use of matches, and is of superior brilliancy.

Not only will this light be used in the cities, but small manufacturing towns, with water power, can also be benefitted, by the simple erection of a water wheel and generator; so that Lowell, Manchester and Lawrence may yet be lighted by water from the Merrimac river.

Electricity will also doubtless provide us with elevators; thus doing away with the going up and down stairs that is so destructive to health and life in a city, and placing what is now the convenience only of hotels and large buildings, in every private house.

And this same powerful agent also holds before us in the future another bright promise. The open wood fire has given place to the close stove, dry furnace heat, or ill-regulated

steam; but we may hope in the near future to have our houses warmed by electricity; then gas, now expensive, as it can only be produced from the best quality of coal, (in fact, only 6 per cent. is used, the remaining 94 per cent. being wasted,) may be manufactured for cooking purposes out of the poorer quality, and ornamental heating fixtures may be found in parlor, bed-room and kitchen which will not fill a room with dust, nor vitiate the atmosphere, as the gas will be burned in a closed radiator, the fumes escaping up the chimney.

Baltimore, even now, produces such a fuel gas, at a cost of not more than fifty cents per thousand feet.

Science has lately turned her attention to what men call "important methods of warfare." The plates of iron gun-boats have been thickened to resist cannon balls; but they, in their turn, have received attention, and it is now conceded that no iron-clad can be built that will withstand the ball sent forth from a Krupp cannon. If a war should break out between England and America, a ship might be stationed seven miles from Boston, and yet toss her shot and shell fairly into the city.

The torpedo boat, with dynamite for ammunition, can speed through the water at the rate of half a mile in sixty seconds. What, then, is the future outlook for effectual warfare that will test the strength of nations? We may thank science and invention that they are forcing nations to settle their difficulties in some other way than by the life blood of their people.

Every German and Frenchman is compelled to spend some of the best years of his life in the army; and the cost of standing armies is an immense drain upon the finances of any nation. Europe keeps 2,000,000 men in the field at a cost of $1,000,000,000 per annum. In this respect the United States is doing well. Her population nearly equals that of any country in Europe, and her area is vastly greater; yet her army and her navy are insignificant when compared with those of other nations; thus her people are at fullest liberty to devote their energies to progress and development.

There are 55,000,000 souls in America today. Ten years hence the number will be 70,000,000. At the close of the century, 90,000,000. What will it be 100 years hence? What, 1,000 years?

The new civilization, while developing the forces of nature, recognizes as no past age has done, the truth that life is more than meat, and the body than raiment."

In no other age has man, as an intellectual and moral being, been held at so high a value as at the present time.

It is this recognition of the worth of human beings that arches all the future with hope and light, men are no longer mere food for powder, the many created to do the bidding of the few. The new civilization recognizes not only the right of every man to make the most of himself, but regards it as the duty of Society to aid him.

Amid the smoke and flame of Gettysburg, America announced to the wondering nations that henceforth we were to be, not a confederacy, but a nation, one and indivisible; that men, irrespective of lineage, race, or previous condition, through all coming time, were to have all the rights and opportunities of citizenship.

Our growth in wealth is fabulous. Our first savings bank was established in 1816. In 1830, about $6,000,000 were on deposit; In 1880 $1,000,000,000.

Contemplate our railroads, manufactories, mines and cities. We stand amazed. The world has never witnessed such a spectacle. Men start in life without a dollar, and in fifty years have millions.

But, you say, "Rich men are growing richer; the poor poorer. It is true that the rich are growing richer, but it is not true that the poor are growing poorer. The poor man keeps step with the rich in the enjoyment of our numberless improvements. His house, his dress, food, newspapers, library, lectures, etc., etc., are the great blessings of life, and he enjoys them in common with the rich man. The poor man of to-day is vastly better off than the poor man of fifty years ago.

The Irish ride to the cemetery, when one of their number dies, in coaches far more luxurious than the best at the demand of England's great queen, Elizabeth.

At the beginning of this century there was probably not a bed in the world as comfortable as may now be purchased by two days' wages of a hod-carrier. Carpenters and blacksmiths can spread their tables with luxuries which it was not possible for Queen Victoria to obtain when she ascended the throne. The fruits of all climes are to be found in our markets.

The new civilization has changed the world's estimate of men. In olden times kings and conquerers were idols; but to-day we forget kings and lords, while the names of Stephenson, Fulton and Morse awaken more enthusiasm.

The use of coal began a great revolution. One hundred years ago, Great Britain consumed 6,000,000 tons in a year; now, 140,000,000 tons. It is the energy in the 200,000,000 tons of coal used in the world every year that gives motion to the world's machinery. In 1788, Great Britain manufactured 68,000 tons of iron; in 1880, 7,000,000 tons. In 1851, Great Britain's product of steel was 61,000 tons; twenty-seven years later, 1,000,000 tons. Inconceivably vast areas of coal are still untouched. Europe has 3,500 square miles of it; Great Britain 5,400; North America 100,000 square miles. At the present rate of consumption, England will use up her coal in 1,000 years, and America will exhaust hers in some millions of years.—*Dio Lewis' Monthly.*

[Translated for the UNITED STATES MILLER, from Prof. Kick's Treatise on Milling.]

SOME RECENT CHANGES IN CENTRIFUGAL BOLTING OR SIFTING MACHINES.

Several changes have been introduced of late in centrifugal sifting machines, consisting of a new form of the wings and a peculiar arrangement of the bolting-cloth, and the combination of two and even more bolting cylinders in one machine for separating purposes.

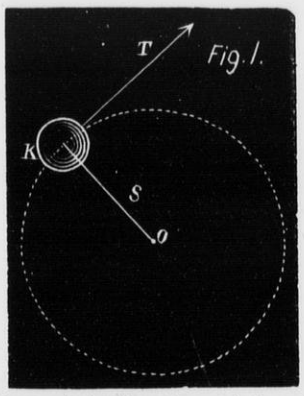

Fig. 1.

The changes in the form of the wings are supposed to cause a more radical direction of the grist particles, when thrown against the bolting cylinder, the principal difficulty with these machines being the enormous consumption of cloth, the reason of which is to be found principally in the fact that the grist is thrown against the sifting surface in a very *acute* angle.

Several German millers have, for practical reasons—the great loss of power and bolting-cloth used, taken a stand against the centrifugal bolting machines, and declared that this defect rests in their principle and is consequently incurable. The so-called improvements themselves in the shape of the wings, show clearly that the trouble really lies in the principle and consists in the throwing of the grist obliquely on the sieves.

When a body B. (Fig. 1,) attached to a string *s*, is moved in a circle, it is true that it causes a *radial* tension on the string, which is called centrifugal force; but the moment the

Fig. 2.

string is held in *o*, the body flies away in the direction of the *tangent*. The new motion can only take place in the same direction, in which the body moved at the moment when the retaining force was released. The tension of the string or the centrifugal force compels the body to move in a circle; if this force is removed, it will keep on in the direction which it had when the restraint was taken away, and that direction is *always* the tangent T at the point where the body was turned loose. Any one can easily satisfy himself of the truth of this law by observing the behavior of the stone in a sling, where the shoulder represents the point *o*.

In the centrifugal bolting machine, therefore, the grist particles fly against the sieve in the direction of a tangent to the circle described by the wings, (see Fig. 2) and this oblique direction, represented by the angle *a*, which by no alteration whatsoever of the wings can be changed to a normal direction, is the *fundamental defect* in the centrifugal bolting machines so far brought forward. No matter how variable, therefore, the form of the wings may be, they may all be passed over, since it is *physically impossible* that the defect can be remedied in this way.

Nevertheless the question arises, whether there may not be found a means by which the grist could be thrown perpendicularly against a rotating sifting-surface. Suppose a grist particle is driven against the sifting-surface in the direction *m n* (see Fig 3) with the velocity *m n*, while the sieve itself moves with the velocity *n o*, the result will be the same, as if the grist particles were flying against the sieve with the velocity *n p* in the direction *n p*. This is evident from the following reasoning, it being presumed that the

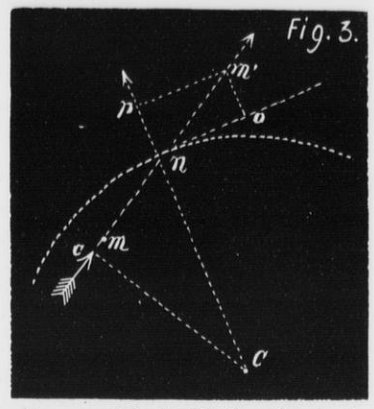

Fig. 3.

reader is acquainted with the physical axiom that velocity can be dissolved and compounded in the same manner as forces, and that consequently we may speak of parallelograms of velocity just as well as of parallelograms of forces. If the velocity $m\,n = n\,m^1$ be resolved into the velocities $n\,o$ and $n\,p$, it will be seen that the compound part $n\,o$ of the velocity contained in the grist particle produces no effect whatever, as long as n (the sieve) also moves with the velocity $n\,o$. Relatively speaking, there remains only the velocity $n\,p$, as shown above. If, therefore, there were no other factors to be taken into consideration, to which we shall soon refer, it would be an easy matter to remedy the defect of the centrifugal bolting-machine, by letting the cylindrical sieve revolve in the same direction as the wings with nearly the same velocity.

If C*c* is the radius of the circle described by the wings and C*n* of the sifting-cylinder,

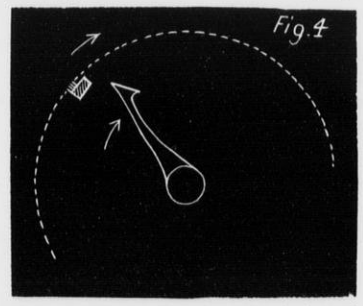
Fig. 4.

it follows, from the similarity of the triangles $n\,m^1\,o$ and $n\,c\,C$, that $n\,o : n\,m^1 = C\,c : C\,n$ or

$$n\,o = \frac{n\,m^1 \times C\,c}{C\,n}$$

by which the velocity of the sifting-cylinder is determined for the purpose of making the grist particles strike the sifting surface perpendicularly. If we employ the numerical value of the rotation and let x signify the revolutions of the wings and y the revolutions of the sifting-cylinder, we get

$$y = \left(\frac{C\,c}{C\,n}\right)^2 x$$

When $x = 200$ and $\frac{C\,c}{C\,n} = \frac{30}{32} = \frac{15}{16}$ is $y = 175$

In these calculations we assume that the air, which takes part in the circular motion exerts no perceptible retarding influence, a supposition that must come very near the truth, since the sifting-cylinder is also rapidly revolved. It may also be mentioned that the process shows the proportion $C\,c : C\,n$ to have a very marked influence on the result.

Nevertheless if a bolter were made on this principle, it would *not sift at all* in a very short time, since all the grist particles falling on the sieve without passing through immediately, would at once take part in the rotating motion of the cylinder, and, pressed against the surface of the sieve by the centrifugal force, soon clog the same by means of mutual adhesion. This principle could therefore only be brought into practical use, if the difficulty just mentioned could be removed. In all probability this might be done by arranging on the inner surface of the sifting-cylinder a brush, made not of bristles, but of softer hair, (see Fig. 4). The constructive difficulties as regards its fastening and adjustability could be easily overcome.

Before finishing this subject, we can from the equation

$$y = \left(\frac{C\,c}{C\,n}\right)^2 x$$

answer the question what proportion the radii of the wings and of the cylinder should have to each other with the usual velocity, in order to insure a perpendicular flight of the grist particles. We find that

$$\frac{C\,n}{C\,c} = \sqrt{\frac{x}{y}} = \sqrt{\frac{200}{25}} = \sqrt{8} = 2.8,$$

that is, the radius of the wings must only be a little over a third part of the cylinder radius, which would give an altogether too large open space for the grist particles to fly through.

A second alternative to make the direction of the grist particles more favorable, is found in giving up the complete cylinder form of the sieve, of which Mr. H. Seck, in Frankfort-on-the-Main; has made use, is his cylinder, latey patented.

He makes the frame of his cylinder of iron pipes, four of which are somewhat larger and provided with tacks, on which the silk-gauze is fastened and carried from there over and around the other pipes in the form of steps, along the inner surface. His arrangement makes the angle in which the grist is thrown against the sieve less acute and consequently better; but the angle remains, however, anything but favorable.

In regard to the combination of two or three centrifugal bolters into one machine, partly for the purpose of sorting the milling products, partly for the separation of the coarser particles and less wear of the gauze, we will only say that such arrangements, on account of the saving of space effected, may be suitable for small mills, but for mills of large capacity these combined machines require so much sifting surface, that they have proved to be impractical for such use.

A CAUSE OF BOILER EXPLOSIONS.

According to M. Treves, some occasionally mysterious explosions of steam boilers, when apparently in good structural and working order, may be thus explained: Supposing that work is to be suspended either for the night or for any long interval, after a stated hour, and that a boiler is commonly driven under an average pressure of 80 or 90 pounds of steam; some time before the hour of closing, the stoker lets his fire slacken, fills up the boiler, and leaves off with perhaps 50 or 60 pounds on the gauge. Next morning, or after the interval, he finds the pressure gauge standing at 20 or 30 pounds, with a good supply of water. Consequently, in order to save the heat stored in the boiler, he begins to fire up, without thinking of the danger which may lurk in the water that has been boiling all night. The stoker never thinks of putting in more water, because the gauge is all right, and thus prepares the essential preliminaries of a "mysterious" explosion.

The water that has been standing above the boiling point for hours has lost its power of ebullition, because the air which it formerly contained has long been driven off; and in this dead condition it is capable of absorbing heat without the power of delivering it up in the form of steam. The water thus becomes superheated, and at the moment of any mechanical agitation—such as the opening of the steam valve, or the introduction of fresh water—it may instantaneously flash into steam with explosive force. It has been abundantly proved that, apart from gross defects of construction, condition or management, superheating of the water has of late years been the only intelligible cause of the greater number of boiler explosions. The remedy for this danger is fortunately simple, and resides in the employment of any effective means for preventing the "sleep" of water in boilers by keeping up a constant ebullition.

A good device for this purpose is to prolong the water feed pipe by a T; the horizontal branch being about six inches above the bottom of the boiler. The under part of this tube is to be provided with open conical nipples ranged along the whole length of the pipe, which will extend from end to end of the boiler. Before firing up, the stoker should force air through the feed pipe so fitted until a pressure gauge on the pump shows a higher reading than the quiescent steam gauge. The nipples are then full of air, and ready to act as generating centers of ebullition, whereupon the fire may be pushed as briskly as desired without risk of explosion. This suggestion emanates from MM. Donny and Gernez, and is recommended by M. Treves as an economical embodiment of a universally accepted theory.

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E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, OCTOBER, 1883

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California 209; Colorado, 52: Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances, This work is indispensable to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

1884.

FLOUR MILL DIRECTORY.

We are now hard at work preparing CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY of the United States and Canada for publication and expect to have it ready for delivery on or about January 1, 1884. Flour mill owners can very materially assist us and make this work of greater value to the trade by writing to us and giving the correct name and style of their firm, with post-office address, and also the capacity of their mill in barrels per day of 24 hours, and also the kind of power used—whether water or steam. We shall spare no pains to make this directory better and more complete than any former edition. Our 1882 edition met with great praise from all who used it, and we think our 1884 edition will give still greater satisfaction. It is to the interest of every mill-owner to be correctly represented in this work. It will cost you nothing but a few moments writing and the price of a stamp, which now is only two cents. The directory is used by mill-furnishers, commission merchants, flour exporters and importers, dealers in machinery and supplies, and by millers, shipping agents, insurance agents, etc., as a work of reference. It has been found to be indispensable to the transaction of business in the trade.

Address all communications to

E. HARRISON CAWKER,
Nos. 116 & 118 Grand Ave.,
Milwaukee, Wis.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

MINNEAPOLIS Millers are troubled considerably by the insufficiency of the water supply, and for that reason, as well as others, are only running to a limited extent of their capacity. It is, we believe, only a question of time, when all Minneapolis mills will be supplied with steam engines for use when the water is low. Minneapolis mills are now reported to be running to only about one-third of their capacity.

Buffalo, N.Y., flouring mills have a daily capacity of 3,975 barrels.

DURING the month of August 38,388 immigrants arrived in the United States.

TO-DAY (Oct. 1,) there are 1,215,000 bushels of wheat in store in Milwaukee elevators.

OREGON and Washington Territory wheat to a limited extent will soon be in Milwaukee and Minneapolis markets.

THE U. S. Agricultural department places the corn crop of the United States for 1883 *already safe* at 1,500,000,000 bushels.

THE Canada wheat crop for 1883 is reported very light and Canadian millers are trying to get the import duty on wheat reduced.

CHICAGO and Milwaukee have already received 5,279,333 bushels of wheat of 1883 crop, against 6,590,000 bushels, up to Oct. 1, 1882.

Charles Rugel, the Parisian statistician says that, taking one year with another, France and England require all the surplus wheat of the United States and Russia.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

MINNEAPOLIS *exported* 1,750,750 barrels of flour during the year ending August 31, 1883, the total flour shipments from Minneapolis, during that time are reported to be 4,089,908 barrels.

THE Knickerbocker Manufacturing Co., of Jackson, Mich., are reported to be hurrying on the completion of their mill-furnishing establishment at Jackson, Mich., as rapidly as possible.

THE firm of Holcomb & Heine of Silver Creek, N. Y., extensive manufacturers of centrifugal reels and bolting cloth, has been dissolved by mutual consent. August Heine will continue the business, which is a large and prosperous one.

WE acknowledge the receipt of "*The Paper Mill Directory of the World*," by Clark, Bryan & Co., Holyoke, Mass. It contains the names and addresses, with capacity, of 4,463 paper mills in the world. It is valuable to all dealers in paper and manufacturers of machinery used in paper mills.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

WE acknowledge with pleasure the receipt from the John T. Noye Manufacturing Co., of Buffalo, N. Y., of one of the handsomest and most appropriate paper-weights that it was ever our fortune to own. It is a nickel-plated little model roller-mill, showing to perfection the Stevens' corrugation. It bears the inscription in handsome letters: "Stevens roller mills, manufactured only by the John T. Noye Manufacturing Co., Buffalo, N. Y." We tender our most sincere thanks to the Company for this nandsome little souvenir.

NOTHING of importance has yet been developed in the matter of the Buchholz roller-mill patents, which claim to be "bed-rock" patents. Mr. Buchholz is a very pleasant gentleman, and doubtless a clever inventor, and if he had presented his claims some years sooner he might, perhaps, have shown a good case, but then a few years ago, when his patents may have been valid in this country, there were few or no roller-mills in America. We have heard indirectly that Mr. Buchholz has again sailed for Europe, but cannot vouch for the truth of the rumor.

THE Milwaukee Exposition is drawing immense throngs of visitors from all sections of the North-west, and all express themselves pleased with the magnificent building and the endless display of goods of all descriptions, machinery of many kinds in operation, the museum of curiosities and the gallery of rare paintings and engravings. It requires at least two days to *see* the Exposition. Aside from all display the managers provide the choicest music from the "big organ" and from the best brass bands that can be obtained. The N. Y. Seventh Regiment Band is now performing every afternoon and evening to delighted audiences. Every man, woman and child in the Northwest should visit the Exposition.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

THE Minneapolis Millers' Association and the railroads running into Minneapolis are having a little fight. The millers demand lower rates for the transit of wheat from south and south-west points. The railroads refuse to comply with the demands of the millers. The Association of millers threaten that they will not send out money to buy wheat on the lines of road refusing to accept their terms, and the railroads in turn threaten to buy up the wheat and ship it to Milwaukee and Chicago. So the matter stands at present.

THE Secretary of the Illinois State Board of Agriculture reports concerning the crops of Illinois as follows:

The wheat crop of 1883, of 20,347,592 bushels, is the smallest on record during the past twenty-four seasons. The average yield of ten bushels per acre is less than that of any year on record, with the exception of 1876 and 1881. The price of wheat in first hands of 95 cents per bushel immediately after harvest, has not been higher than this season but twice in ten years—1877, $1 15, 1881, $1 07 per bushel. The value of the late crop of wheat, of $19.337,063, is less than that of any year since 1881. The loss on the 1883 wheat crop, after deducting use of land, cost of production, etc., is $3,358,749. The spring wheat crop amounts to 615,190 bushels, the winter wheat crop, 19,732,402, a total of 20,347,592.

WE have received a handsome copy of *Trade, Commerce and Industries of Chicago*, by John E. Land, Esq., of No. 76, Fifth Avenue, Chicago, Ill. Mr. Land has been for many years engaged in publishing the commercial histories of various cities in the United States, among which, we remember those of Milwaukee, Minneapolis, St. Paul, Peoria, Pittsburgh, etc. The plan of the work is to give a general history of the city, with handsome illustrations, and then the author points out the peculiar advantages of the place for business purposes. This is followed up by graphic, illustrated descriptions of the leading business houses. The Chicago work is very large and handsome, and shows the result of an immense amount of careful labor.

A Rochester, N. Y. correspondent writes as follows:

The milling interests in Rochester complain of the condition of the trade and margins this year as compared with the season of 1882. The latter was very satisfactory, the main reason given being that while the wheat crop of 1882 in New York State was exceptionally fine, both in quality and quantity, so much so in fact, that it commanded a premium of from 12 to 15c. a bushel over western wheat, millers were obliged, in order to find a market for their product, to sell at the same figures demanded for western flour, and consequently with little or no margin and to their loss. This year's wheat crop in New York State is not only very poor in quality, but only about half as large as last year's which will necessitate the use of western wheat largely by Rochester millers, yet still giving them a fair chance in competition with western manufacturers in eastern markets. The combined capacity of the Rochester mills is 3,100 barrels daily, and at present they are being run at only about two-thirds their actual capacity.

CONSUL Henry Sterne, at Buda-Pesth, Austria, in noticing the fact that the export of flour from the United States is year by year assuming larger proportions, properly inferred that the milling interests in the United States would be interested to know that the production of the Hungarian millers last year was the largest on record, that the mills there all paid good dividends, and that the outlook June 14, (date of Mr. Sterne's report,) was that 1883 would also prove a profitable year.

The following is a statistical report by the Chamber of Commerce on the quantity of flour produced by the eleven mills of Buda-Pesth during the years indicated:

	Cwt.		Cwt.
1870	5,000,000	1874	4 500,000
1871	5,700,000	1880	6,270,000
1872	4.000,000	1881	6,800,000
1873	4,850,000	1882	8,000,000

The years from 1874-80 are not reported, but the product in said years is said to have gradually increased again.

These mills consumed 13,700,000, 15,230,000, and 17,700,000 bushels of various kinds of grain during the years 1880, 1881 and 1882 respectively. There are other large mills scattered over the State, but those of Buda-Pesth are mentioned because they are more exclusively working for the export trade, and are, therefore, of more direct importance to competitors in the United States. The Austrian milling industry is specially favored by the State in the matter of transportation charges. Nearly all the flour exported goes out of the country by way of Fiume, at the head of the Adriatic. It is added that about 25 per cent. of the total product is exported. England takes the largest share, and of the finer grades, after which, in the order named, Hungary's customers for flour are France, Germany, Switzerland, Belgium, Holland and Brazil.

FLOUR MILL OWNERS—Please send us your address, with capacity of your mill in barrels per day of 24 hours, and also state whether you use steam or water-power, or both.

DIRT BY THE BUSHEL.

We watched the unloading of a boat-load of wheat not long since, at a mill by the Erie canal. The huge elevator leg was let down into the hold of the boat, and the great mill began to suck up the cargo at a tremendous speed. We could not help thinking of the way a spider sucks the life of a victim, and we almost looked for the boat to shrink into a shapeles lump, as the huge bulk of wheat was rapidly transferred to the bins of the mill.

But ere long we were fairly driven from our point of observation at the hatchway by the blinding, suffocating clouds of dust that rose from the depths of the hold. And as we examined the wheat we began to wonder who had been paying for the transportation of all that dirt. Of course a thorough cleaning of the wheat would reduce the bulk of the cargo, and that too, quite materially. Some one must pay for the carrying of all this dirt—pay for it by the bushel. And the grain shovelers, down in the hold could add their voices to ours in objecting to this uneconomical way of shipping wheat. Their pulmonary complaints are increased by every load of grain they assist in discharging. So that health and economy would dictate a different course from that now pursued in the shipment of wheat to the mill.—*Roller Mill.*

LITTELL'S LIVING AGE.—The numbers of the *Living Age* for September 15 and 22, contain France and England in Egypt, and France in Syria, *Fortnightly;* The Locust War in Cyprus, *Nineteenth Century;* Across the Plains, *Longman's;* King Mtesa and the Belka Arabs, *Blackwood;* Two Turkish Islands To-day, *Macmillan;* Moruca, or a Few Days among the Indians, *Month;* Earth Pulsations and Winter Life at Fort Rae, *Nature;* Unclaimed Money and the Southampton Artesian Well, *Chamber's Journal;* The Pathetic Element in Literature, The Closing of the Scottish Highlands, and a Summer Day's Journey. *Spectator;* with "Master Tommy's Experiment" "Town Mouse and Country Mouse," and installments of "Along the Silver Streak," and poetry.

For fifty-two numbers of 64 large pages each, (or more than 3,300 pages a year) the subscription price ($8) is low; while for $10.50 the publishers offer to send any one of the American $4 monthlies or weeklies with *The Living Age* for a year, both post-paid. Littell & Co., Boston, are the publishers.

PER CAPITA CONSUMPTION OF WHEAT.

The increased consumption of wheat per capita, both in Europe and America of late years, is a well established fact. In the former, even in those districts where rye is mostly used, there has been a notable increase in the use of wheaten bread, as the relative price of the three principal classes of foods, meat, bread and vegetables, are about the same in both countries. This fact shows that wheaten bread, with its nutritious value, is the most economical article of diet in general use. In the Southern states, among the colored people, the consumption of corn has been of late largely displaced by the use of wheat. The per capita consumption of wheat in the United States has been recently estimated at four bushels per annum. The *New York Produce Reporter* considers this to be considerable below the real amount, and presents carefully collected statistics to prove the statement. Taking the estimate of the Agricultural Department of the average wheat acreage during the five years from 1877 to 1881 inclusive, and allow 1½ bushel per acre for seed, which is ⅛ of a bushel larger than the estimate of the Department, and adding the average annual exports of the five years ending June 30, 1882, subtracting from this sum the average annual imports, there remains 197,722,811 bushels as the average annual absorption of our crop in seed and net exports, leaving an annual average consumption of 294,658,990 bushels. On the basis of the average population, as taken from the census of 1870 compared with that of 1880, which is 48,737,499, the annual average quantity of wheat retained for consumption is found to be 4.61 bushels for each inhabitant, or with the Department's estimate for seed, it would be 4.70 bushels. As the reserves at the close of the above period were probably less than at any corresponding date for the past twenty years, the writer concludes that five bushels per capita is propably nearer the true amount of the wheat consumption. —*American Miller.*

THE SAVANNA FLOURING MILLS.

CAPT. JERRY WOOD, Prop.

In the manufacture of no one article has there been such a complete revolution in the past ten years, as in the manufacture of wheat flour. The use of the pick in the dressing of stones for the manufacture of wheat flour, has been entirely done away, and a mode of manufacture adopted that proves to be far more satisfactory to the owners of mills and to the consumers of their products. The making of flour by what is known as the "Roller Process," is a decided improvement, and the the "mill-stones" in use for these many years, are rapidly being displaced and will soon be referred to, only as we speak of the manner of the manufacture of articles in the "past ages."

The Savanna Mill is situated on Plum River about one and a half miles from the post-office, and the site is of the most natural and best for a water-power mill to be found in any portion of the Northwest. There is an abundant supply of water at all seasons of the year, and every natural facility is afforded for carrying on the business with profit to the proprietor. For some years the flour manufactured at the Savanna Mill has been considered the equal of any flour to be found in the home market. Capt. Wood, the proprietor, is one of those far-seeing, practical business men, who is at all times determined to keep abreast of the times in any department of business under his management. As soon as it was established that a process for the manufacture of flour had been discovered that is superior to the process that was used in his mill, he determined to have it, and thereby give to his patrons the benefits of the advantages of purchasing an article of flour of home manufacture that is the equal of the best made at any place in the whole country. He at once made a thorough investigation of the different manufactories, of the machinery necessary to the 'new process,' and decided that Edward P. Allis & Co., of Milwaukee, Wis., are the most trustworthy and competent men engaged in the business. In the month of May he closed a contract with them, and a complete revolution of his mill was commenced. Not a dollar of expense has been spared in making the Savanna Mill second to no mill in the State. The most competent workmen have been employed and everything done to make a superior mill. The instruction of Capt. Wood to the agents of Messrs. Edward P. Allis & Co., to our personal knowledge, was to spend the last dollar necessary to make the Savanna Mill the best that could be made. The expenes of making the change was $10,000, and after having looked through the mill, from the basement to the fourth story, we are gratified to state that in our opinion, those in charge of the revolution faithfully carried out the instructions of the proprietor.

It is a pleasant thing, indeed, to see perfect working of the machinery. Surely it can be said that everything works to a charm.

We were shown through the mill by Mr. J. E. Watson, agent of E. P. Allis & Co., who is a practical miller of twenty-three years experience, and who very kindly detailed every step in the process of making flour by the "roller method." We have reason for thinking that Mr. Watson thoroughly understands his business and is a trustworthy and reliable man. Without solicitation he said to us that Capt. Wood has the most complete and perfect mill of its capacity, to be found in the State. He has a large acquaintance with the mills of the State and said that he was well advised of what he was saying. There are five reductions on wheat, and seven on middlings. Mr. Watson assures us that if Capt. Wood cannot manufacture a superior article of flour, that it will prove futile for any one to try.

Jerry Greve and John Crawford, Capt. Wood's millers, are men of long and faithful experience, and are well skilled in the business. They are delighted with the perfect running machinery and are confident that the flour of the Savanna Mill will stand the test of the most fastidious inspector.

The capacity of the mill is sixty barrels per day, when worked with ordinary speed.

In closing, we are pleased to state that no man has proven his confidence in the future prosperity of the town of Savanna, more fully than has Capt. Jerry Wood. Fortunately for the town, he has money and is not afraid to invest it.

He shows in the most practical way possible, that he is interested in building up the permanent institutions of the town. We would that others who have means and are only willing to invest in a bond and mortgage, were possessed of a portion of the enterprising spirit of the proprietor of the Savanna Mill. There are other manufactories that would thrive in this vicinity if only those having the means would be willing to invest it. Let us hope that it will be done in time. —*Savanna (Ill.) Times, September* 14, 1883.

ELEVATOR CAPACITY TRIBUTARY TO MINNEAPOLIS.

The larger proportion of the elevators along the St. Paul, Minneapolis & Manitoba, and the Northern Pacific Railroads are owned and controlled by the millers of Minneapolis, Minn. The following are the names of the elevator companies, and the aggregate capacity of their elevators, from which mainly that city obtains its supplies of wheat, as stated by the *Pioneer Press:* The Geo. W. Van Deusen Co. have 70 elevators with a capacity of 1,750,000 bushels. The largest at Minneapolis has a capacity of 300,000; the next in size at Winona with 200,000, and the third at Rochester with a capacity of 100,000 bushels. All are in Minnesota except two, which are in Dakota. The Northwestern Elevator Co. has 18 elevators with a total capacity of 1,450,000 bushels. Hodges & Hyde have 38 elevators, aggregating a capacity of 575,000 bushels. The Pillsbury & Hulbert Elevator Co. have 62 elevators with an aggregate capacity of 3,064,000 bushels. The two largest are at Fargo and Three Points, on Moorhead Northern, with a capacity of 120,000 bushels each. W. W. Cargill & Bros., have 36 elevators with a total capacity of 610,000 bushels. The Minnesota & Dakota Elevator Co. have 23 houses located on the St. P., M. & M. Railroad, with an aggregate capacity of 1,035,000 bushels. The Northern Pacific Elevator Co., has 45 elevators with a total capacity of 2,009,000 bushels. The two largest are at Fargo and Mapleton, Dak., with a capacity respectively of 150,000 and 100,000 bushels. Kellogg, Lange & Miller have 24 elevators with a total capacity of 921,000 bushels. The two largest are at Sioux River Valley and Elevator "C," at Minneapolis, with capacity of 150,000 bushels each. F. H. Peavey & Co. have over 50 elevators, and seven new houses going up in Dakota, with an aggregate capacity of 911,000 bushels. Meader & Co. have 10 elevators, on the Pacific division of M. & St. L. Road, owned and operated by several parties, aggregating a capacity of 310,000 bushels. The Minnetonka Mill Co. have 6 elevators with a total capacity of 97,500 bushels. The St. Paul elevators are "A" and "B" with a capacity respectively of 500,000 and 1,000,000 bushels. The Milwaukee elevator is not in use. The Minneapolls elevators, not included in the above, are "A," "B," Pillsbury, Lowry, and the Mills, with an aggregate capacity of 3,095,000 bushels. The largest, elevator "B," has a capacity of 900,000 and the next in size, elevator "A," of 750,000 bushels. Under the head of Sundry Firms, and all other elevators, is aggregated a capacity of 3,740,000 bushels. The grand total elevator capacity is 20,394,500 bushels.—*American Elevator.*

PERPETUAL MOTION.

The Professor in the Machine Shop.

As I stated in the last issue, Bill was so disappointed to see the machine stop when he thought that he had it perfected at last, that he was about to smash it with a heavy sledge; but just as he was going to strike I stopped him. I did it from the instinct of a machinist. I could not bear to see all that fine work smashed up. The mere fact of its being worthless in itself had nothing to do with it. Somehow a mechanic winces when the work of his hands or of others is deliberately broken up before him, and I stayed Bill's hand, with some indefinite idea that perhaps a part of the machine might be good for something; a nonsensical notion enough; but impulse is not reason.

So soon as the fit passed away from Bill, he went and seated himself in a corner and leaned his head against the wall in silence. I let him alone and said nothing, for, to tell the truth, I did not know what to say. If I consoled him, it might encourage him to go on with his efforts, when I came there with the intention of discouraging him.

"When in doubt, do nothing," is a good motto, and I followed it. In a little while he got up and came over to the machine.

"Something must have got foul somewhere," said he, "for if it will run three days it will run thirty years. Take a look at her, Moulton, and see if you can find anything wrong."

"Bill," said I, "you must excuse me. I don't know anything about it, what your principle is, or where the machine begins or ends. I'd do more harm than good."

But before I had done speaking Bill had the lamp in his hand and was peering in among the gears and the toggle-joints, and the lazy-tongs, and every sort of mechanical movement that was ever heard of. He reached in his hand, drew his finger over the teeth of the escapement, and looked at it.

"She's dry as a bone," said Bill. "No wonder she stopped. Those pallets are hardened steel, and they ought to be made of something harder. I'll send to New York, and get some irridium, the metal they point gold pens with, and try that to-morrow. Once I get that all right she will run then, and no mistake. I ain't going to give her up now when I have got as far as this."

"Bill," said I, "are you going to work on this machine any longer?".

"Didn't you hear what I said?" he answered. "Of course I am."

"Well, now, let me tell you something," said I. "Suppose your escapement is dry; don't you see that a machine which weighs a ton, and which is supposed to have power within itself to drive itself, must be pretty nearly balanced as regards running or stopping when a little thing like that can defeat it? You are too good of a mechanic not to see that, Bill."

He thought for a moment, and said slowly: "I don't know but you are right."

"And no matter what rigs you get up," said I, continuing, "you come out at the same place you started in at."

"What's that?" said he.

"Why, your machine stands still," said I. "You may annihilate friction—almost—and balance your moving parts until a breath will start or stop them; but, Bill, the more you put in, the worse you are off. Every piece you put on that machine since you began it was a mistake; for the matter of that, the whole of it is, and I want you to promise me one thing right now—that you will drop this job at once and never do another stroke on it."

He sat moody and silent, his legs stretched out in front of him, his chin sunk on his breast, and his eyes gleaming underneath his shaggy brows. I continued to exhort him, laying down the law, explaining why the machine could not work, and endeavoring by all the arguments I could summon to break up his infatuation, and I thought I had succeeded, until he broke in by saying:

"Moulton, I'll make that machine work. I can't give it up now. I have been at it too long, and I never shall hear the last of it if I stop. I'll be 'Perpetual Motion Bill' as long as I live."—*Mechanical Engineer, for September.*

CHEATING IN GRAIN SHIPPING.

[From the Kansas City Journal.]

"The wheat pluggers are about as plenty as the men who get the best fruit on the top of the half bushel, the good eggs in the top of the box, the best hay on the outside of the load, and so on. You see, we send millions of dollars every year to convert the heathen in foreign lands, while the heathen at home are cheating their neighbors out of their boots. The word plug has reference to a way dishonest countrymen have of cheating grain shippers. They load the bottom of the car with chaff or bran or low grade grain, and put good grain on top of it, and, as it is sold by sample, when it reaches its destination, and the receiver discovers the cheat, the shipper has to make good the loss.

"Is there much of this plugging done?"

"It is still very common, but not near so much as it used to be. There is never a man sharp enough to invent a trick but there is another sharp enough to detect it. We 'drop onto' all their little games. And there are hundreds of country shippers who can't even now imagine how we inspectors see the bottom of a car without unloading it."

"Well, it is somewhat mysterious—how do you manage it?"

"You see this," said he, taking a charm from his watch chain, "this is the instrument in miniature that we use. By forcing this down through a car of grain and then drawing out the piston we have a vacuum into which, through holes in the sides, the grain falls. This gives us a sample of the grain in every inch of the car to the bottom."

"And yet there are people who will put bad grain on the bottom?"

"Yes, but the complaint is growing less. You see our orders are, when we discover a plugged car to give it the lowest grade on our scale. That sickens them. Some time ago a man sent a car of grain in here with orders to ship it to St. Louis if it didn't grade so and so here. Upon inspection I found perhaps two wagon loads of damaged wheat spread over the car about a foot from the top, so it was sent to St. Louis. The inspector passed it. A short time after I heard from the shipper. He said it was loaded just as I said it was, but he thought he would run the risk of its passing here or St. Louis."

"What are some of the other plans used to deceive the alert inspector?"

"Well, they will put damaged grain all around the edges, for instance, and put little layers here and there through the car. There is a chance of distributing a wagon load of bad wheat through a car so that the inspector misses it, and, like the men above, they run the risk."

"What is the best trick in your opinion you ever discovered?"

"About the cutest thing I ever seen, I believe, was this: Eastern shippers would fill sacks with bad wheat and distribute them about a car, standing them on the mouth of the sack and fill up the car. When they got the sacks covered they would then pull them out, leaving the bad wheat standing in a column just the size of the sacks, you know, and an inspector might probe all day with his gauge without touching one of those pillars."

"Do you hope to break up the practice in time?"

"We can hardly hope to do that altogether, but we can keep the evil at its minimum, which is about what we are now doing."

CHAFF.

"Why, Sammy," said a father to his little son, "I didn't know your teacher whipped you." "I guess if you'd been in my trowsers you'd know'd it," replied Sammy.

"Why," asked a Sunday school teacher of a little boy, "did Jacob marry the two daughters of Labana?" "I dunno, except perhaps he was satisfied with one mother-in-law."

A little girl, a few days since, addressing her sister asked, "What was the chaos, pa was reading about to-day?" To which the latter replied, "'Twas a great pile of nothing, and no place to put it in."

A little man, caught in the belting and whirled around at the rate of a mile in about two minutes, was rescued uninjured. When asked if he wasn't dreadfully frightened, he answered: "I thought my wife had caught me and was running me out by the back of the neck."

STEAM BOILER COVERING AN ELEMENT OF DANGER.

Speaking of the Riverdale disaster, the first engineer of a large and popular river steamboat that carries thousands of passengers during the summer season, recently expressed himself forcibly, not only against the custom of setting boilers so low in a boat, and otherwise so circumscribed, that they cannot be come at for examination, but as well against covering boilers according to present practice, so that the shell, and generally the larger part of the leg, cannot be seen. He emphasized his strictures on the latter practice by relating his own experience that morning—an experience not calculated to be particularly reassuring. In looking over his boilers he saw evidence of a leak in the presence of a small quantity of salt on the covering, and, digging through the felting and following up the "lead" for some distance, he came to a body of salt covering several inches of the shell to a considerable depth. Removing this, he thrust his knife through the iron. In cutting away for a patch the thin, or corroded, area was found tolerably well defined, ending almost abruptly in iron of substantially the original thickness. His argument is that without the covering a slight leak will be at once detected, and remedied before any particular harm is done; but that with the covering it is generally impossible to detect it for some time, and that when it does show itself outside the covering it is often found that the iron is eaten away for quite a distance around the leak, frequently so as to leave the boiler in a dangerous condition. This is the opinion (not the theory) of an observing engineer of many years' experience in steamboating, and carries weight accordingly. Stay-bolts may break, as the engineer referred to justly remarks, and a knowledge of the fact be entirely beyond the observation of the engineer for weeks. With a small lead, especially in a part of a boiler where circulation is sluggish, and in a boiler where more or less salt water is used, salt will deposit around it very rapidly, and the iron is likely to be soon dangerously corroded. If the boilers of steamboats can be satisfactorily covered so that the sections can be readily removed for inspection of every part, then the saving of fuel effected by that means is an important consideration; but if the covering is an element of danger—even a very small one—it should not be permitted. —*American Machinist.*

WHAT THE GEO. T. SMITH MIDDLINGS PURIFIER CO. ARE DOING IN CANADA.

Within a short time the busy hum of machinery will again be heard in the Thomson & Williams Manufacturing Co's works. The Smith Purifier Co., to which we alluded last week as having purchased the premises, have taken possession, and a force of men is now at work cleaning up the place and overhauling the machinery. In a week or two the whistle will sound again, and the manufacture of improved milling machinery be commenced on an extensive scale. The company, as we mentioned before, own the patents under which the Geo. T. Smith Middlings Purifier is manufactured, besides other valuable inventions for making flour under the systems now in vogue. Grinding flour by the old buhr stones may now be considered a thing of the past, the new style of crushing the grain between rollers having proved much more economical and expeditious. It may be taken for granted that no more mills using stones will be built, and that many of those now in operation on that principle will be converted as speedily as possible. The machinery made by the Smith Purifier Co., being essential to the making of flour under the new process, it is easy to see that the milling interests of the entire Dominion will be tributary to the Stratford Co., and the establishment of a large and profitable business here will be but a question of a very short time. The company possess large practical experience, having controlled the business in the United States for a number of years, and as they have abundant capital they will leave nothing undone to extend their operations to the utmost possible limits. It is their intention at first, we understand, to confine themselves to the special machinery controlled by them, viz: The Smith Purifiers, Centrifugal Reels, and Dusters, but it is altogether probable that they will soon put themselves in a position to turn out everything required for mill outfits. The shops being supplied with patterns and machinery for making the Brown Automatic Cut-Off Engines, which were a specialty of the old company, and also all the patterns of the various machines manufactured by them, the building of these will probably be continued. The force to be employed will be from 50 to 100 men at first, and as far as possible the employes of the old shops will retain their positions. The gentlemen representing the company here have already impressed the people of Stratford with their thorough-going way of doing business, and we have no doubt will soon give a new impetus to the town.

The amount asked from the ratepayers as a bonus to the undertaking is comparatively trifling, and is not actually a bonus to the individuals forming the company, but, as we explained last week, merely to assist in buying out the Toronto concern—this company paying what they considered full value, aside from the assistance received from Stratford. We anticipate no serious opposition to the by-law, which is to be voted on on Monday, the 24th inst. The by-law will be found in our advertising columns, and it will be seen that the town is amply secured against possible loss. The company are not bonus hunters, but men of wealth with a monopoly of a profitable business, and it rarely happens that so desirable an opportunity is offered to any community. The amount contributed by each ratepayer will be insignificant, and the bonus will nearly be repaid by the company in the way of taxes.—*The Stratford Beacon (Ontario.)*

A MAGNETIC ADDRESS.

S. S. Cox delivered the annual address before the Asbury (Ind.) University. In it he gave a graphic picture of the working of the new magnetic elements of our time. He said: "The electric monograph transmits messages in the original handwriting. The hektograph multiplies your epistles; the telephone enables people to make contracts through an orifice; but as there is no witness, photography comes in and records the shadow of the sound by curves in vowels and consonants! Electricity is an element elusive and subtile, yet it is stored in a box and imprisoned in a metal to be used at pleasure, for portraiture, sound, light or power. I have seen an organ in Berlin played with electricity, but this is simple compared with other experiments. Is it not a marvel that we can telegraph from a moving railroad car or the speeding steamship? A California photographer obtains six photographs in one leap of a clown in six different positions. He catches a horse on the gallop, a rabbit on the run, and a bird on the wing. By means of a wire a circular saw or a locomotive may be—nay, has been—run miles distant from its source of force. Electricity is born of the sun. It may be converted back to its source, so that when one talks by telephone he may see his distant colloquist. It is shrewdly believed that nerve power depends for increased strength on light. The vast current of liquid force which we call electricity is condensed in boxes like dessicated meats, or spread over continents to convey intelligence. Man can never overdraw from this last bankruptless depository of nature. Is it in vegetation? The electric light gives no interval of repose for the growth of fruit, leaf and flower. No sleep for berry or plant between eve and dawn."

AN INDEPENDENCE DINNER.

Capt. Frank P. Lawrence sends us, from Fergus Falls, Minn., the following menu card, which the Silver Moon Hotel, there, used for its Fourth of July dinner. From the underlining of some of the courses, we are led to infer that he especially relished the boiled and the desert:

COMPLIMENTARY DINNER TO THE DEAR BOARDERS,

4TH OF JU-NEW-YEARS, 1883.

BILL OF CYCLONES.

SOUP.

Cork. Sponge. Ox Ears.

FISH.

Fergus Falls Suckers. Speckled Hair Pins.

BOILED.

Old Maid's Lips. Vinegar Sauce.
Mother-in-law Tongue. Son-in-law Dressing.
Bicycles. Park Region Style.

COLD.

Boiled Ice. Fried Icebergs. Stewed Ice.
Ice Wagons, Wheeler's Patent.

ROAST.

Spring Chickens, 30 years Old.
Toothpicks, larded.
Tree Toads, Stuffed with Mice.

ENTREES.

Frogs Brains, Silver Moon Style.
Sawbridge's Locals, Stuffed.
Crushed Molasses on Strawberry, C. O. D. Style.
Elephants on Toast.
Square Dealing Suspenders, a la 26.

GAME.

Picket's Bear, Stuffed with Bismarck Mud.
Golden Eagle on Toast.
Canary Bird, 10 Cents a Cut.
Euchre. Faro. Old Sledge. Hazard.

VEGETABLES.

Tight Boot Corn. Land League Fruit.
Dead Beats.

PASTRY.

Custard Pie Cut Bias. Left Handed Pie.
Leather Pie, with Buckles.
Sawdust Pudding, Pine Sauce.
Oatmeal Pudding, with Horse Radish.

DESERT.

Nigger Kisses. Dough Nuts. Pea Nuts.
Hash. Snow Balls.

LIQUORS.

Rain Water. Boiled Oil. River Water.
Hair Oil. Kerosene. Pump Water.
Magnolia Water. Gasoline. Mucilage.

NEW WHEATS.

Farmers are all anxiously looking for a good white wheat to take the place of the Clawson, which has greatly deteriorated during the past three years. Any new varieties, therefore, that promise well, are eagerly looked for. Among the new white varieties offered this season is one called the Landreth, which is being sent out by Landreth & Sons, of Philadelphia. It is described as a bald wheat, with light yellow straw, heads from four to six inches long, very hardy, and the most productive of several varieties with which it was grown. Among these were the Clawson, Fultz, Mediterranean, Velvet Chaff and Champion Amber. The weight per measured bushel was 62 lbs., and it produced at the rate of 31½ bushels per acre. Parties in Kentucky, Tennessee, Pennsylvania and Maryland, who have grown it this season, speak highly of it as a productive, hardy wheat, of excellent flouring qualities, and likely to be much grown where it has been tested. Mr. Wm. L. Eastman, of Seneca County, N. Y., says:

"I have this year grown the New White Wheat named 'Landreth,' and find it superior to any variety I have ever raised. My experience with the Clawson and other late and popular varieties has been quite extensive, having furnished the United States Agricultural Department with wheat for distribution for several years. I have this year grown the Landreth and Clawson side by side with equal chances, and find the Landreth superior. It has been entirely free from rust while other varieties have not; it has a large, smooth head, stiff white straw, and is a large producer, having yielded forty-one bushels per acre."

Another new variety is called the Martin Amber. It originated in Pennsylvania, and was first brought to notice in 1878. It is described as a bald wheat, the grain a bright amber, chaff white, heads long and well filled, straw of medium length, and very clean and bright. As to its productiveness, a number of farmers throughout Pennsylvania state that in their opinion it is the coming wheat and the most productive they have ever grown. Mr. A. W. Cheever, editor of the *New England Farmer*, has grown it on his farm, and says of it:

"As compared with our old variety, the Clawson, which has thus far given us better satisfaction than any other variety we have experimented with, the Martin Amber is far in advance in the weight of straw, size and length of head, number of kernels in a head, and particularly in the number of heads in a stool. The Clawson was sowed at least a month earlier the preceding fall."

The Martin Amber is being sent out by J. A. Everitt & Co., of Watsontown, Pa.

THE J. T. NOYE MANUFACTURING COMPANY'S SPACIOUS ESTABLISHMENT.

We recently announced that the large factory of the J. T. Noye Manufacturing Company, located on Washington street, corner of Perry street, was purchased by the Lehigh Valley Railway Company, upon which to construct a freight depot. The buildings are to be torn down, consequently the milling company found it necessary to provide new quarters. Anticipating this result, Mr. Noye about a year ago purchased a large tract of land lying between Lake View Avenue and Fourth street, Pennsylvania and Jersey. The location is a magnificent one, and admirably situated for the purposes to which it is to be devoted. The land from Fourth street rapidly declines to the canal so that the view of the lake from the works will always be uninterrupted, and, what is better, the cool lake breeze drawing through the buildings will keep the works cool and pleasant during the summer months. For the workmen of J. T. Noye & Co. to be transferred from the banks of the stinking Hamburg canal to the charming spot where the new works are being located, will be like leaving the crowded business streets of the city for a cool and refreshing country retreat.

The plot of land purchased is 630 feet long by 265 feet wide. It includes the entire block with the exception of three small lots facing on Lake View avenue. Spacious works are now being constructed and will be completed by the middle of the winter. The new factory will be a vast improvement on the old one, both as to size (being fully a third larger) and adaptability. In the manufacture of milling machinery much heavy material is used and heavy machinery is employed. Hence the nearer the ground the work can he done the better. In making the plans for the new building, therefore, this point was kept constantly in view, and high structures avoided. A building 42 feet by 281 is now complete and full of machinery. This shop reaches from Fourth street to Lake View avenue. It will be used after the works are complete as a general machine shop. Adjoining this is an engine room 32 feet by 32, enclosing a seventy-five horse-power engine. This engine is designed to furnish power for the machine shop only. Immediately east of this is the foundry, a substantial brick structure, 80 by 120 feet. It is covered by a mansard roof and surmounted by a cupola, 90 feet long, both sides of which and of the roof are well supplied with adjustable windows, so the ventilation will be admirable. Attached to the foundry will be the wood-shop, brass foundry, cupola, core-rooms and a cleaning room annex, 22 by 50 feet, and sand room, 22 by 46 feet.

Still further east is the main building of the works running parallel with Fourth and extending to Pennsylvania street. It will be 300 feet long by 50 feet wide, two stories high. It will be divided into two departments. In the part farthest east and facing on Pennsylvania and Fourth, will be the wood-working machinery. In the other part the rollers will be corrugated and the iron work done. The business will be so arranged that the heavy work in both departments will be done on the ground floor and the lighter parts in the second story. The side walls of this structure are well advanced. Independent of this is the engine and boiler house 16 by 56, inclosing a one hundred horse-power engine which will drive the machinery in the main building. The entire works will be heated by steam from two immense boilers in this annex.

Adjoining the foundry and running parallel to it will be located a large blacksmith shop, while on the Lake View side is a pattern shop 42 by 132 and three stories high. This building is well advanced. It is the plan to build a large and imposing structure adjoining on the west in the near future for offices, but it will not be undertaken this winter. Every modern labor-saving appliance will be introduced in the works, and the whole made as complete as money, experience and ingenuity can make them. The firm of J. T. Noye & Co. are to be congratulated upon the improvements they are making, and their workmen are greatly to be congratulated on the very pleasant change awaiting them.

The present shop on Perry street, between Main and Washington, will be operated as heretofore.—*Buffalo Commercial Advertiser*, Sept. 17.

The United States Consul at Leeds, England, reports that our tariff is likely to prove disastrous to the woolen trade of that district. As the tendency of other European nations is to protect their own industries by imposing high duties on imports, the English manufacturers reposed fond hopes on the agitation against protection in America. They expected that the revision of our tariff would increase American demand for their goods, and they are intensely disappointed over the turn that matters have taken. They find that the revision leaves them worse off than they were before. Many mills were kept going on the expectation that their production could be shipped wholesale upon the American market so soon as the tariff was revised, and the knocking out of this prop from under them has led to wide-spread stagnation of business. Manufacturers and operatives are now said to be coming to America in large numbers.

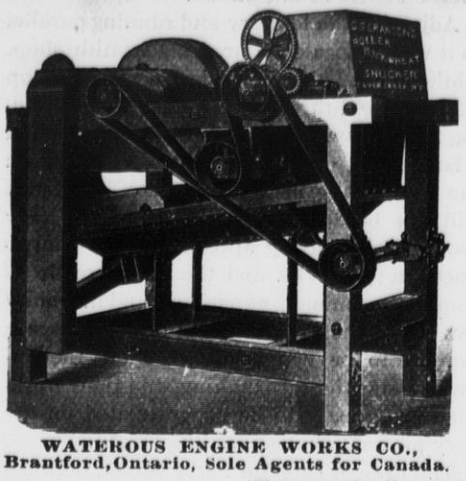
We regret to hear of trade depression in any country, but we can bear with greater fortitude to hear of it abroad than among our own operatives, especially in a case where increased prosperity abroad was going to entail poverty among American mill workers. —*Mechanical Engineer.*

How to Recognize Good Wood.—Rankine says that there are certain appearances characteristic of good wood, to what class soever it belongs. In the same species of wood that specimen will in general be the strongest and most durable which has grown the slowest, as shown by the narrowness of the annular rings. The cellular tissue, as seen in the medullary rays (when visible), should be hard and compact. The vascular or fibrous tissue should adhere firmly together, and should show no wooliness at a freshly cut surface; nor should it clog the teeth of the saw with loose fibers. If the wood is colored, darkness of color is in general a sign of strength and durability. The freshly cut surface of the wood should be firm and shining, and should have somewhat of a translucent appearance. In wood of a given species the heavy specimens are in general the stronger and more lasting. Among the resinous woods, those having the least resin in their pores, and among non-resinous woods those which have least sap or gum in them, are in general the strongest and most lasting. Timber should be free from such blemishes as "clefts," or cracks radiating from the center; "cup shakes," or cracks which partially separate one layer from another; "upsets," where the fibers have been crippled by compression; "wind galls," or wounds in a layer of wood, which have been covered and concealed by the growth of subsequent layers over them; and hollow or spongy places in the center or elsewhere, indicating the commencement of decay.

Moritz Grousman, in his Year Book for 1883, gives the following recipe for cementing rubber or gutta-percha to metal: Pulverized shellac, dissolved in ten times its weight of pure ammonia. In three days the mixture will be of the required consistency. The ammonia penetrates the rubber, and enables the shellac to take a firm hold, but as it all evaporates in time, the rubber is immovably fastened to the metal, and neither gas nor water will remove it.

The six leading agricultural products of the United States, according to the census report of 1880, were in the following order: Corn, wheat, hay, cotton, oats and potatoes. The value of the first was $600,000,000; of wheat, $500,000,000; hay, $330,000,000; cotton, $232,000,000; oats, $130,000,000; and potatoes, $73,000,000.

DO YOU MAKE BUCKWHEAT FLOUR?



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SHUCKER

—YOU CAN—

INCREASE YOUR PROFITS,
BETTER YOUR QUALITY,
SATISFY YOUR CUSTOMERS.

Send for full Descriptive Circular, giving prices, Sizes, Terms, etc.

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WATEROUS ENGINE WORKS CO., Brantford, Ontario, Sole Agents for Canada.

[Please mention UNITED STATES MILLER when writing].

5300
'Triumph' Power Corn Shellers
IN USE.

Send for Descriptive circular and Testimonials.

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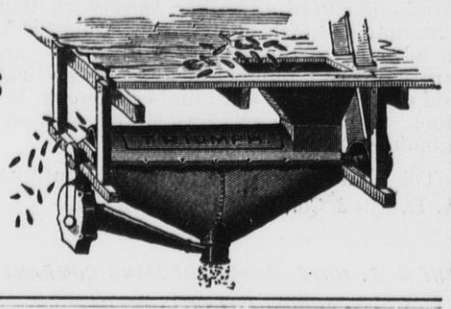
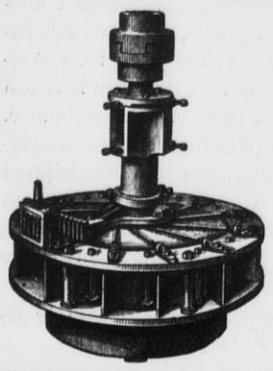
20, 22 and 24 St. Clair St., Painesville, O.





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WATER WHEEL,

Fine New Pamphlet for 1883.

The "OLD RELIABLE" with Improvements, making it the **Most Perfect Turbine now in use**, comprising the **Largest** and the **Smallest** Wheels, under both the **Highest** and **Lowest** Heads in this country. Our new Pocket Wheel Book sent free. Address,

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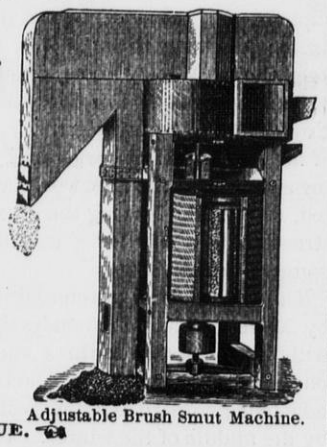
RICHMOND MANUFACTURING CO.,
LOCKPORT, N. Y.,

MANUFACTURERS OF RICHMOND'S CELEBRATED

Warehouse Receiving Separator, Grain Separator
AND OAT EXTRACTOR,
WHEAT SCOURERS,
—AND—
Wheat Brush Machines,
UPRIGHT AND HORIZONTAL BRAN DUSTERS,
CENTRIFUGAL FLOUR DRESSING MACHINES.

Thousands of these Machines are in successful operation, both in this country and in Europe. Correspondence solicited.



Adjustable Brush Smut Machine.

SEND FOR DESCRIPTIVE CATALOGUE.

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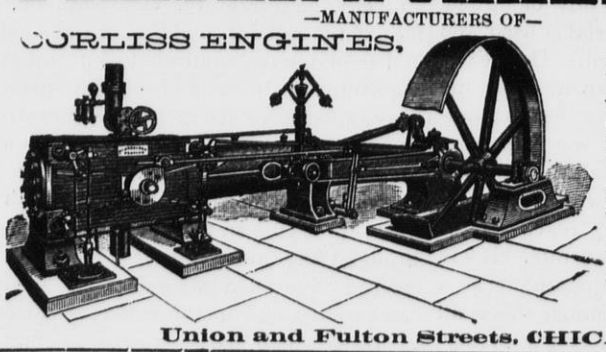
CORLISS ENGINES,



Of Superior Construction,

Slide Valve Engines,
Horizontal, with Single Valves, Fixed Cut-off Valves, or Adjustable Cut off Valves, Hoisting Engines, Pumping Engines.

Tubular Boilers, Cylinder Boilers, Two-flue Boilers, and Portable Boilers.

Outfits of Improved Mining Machinery for the systematic smelting and concentration of ores.

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We are the first introducers of the Chilled Iron Rollers for milling purposes, and hold Letters patent for the United States of America. For full particulars address as above.

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Foundrymen & Machinists.
Established 1851.
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MILL STONES.
Flouring Mill Contractors.
Send for Pamphlet.
Nordyke & Marmon Co
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17 Miles the Shortest Line
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—THE NEW ROUTE TO—
New London, Grand Rapids, Chippewa Falls, Eau Claire, and all points in
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The new line to Oconto is now completed, and opens to the public the shortest and best route to all points on the Michigan Peninsula.

CONNECTIONS.

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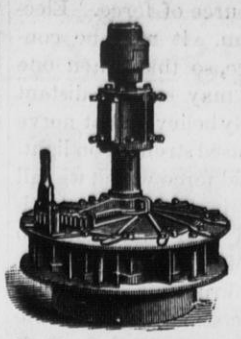

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Made of best materials and in best style of workmanship.

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From 1 to 20 feet diameter, of any desired face or pitch molded by our own SPECIAL MACHINERY. **Shafting, Pulleys, and Hangers,** of the latest and most improved designs.

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Flour and Paper Mill Machinery, Best Chilled or Porcelain Rolls for Crushing Wheat and Middlings and
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The AMERICAN TURBINE, as recently improved, is unequaled in the power utilized from a given quantity of water, and is decidedly the BEST "PART GATE" Water Wheel ever known. It has also been otherwise greatly improved.

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BOTTLERS' SUPPLIES CONSTANTLY ON HAND.

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FROM 1-4 to 10,000 LBS. WEIGHT.

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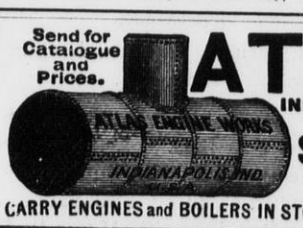

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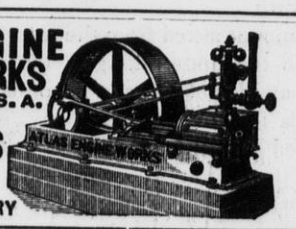

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NO OTHER engine builder has authority to state that he can furnish this engine.

The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

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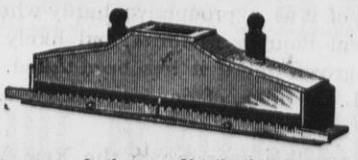

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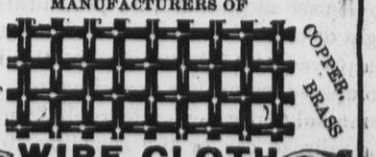
The E. T. Barnum Wire & Iron Works,
MANUFACTURERS OF



WIRE CLOTH

For Paper and Flouring Mills, Breweries and Mining. STEEL TEMPERED WIRE CLOTH, for BOLTING PURPOSES, Wire Office and Counter Railing, Wrought Iron Fences, Wire Signs, Stable Fixtures, Weather Vanes, Roof Cresting, &c.

WIRE AND IRON WORK OF EVERY DESCRIPTION.

MANUFACTURED BY
The E. T. Barnum Wire & Iron Works,
Detroit, Mich.

Write for Catalogue, stating your wants, and we will make you estimate. Mention this paper.

TECHNICAL EDUCATION.

The general increase in schools of design, technical schools and like institutions, says A. Curtis Bond in a recent issue of the *Popular Science Monthly*, has created no little comment, and given rise, to some extent, to opposition. It is a difficult matter to reconcile the differences between the opponents and those who favor this form of instruction, for the reason that the question, in a measure, is one of pecuniary interest to both parties. There are many instances in which technical education may justly be claimed to be a necessity, especially in those professions which demand a knowledge or a character of schooling that can be more thoroughly conveyed by means of that which instructs in the theories of a craft or art as distinct from its practice. In the case of the architect, for example, nature may indicate the urgencies of the profession; it provides for the beautiful, for the attractive features, but the details it avoids; teachers must show the mechanical portions of the work, and instruct in the principles which make the building possible and form a support for the decorative exterior. The necessity of such teachings was recognized by early nations, and in their architecture and designing its value was taken into consideration, and its spirit must have existed among the early Aryans, as its materialized form did with the skilled and finished draftsmen of Egypt and Greece.

We may easily realize the increased need of technical training to-day over the necessity of two thousand years ago. At that time the artist himself did the work—the actual labor; he evolved the idea and executed it, the brain that conceived the thought guided the hand that gave that thought substance and shape. Every touch of the chisel imparted life, for the spirit of the worker went into the stone, and it was molded and shaped by the genius of the thinker. Now it is mechanical; the artist originates, others execute, and this execution must follow pattern, designs, plans. No scope is given the workman; he is bound by lines beyond which he dare not go, and his fancy, if he has any, serves naught in the creation of his subject; drawings control this creation, and the living translator of those drawings, from what was in the past an intelligent reasoner, has become in the present an automatic machine. Disposing thus of a man's individuality, some means are essential to convey the thought of the designer into the hand of the worker, and customs have grown and laws have been adopted that will serve as a sort of mental telegraph between these two—laws which govern the flight of the artist's fancy and instruct the artisan in an understanding of the designer's purposes. Taking this view of the situation, it is certainly necessary that talent should be technically tempered.

It is not to be expected that every one learning a trade will become an expert or an innovator; ability to comprehend the requirements of trades is developed in either the shop or the school, but the regrets so often expressed by those who have grown up from apprentices for their lack of education evinces the limited possibilities of practical knowledge simply, and demonstrates, in a measure, the necessity for an early instruction in the theories, if one thinks to introduce improvements and progressions in his profession. The want of education, with which most apprentices must contend, interferes in other ways with their progress. The master is apt, in many instances, to exaggerate the difficulties to be overcome, and enlarge upon the mysteries surrounding his work-beneh. The doubt this would arouse in an unschooled mind might be fatal to success, and the superstition that there was something impossihle for the apprentice to comprehend is liable to remain with him as a drag-net to his future usefulness, trammel his ambition, and perhaps turn his abilities into a channel less profitable to himself and to the world.

Technical schools, adopting, as they do, a different course, impress the students with the comparative simplicity of business, and give them the feeling of ability to grasp and utilize the intricacies and peculiarities of the trades. That which is formidable to the uninstructed becomes a *bagatelle* to those familiar with the details and with those who have an intelligent theoretical acquaintance with the governing principles. It is true, this theoretical knowledge cannot provide for all emergencies that are likely to occur in the workshops, but it lays a foundation which will aid the student, when those emergencies present themselves, in comprehending and overcoming the difficulty; and it is a question we would be loath to decide in the negative, whether or not a mechanic, who, after being educated in a technical school, had had a reasonable experience in a shop, would not find a readier and more effective remedy for an accident than one who had been brought up in a shop and lacked school training.

Another consideration worth noting is the comparatively short time during which a man improves his skill in the trade or art he may have adopted. The Technical Commission of Great Britain sets the period at from 10 to 15 years as a maximum, and this may be regarded as a reasonable estimate for the time at the end of which progress in the individual ceases; and such being the case, it is proper to give at the outset all the helps toward developing talent that are attainable. Technical education may be one of these helps. If it were possible to acquire theory and practice at one and the same time, its desirability would be indisputable, but we imagine this in its true sense is impracticable. The practice obtained in technical schools is not the real, genuine, unadulterated article, and it would be a dishonest teacher who would put forth any such claim. It is impossible to foresee, as we have said, all the necessities that arise, and are likely to arise, in the course of business experience, and they absolutely require, when they obtrude upon the regular course, the judgment of a mind that has been accustomed to coping with difficult situations where a failure to devise a remedy at once meant an utter failure of the entire work.

A Stool of Martin Amber Wheat.

(See article entitled New Wheat on page 99.)

But one of these qualifications must, in the order of things, precede the other, and we are confronted with the question, which shall it be? Theory—that is, the comprehension and understanding of whatsoever we undertake—is the foundation upon which practice may build, theory will necessarily acquire the mechanical ability to put its ideas into shape by a reasonable amount of practice; but practice, though it be of years, does not by any means guarantee theoretical, or even an intellectual, appreciation of the results that labor accomplishes, and without this what can be expected from the mechanic? We certainly should not ask for improvements from a man who does not understand the foundation principles of the mechanical part of his work. Starting with a fairly good technical or theoretical education, one grapples with the problems of business more intelligently and in most cases, more successfully. If one chance to become an employer, he can utilize the practice of his employes to demonstrate his theories, and often will this theorizing, and the thoughts created by an early technical education, suggest means for lightening, simplifying and improving the labor that practice had failed to find an opportunity of modifying.

THE POWER OF EXPLOSIVES.

The dynamite scare in England has led to the publication in the English journals of a number of letters on the power of explosives from which we choose the following written by Mr. George M. Roberts, the technical manager of Nobel's Explosive Company, Limited, who writes:

Nitro-glycerine and dynamite do not, when exploded, exert such a force as is popularly believed. To speak precisely, the power developed by the explosion of a ton of dynamite is equal to 45,675 tons raised one foot, or 45,675 foot-tons. One ton of nitro-glycerine similarly exploded will exert a power of 64,452 foot-tons, and one ton of blasting gelatine similarly exploded, 71,050 foot-tons. These figures, although large, are not enormous, and need not excite terror. Seventy-one thousand tons of ordinary building-stone, if arranged in the form of a cube, would measure only 96 feet on the side, and if it were possible to concentrate the whole force of a ton of blasting gelatine at the moment of explosion on such a mass, the only effect would be to lift it to the height of a foot. The foregoing figures are derived from experiments made at Ardeer with an instrument which gives accurate results in measuring the force of explosives. The power exerted by an explosion on surrounding objects is in the inverse ratio of the cube of the distance from the point of explosion. Thus, at 100 feet from the exact point of an explosion, the power is only the cube of 1–100, or 1–1,000,000th part of what is at a distance of only one foot from that point; or, in other words, if the power at one foot from the spot be represented by 1,000,000, at the distance of 100 feet it will be but one. It is thus seen that the effects are intense locally, but comparatively trifling at even short distances. If a ton of dynamite or nitro-glycerine were exploded in a London street, the effects would be felt severely in the immediate neighborhood only of the explosion, and beyond that they would be confined to the mere breakage of windows. Indeed, it would be impossible by a single explosion, however large, to do damage to any considerable extent beyond the immediate neighborhood in which the explosion took place. On one occasion I happened to witness the explosion of over a ton of nitro-glycerine from a distance of only 60 yards. The nitro-glycerine was about ten feet beneath the level of the ground which was of sand and covered with water. Beyond the breakage of windows and the bursting of a few doors in the surrounding buildings, there was no damage done. A little sand was thrown over me, but I received no personal injury. Vague statements have been made from time to time, promulgated to induce the belief that there are stronger explosives than nitro glycerine and nitro-glycerine preparations, and that the wretched men who have been guilty of the late attempts on public buildings, etc., are in possession of more powerful explosives than any known to chemists. The public may rest assured that such is not the case. Nitro-glycerine and its preparations form the strongest explosives yet known. The strongest of these is the material known as blasting gelatine. It consists of nitro-glycerine combined with a certain proportion of nitrated cotton. It is much more difficult to prepare than either nitro-glycerine or dynamite, and cannot be made by unskilled persons. If the power of dynamite be represented by 1000, that of nitro-glycerine will be 1411, and of blasting gelatine 1555. The 1½ cwt. of nitro-glycerine seized by the police the other day would, if exploded, exert a force of only 4833 foot-tons, and if converted into dynamite it would represent a force of only 4567 foot-tons. The conversion of nitro-glycerine into dynamite reduces the power of the former, but renders it more easy and safe to handle and use. The power given above is comparatively insignificant, and as it is the maximum effect that could be produced under the most favorable circumstances on the very spot of explosion, it never could be obtained in practice. It is therefore absurd to say, as was said the other day in a London paper, that the explosion of such a quantity of nitro-glycerine would blow up the whole of London. In fact, the explosion could scarcely be heard over London, and the damage done by it would be strictly local. I have often, by way of experiment exploded one pound of dynamite suspended from the end of a fishing-rod by a string about six feet long, holding the rod in my hand the while. As there was no solid matter to project, I received no injury, and the end of the fishing-rod was not even scratched. About three feet of the string at the end of the rod was always left uninjured.

ENCOURAGEMENT OF TRADE JOURNALS.

The Builder and Wood-Worker says that "the encouragement of technical and trade journals augurs well for the advancement of manufacturing and mechanical industries. No matter how skilled may be a workman, his fellow craftsmen possess secrets of which he is ignorant, and which can, as a rule, only receive the proper dissemination by being published in the specially technical papers, that are doing so much for the elevation of the American artisans and their numerous callings, in which the public are so intensely interested. Every mechanic who prides himself in his particular line, ought to subscribe to a trade journal—one representing more closely the branch of work in which he is engaged. This should be read closely and carefully, and the hints and suggestions thrown out must be noted with a view of giving them practical test. By pursuing this commendable course, a greater degree of technical skill is acquired at a trifling expense of time and small outlay of money. Then, too, a knowledge is obtained as to the better class of new text books appearing from time to time bearing on the exact sciences and applied mechanics. Besides all this, the general news of particular localities as to the progress thereof is an especial feature characterizing these papers, of which sight cannot be lost without detriment to the loser. To be well posted is as much stock in trade with a mechanic as it is to a merchant or professional man. The trade journal is fast becoming, under wise and faithful guidance, as much of a necessity as the daily papers."

STEEL AND IRON TESTS.

Nitric acid, says *Electricity*, will produce a black spot on steel; the darker the spot the harder the steel. Iron, on the contrary, remains bright if touched with nitric acid. Good steel in its soft state has a curved fracture and a uniform gray luster; in its hard state a dull, silvery uniform white. Cracks, threads or sparkling articles denote bad quality. Good steel will not bear a white heat without falling to pieces, and will crumble under the hammer at a bright red heat, while at a middling heat it may be drawn out under the hammer to a fine point. Care should be taken before attempting to draw it out to a point that the fracture is not concave; and should it be so, the end should be filed to an obtuse point before operating. Steel should be drawn out to a fine point and plunged into cold water; the fractural point should scratch glass. To test its toughness, place a fragment on a block of cast iron; if good, it may be driven by the blow of a hammer into the cast iron; if poor, it will crush under the blow. A soft, tough iron, if broken gradually, gives long, silk fibers of leaden-gray hue, which will twist together and cohere before breaking. A medium, even grain, with fibers, denotes good iron. Badly refined iron gives a short blackish fiber on fracture. A very fine grain denotes hard, steely iron, likely to be cold-short and hard. Coarse grain, with bright crystalized fracture or discolored spots, denotes cold-short, brittle iron, which works easily when heated and welds well. Cracks on the edge of a bar are indications of hot-short iron. Good iron is readily heated, is soft under the hammer, and throws out few sparks.

SEVEN FOOLS.

Punch gives a list of seven fools as follows:

1. The envious man—the man who sends away his mutton because the man next him is eating venison.

2. The jealous man—who spreads his bed with stinging nettles, and then sleeps on it.

3. The proud man—who gets wet through sooner than ride in the carriage of an inferior.

4. The litigious man—who goes to law in hopes of ruining his opponent, and gets ruined himself.

5. The extravagant man—who buys a herring and takes a cab to carry it home.

6. The angry man—who learns the ophicleide because he is annoyed by the playing of his neighbor's piano.

7. The ostentatious man—who illuminates the outside of his house brilliantly, and sits inside in the dark.

In regard to the smoke nuisance P. Barnes, mechanical engineer, of Elgin, Ill., says:

The case in brief is this, that without exception the fixtures or attachments which employ air or steam jets or any similar means have always been found to lead to greater expense for fuel, and to be wholly useless when left in ordinary and indifferent hands. On the other hand any boiler of any reasonable or probable construction, in the hands of an interested and willing fireman, can be made to do its full duty without any more smoke than would be passed at once by an inspector, and with an entire saving of the fuel which would be otherwise wasted in the needless working of the attachments upon which so many words have recently been spent.

The Minneapolis *Northwestern Miller* says that from the report of the receipts and shipments from that city during the past year, it may be seen that 4 bushels 39½ pounds of wheat are required to produce a barrel of flour. This is the average of grinding over 18,000,000 bushels of wheat, and may be taken as a fair figure on spring wheat of medium quality as it ran during the year ending August 31 last.

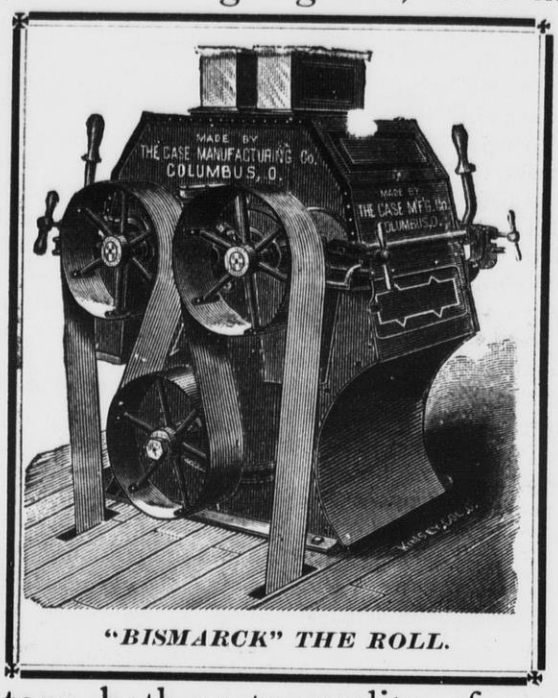
The Case Manufacturing Co.

Ann Arbor, Mich., September 11th, 1883.

Case Manufacturing Co., Columbus, Ohio.

GENTLEMEN:—Owing to the misrepresentations of agents of rival systems, we several times decided not to use the Case system, when about to place some roller system in our mill. Like many other matters, however, this would not stay decided until decided right. We gave the system an investigation, and concluded to adopt it.

Now as to results, our flour has given satisfaction wherever used. Our New York agent, writes of our straight grade, "it is the handsomest flour, except full patents, that we have had from your state."



"BISMARCK" THE ROLL.

The reports from other markets are of a similar nature. What neighboring millers think of the system is shown by the fact that it has been adopted, both as to Rollers and Purifiers, in two other mills in this vicinity, and we understand is to be substituted in another, making four mills on your system within eight miles of Ann Arbor.

Finally, as the senior member of our firm has himself been a practical mill builder for over forty years, we believe our own opinion entitled to some weight; it is that the Case system of milling is superior to all others, and that any miller adopting it will find it entirely satisfactory, both as to quality of work and simplicity of machines.

"BISMARCK" THE PRINCE.

Very cordially yours, R. K. AILES & CO.

Case Manufacturing Co.

Orrville, Ohio, Sept. 19, 1883.

Gentlemen:—The Feed you put on my Rolls is the thing to save the Millers from trouble.

Yours truly, O. K. GRIFFITH.

THE CASE MIDDLINGS PURIFIER

A—The Fan spout, is reversible and can be made to blow toward either end of Purifier.

The Fan can be placed on top or end of Purifier—when on end it increases the length 39 inches, and diminishes the height 22 inches.

B—Air-valve upper Riddle.

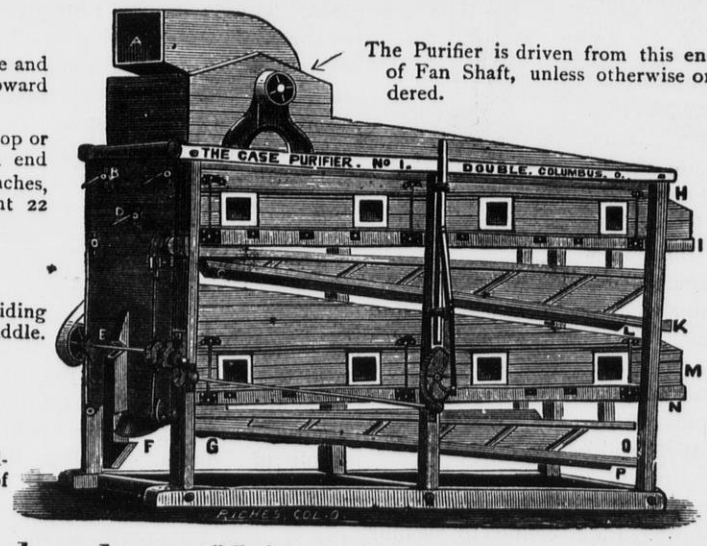
C—Cut-off for upper Riddle, sliding one-half the length of Riddle.

D—Air-valve, lower Riddle.

E—Upper Riddle tails off here.

F—Lower Riddle tails off here.

G—Cut-off for lower Riddle, sliding one-half the length of Riddle.



The Purifier is driven from this end of Fan Shaft, unless otherwise ordered.

H—Feed Box for upper Riddle.

I—Bolting Cloth for upper Riddle.

K—Purified Middlings from upper Riddle.

L—Cut-off from upper Riddle.

M—Feed Box for lower Riddle.

N—Bolting Cloth for lower Riddle.

O—Purified Middlings from lower Riddle.

P—Cut-off from lower Riddle.

The upper and lower halves are each a complete machine, and can be run together, or separately, as desired.

Case Manufacturing Co., Columbus, Ohio.

Roseburg, Oregon, Sept. 3d, 1883.

GENTS:—Although you have not asked us for a recommendation of your Purifier, we deem it our duty to write you one, having found after using your machine, that in our judgment it is far superior to any other machine we have ever seen in operation. We would not give it for any "Smith" Purifier we have ever seen. It is no wonder the Smith Co. tried to shut you up, and we hope for the good of the milling fraternity, and to repay you for your trouble and expenses, that you will never be defrauded out of your patents.

We predict large sales of your machines, as they are much cheaper in price, and do superior work to any other we know of. We could mention their superior points but it would take too much space. If any one wants to hear anything further about your Purifiers refer them to us, for we cannot praise your machinery too highly. Yours truly, CROCKER & DODGER.

The Case Manufacturing Co. will have on exhibition at the approaching Chicago Exposition, a sample line of their Breaks, Rolls, Purifiers, &c., which will be in charge of Messrs. Wm. E. Catlin & Co., their Chicago agents. Address,

CASE MFG. CO., COLUMBUS, OHIO.

[Please mention the UNITED STATES MILLER when you write to us.]

NEWS.

Lawson & Bell, Gallipol, O., recently ordered a Gray's noiseless belt roller mill of Edw. P. Allis & Co.

Amendt & Son, Piqua, O., have ordered a Gray's noiseless belt roller mill.

Edw. P. Allis & Co., Milwaukee, recently sold Beach Bro's of Beatrice, Neb., a Gray's noiseless belt roller mill.

Haggerty, Hunter & Co, Peoria, Ill., a Gray's noiseless belt roller mill for Darlinville, Ill.

The Hudnuts of Terre Haute, Ind., are putting in another Gray's noiseless belt roller mill.

A. Root & Co., Hersey, Mich., lately purchased a Gray's noiseless belt roller mill of Allis & Co., Milwaukee.

The Case M'fg Co., Columbus, O., have been ordered to ship M J. Bewley, Fort Worth, Texas, one centrifugal reel.

Tuttle & Co., Columbia City, Ind , will start up their mill in a few days, on the "Case" system.

The Case M'fg Co. have an order from J. & W. Oxenford Lake City, Iowa, for one No. 2 double purifier.

Dennis & Slough, Westerville, O., have lately started up their mill on the "Case" system with splendid results.

R. Tuttle & Co., Columbia City, Ind,, will start up their mill in a few days on the Case system.

The Case M'fg Co. have an order from J. & W. Ornkford, Lake City, Iowa, for one No. 2 double purifier.

Dennis & Slough, Westerville, O., have lately started up their mill on the Case system with splendid results.

The Case M'fg Co., Columbus, O., have just shipped J. W. Deemer, Grant City, Iowa, one No 2 double purifier.

S. F. McDonald, Oxford Mills, Iowa, has lately started up his mill on the Case system of gradual reduction

L. A, Jacobs, Pana, Ill., has lately started up his mill on the Case system of gradual reduction.

Werner Miller & Co., Wright City, Mo., have ordered three additional sets of rolls from the Case M'fg Co.

Odell rolls have been ordered for the mill of Montgomery & Co., Opdyke, Ill.

C. E. Dexter, Live Oak, Fla., just placed his order for a 15 inch wheel with the Stilwell and Bierce M'fg Co.

Reiling & Co.. Bellevue, Iowa, have improved their mil by adding an Allis-Gray roller mill, purchased from Edw. P. Allis & Co., Milwaukee, Wis.

McKimon & Co., Concordia, Kas., are putting in a Gray's noiseless roller mill, purchased from Edw. P. Allis & Co., Milwaukee, Wis.

Chas. F. Nelson Sedalia, Mo , recently purchased a Gray's noiseless belt roller mill from Messrs. Edw. P. Allis & Co , Milwaukee, Wis.

Jewell Mill Co., of Brooklyn, N. Y., recently ordered nine Gray centrifugal rolls of Edw. P. Allis & Co., Milwaukee.

E. T. Archibald & Co, Dundas, Minn., lately purchased eight pairs of Allis rolls in Gray's noiseless belt frames from Edw. P. Allis & Co., Milwaukee, Wis.

M. D. Blish & Crane, Seymour, Ind,, recently ordered three pairs Allis-Gray rolls in belt frames, centrifugal reel etc., of Edw. P. Allis & Co, Milwaukee.

The E. P. Ferry Lumber Co., of Montague, Mich., recently ordered a Gray's noiseless belt roller machine from Edw. P. Allis & Co., Milwaukee, Wis.

Saxtun & Thompson, Troy, N. Y., recently ordered a Gray's noiseless belt roller mill from Edw. P. Allis & Co., Milwaukee, Wis.

W. S. Colburn of Neilsville, Wis,, is putting in a No. 2 four-break machine and Allis-Gray roller mill, ordered of Edw. P. Allis & Co , Milwaukee, Wis.

Tadd & Stanley Mill Furnishing Co., St. Louis, recently ordered four pairs Allis rolls from Edw. P. Allis & Co., Milwaukee.

Green & Heaton, Reedsburg, Wis., lately purchased a Gray's noiseless belt roller mill from Edw. P. Allis & Co., Milwaukee Wis.

T. C. Graden & Co., Durango, Cal., have ordered ten pairs of the celebrated Allis rolls in Gray's noiseless belt frames. They intend to remodel to the roller system.

Edw. P. Allis & Co., Milwaukee, have recently received orders from the Pacific coast, for fifty-nine pairs of the celebrated Allis rolls in Gray's noiseless belt frames.

Johnson & Jarret, Des Moines, Iowa, six pairs Allis rolls in Gray's noiseless belt frames, for Lightner & Duncan, Mitchellville Iowa.

Bass Foundry and Machine Works, Ft. Wayne, Ind., two reduction machines and six pairs Allis rolls in Gray's noiseless belt frames, for D. Rodbaugh, New Paris, Ind.

A. A. Taylor, of Toledo, N. Y., has recently put in another Gray's noiseless belt roller mill, purchased from Edw. P. Allis & Co. Milwaukee, Wis.

The Saxony Mills, at St. Louis, recently ordered four pairs more of Allis rolls in Gray frames. from Allis & Co., Milwaukee.

The Case M'fg Co., Columbus, O., have an order from Graham & Gilham, Trenton, Mo., for one pair of smooth rolls, with patent automatic feed.

The Case M'fg Co., Columbus, O., have an additional order from Y. M. Rizer, of Franklin, Tenn., for breaks and rolls.

J. F. Schooellkoff, Black Rock, N. Y., has ordered one patent automatic feed box from the Case M'fg Co. Columbus, Ohio, for his Smith purifier.

The Case M'fg Co., Columbus, O., are furnishing Isaac Harb, Polo, Ill., with one "Little Giant" break machine, and two pairs rolls with patent automatic feed.

The Case M'fg Co., Columbus, O., have an order from E. T. Shatzer & Co , Evansville, Ind , for one Case centrifugal reel.

The Case M'fg Co., Columbus, are furnishing Geo. T. Dawley, Royalton, Wis. one No. 1 double purifier, and one four roller "Bismarck" mill with patent automatic feed.

The Case M'fg Co., Columbus, O., have an order from Thos. Mosher, Springville, Mich., for purifiers, breaks, rolls, &c., &c.

The Case M'fg Co., Columbus, O., have an order from E. T. Noel, Nashville, Tenn., for six additional sets of Case rolls.

Odell rolls have been ordered by McMahan Bro's, Burlington, Kan. They have also placed orders with the Stilwell and Bierce M'fg Co. for other mill machinery.

Four pairs of Odell rolls have been ordered from the Stilwell & Bierce M'fg Co., for the mill of C. C. Dobson & Son, Cherryvale, Kan.

Hardesty Bro's, Canal, Dover, O., have recently placed their order with the Stilwell & Bierce M'fg Co. for the Odell rolls.

The Stilwell & Bierce M'fg Co. have orders from Julius Knofler, Farmington O., for two pairs of Odell rolls for germ and bran.

The Stilwell & Bierce M'fg Co. are furnishing six pairs of Odell rolls for the mill of A. M Dunn, Fairfield, O, which is to be changed at once to the Odell system

Krauss Bro's, Corysville, Pa., are remodeling their mill according to plans furnished by the Stilwell & Bierce M'fg Co. They use ten pairs of the Odell rolls.

The Stilwell & Bierce M'fg Co. furnish Edward Johnson of Zanesville, O., for his oat meal mill, a 14-inch Victor turbine,

J. J. Scott, & Bro., Lynchburg, Va., have ordered from the Stilwell & Bierce M'fg Co,, a Victor turbine to drive their mill.

The Stilwell and Bierce M'fg Co. are furnishing a Victor water wheel to run the flour mill of Cassell & Co., Zanesville, O.

The Case M'fg Co., Columbus, O., are furnishing Isaac Hesb, Polo, Ill., with one "Little Giant" break machine, and two pairs rolls, with patent automatic feed.

The Case M'fg Co., Columbus, O , are furnishing G. M. Schramm & Son, Pontoosuc, Ill., with a line of rolls, puri fiers, &c.

The Case M'fg Co , Columbus, O., have an order from E. G. Shatzer, Evansville, Ind., for one centrifugal reel, to be placed in the mill of Williams & Kelly, Windslow, Ind.

Geo. P. Walterhouse of Salem, Oregon, recently sent in an order to Edw P. Allis & Co., Milwaukee, Wis., for ten pairs of the celebrated Allis rolls in Gray's noiseless belt frames, for a mill in Washington Territory.

Upham, Son & Co., Blue Rapids, Kas., are putting in the roller system, and have placed order with Edw. P. Allis & Co., Milwaukee Wis., for ten pairs of Allis rolls in Gray's noiseless belt frames.

Wells & Nieman, Schuyler, Neb., have placed order with Edw. P. Allis & Co,, Milwaukee, Wis., for eight pairs Allis rolls in Gray's noiseless belt frames, purifiers etc., to improve their mill.

Gehlen Bro's, Lemars, Iowa, lately ordered a No. 2 four-break machine, and the iron work necessary to remodel their mill to the roller system, from Edw. P. Allis & Co., Milwaukee, Wis.

The Garden City Mill furnishing Co., of Chicago, are putting in rolls etc., for Geo. Miller, Angola, Ind., and have placed order with Edw. P. Allis & Co., Milwaukee, Wis., for Allis-Gray roller machines.

Edw P. Allis & Co., of the Reliance Works, Milwaukee, Wis., are remodeling the mill of C A. Roberts & Co., at Fargo, D. T., and will use six pairs of Allis rolls in Gray's noiseless belt frames.

The Gate City Mill Co., of Rapid City, D T., are putting in a roller outfit, and have ordered their rolls, iron work and a No. 2 four-break machine, of Edw. P. Allis & Co., Milwaukee, Wis.

Edw. P. Allis & Co., Milwaukee, Wis., recently received contract for remodeling T. Lloyd Fulmia & Co.'s mill at Haltboro, Pa., and will put in fourteen pairs of Allis rolls in Gray's noiselesss belt roller frames.

Johnson & Jarret, of Des Moines, Iowa, recently placed an order with Edw. P. Allis & Co., Milwaukee, Wis., for a Gray's noiseless belt roller mill for job of theirs at Atlantic Iowa.

Edw. P. Allis & Co., of Milwaukee, Wis., are furnishing a complete line of Allis rolls in Gray's noiseless belt frames, for the Colorado Mill & Mercantile Co., of Denver, Col., and have a contract for the same.

Reddeman & Jaeger, Sanville, Wis., are putting in a full line of the celebrated Allis rolls, in Gray's noiseless belt frames, purchased from Edw. Allis & Co., of the Reliance Works, Milwaukee, Wis.

J. Q. Halteman & Co., St. Louis, Mo., recently sent in an order to Edw. P. Allis & Co., Milwaukee, Wis., for a Gray's noiselesss belt roller mill, for Burdett & Wicks, Eldorado, Wis.

The Case M'fg. Co., Columbus, O., have the order o Poage & Son, Ashland, Ky., for eight pairs rolls, breaks, scalpers, purifiers, centrifugals &c., for a full gradual reduction mill on the "Case" system.

The Case M'fg Co., Columbus, O., have an order from E. J. Smith, Springfield, Neb., for rolls, breaks, and purifiers; the rolls and purifiers to have their patent automatic feed.

The Case M'fg Co., Columbus, O , have an order from G. J. Smith, Springfield, Neb., for rolls, breaks, and purifiers; the rolls and purifiers to have their patent automatic feed.

The Stilwell & Bierce M'fg Co. have a recent order from Reblitz Bro's, Chilton, Wis., for a pair of Odell rolls for their mill which is to be remodeled at once. They also furnish them plans and programme on the Odell system.

The mill of Isaac Croff, Millersville, O., has also been recently started This mill has in the Odell rolls and system, and has few equals and no superior in the quality of its products and its yields.

George Brose of Evansville, Ind., who ha been remodeling his mill to the Odell system, started it up last week. He has a full line of the Odell rolls. The mill is doing very fine work, and no changes had to be made.

C. A Pillsbury & Co., of Minneapolis, Minn., are putting in ten pairs more of the celebrated Allis rolls in Gray's noiseless belt frames, purchased from Edw. P. Allis & Co., Milwaukee, Wis. This shows the appreciation of this firm of the Allis-Gray machines.

Jno. D. Allen, Fall River, Kas., is about to commence remodeling his mill to the roller system, and has placed orders with Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for ten pairs of their new style roller machines, etc.

The Goodlander Mill and Elevator Co., Ft. Scott, Kas. will soon be operating on the complete roller system, having recently purchased six pairs of Allis rolls in Gray's noiseless belt frames, Gray purifiers etc., from Edw. P. Allis & Co, Milwaukee, Wis.

Edw. P. Allis & Co., Milwaukee, Wis., have the contract for remodeling the mill of Thompson Bros. Gaun, O., to a complete roller mill of 200 bbls. daily capacity, and are furnishing the entire machinery, including fourteen pairs of the celebrated Allis rolls in Gray's noiseless belt frames.

Another four-break reduction mill gone—this time Thos. Humphreys was the lucky purchaser: he also purchased a Gray's noiseless belt roller mill of Allis & Co , Milwaukee, for the improvements he is making in his mill at Salisbury, Md.

Haloway & Cault, Fall River, Wis., are putting in the roller system, and have ordered the necessary machinery, including a No. 2 four-break machine, four pairs of the celebrated Allis rolls in Gray's noiseless belt frames, centrifugal reel etc., of Edw. P. Allis, & Co., Milwaukee, Wis.

Silas Carey, Lehigh, Ia., lately decided he would have to adopt the roller system in order to cope with the other mills around him, and has contracted with Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for the outfit, consisting of a No. 2 four-break machine, Gray's noiseless belt roller mills, centrifugal reels, etc.

The mill of H. H. Groff, Fertility, Pa., which has lately been remodeled, has been started, and gives complete satisfaction. The flour was sold away ahead of production. This mill was planned by the Stilwell & Bierce M'fg Co., Dayton, O , and is furnished with Odell rolls.

The mill of E. G. Brooke, Birdsboro', Pa., has just been started. This mill has a capacity for 100 bbls. per day. It was built according to plans furnished by Mr. U. H. Odell, milling engineer for the Stilwell & Pierce M'fg Co., Dayton, O. It is a complete success, and was from the start.

The mill of Hardesty Bro's, Canal, Dover, O., is finished and has been running a short time. This mill was built according to the plans and system furnished by the Stilwell & Bierce M'fg Co. Odell rolls of course are used, and also the Odell system. The mill is a complete success.

The Stilwell & Bierce M'fg Co. have just started up the mill of Boos, Fallor & Co., Newtonville. No changes were made in the mill, and it was a success from the time it was started. It is entirely satisfactory to the miller, and the flour finds ready market.

The Stilwell & Bierce M'fg Co. have recent orders from Wm. May, Lee, Mass.; Morris Martin, Reed City, Mich., The Pray M'fg Co., Minneapolis, Minn.; Roster & Bro.; Atlanta, Ga.; and J. A. Cole, Rochester, Minn., for Victor turbine water wheels.

The new 800-bbls. mill of J. W. Kaufman, recently completed by Edw. P. Allis & Co., has just been started off with excellent results; the mill went off, like an old mill, and did not have to be changed at all. This speaks well for the millwright, O. H. Carleton, who had the construction of the mill in charge.

Stillman, Wright & Co., of Berlin, Wis , find they can't get along without Allis rolls, although they have a line of Stevens rolls in, and recently sent in an order for four pairs of Allis rolls in Gray's noiseless belt frames, to be filled at the Reliance Works of Edw. P. Allis, & Co., Milwaukee, Wis.

The Case M'fg Co., Columbus, O., have been awarded the contract of F. M. Busby & Son, Lebanon, Ind., for a full gradual reduction mill on the Case system, using eight pairs of rolls, in connection with their breaks, purifiers, centrifugals, scalpers, &c. This mill will come in competition with some of the best roller mills of other manufacturers, and the Case Co. do not hesitate to guarantee results.

The Case M'fg Co., Columbus, O., sometime ago furnished Banks & Sweeney, Blackburn, Mo., with a partial line of machinery. They were so well pleased with the machines they purchased that they have now placed their order with the same company for a complete outfit of rolls, purifiers, centrifugals, &c., for a full gradual reduction mill on the Case system.

Edw. P. Allis & Co, Milwaukee, Wis., recently received quite an important contract, viz: that of the erection of a complete all-roller, 175-bbls. mill, for the Nashville Mill Co., of Nashville, Tenn. Allis & Co. furnish the entire outfit, including twenty pairs of the celebrated Allis rolls in Gray's noiseless belt frames. The work is being rapidly pushed forward to completion, and when completed will be one of the finest mills of the size in the South.

Edw. P. Allis & Co., have recently captured some pretty good orders in Colorado, among which are: Standard Mill and Elevator Co., Ft. Collins, Col., machinery to remodel a 100-bbls. mill to the roller system, using a full complement of Allis rolls in Gray frames; Also, J. Sternburg, Boulder, Col., Gray's noiseless belt roller mills, and Allis & Co. are furnishing the roller machines, etc., for the new mills at Denver.

The Case M'fg Co., Columbus, O., have been awarded the contract of W. H. Childs, Abilene, Kas., for a complete outfit of breaks, rolls, purifiers, centrifugals, &c , for a full gradual reduction mill, on the Case system. Mr Childs put in two sets of the Case rolls some time ago, and now shows his appreciation of the same by placing his order with the same company for a full outfit.

The Case M'fg Co., Columbus, Ohio, has a line of their breaks, rolls and purifiers at the Chicago Exposition, under the charge of their Chicago agents, W. E. Catlin & Co.; one of the features of their display will be a four-roller Bismark mill in operation, showing the advantages of their patent automatic feed and simple adjustment. The feed and rolls are becoming more important than ever, and it will be a good opportunity for millers to inspect this feed.

Proctor Taylor, Pontiac, Ill, will soon commence remodeling his mill and has contracted with Edw. P. Allis & Co, of the Reliance Works, Milwaukee, Wis,, for the entire outfit of machinery. The mill, when completed on the roller system, will have a capacity of from 75 to 100 bbls. per day, and will contain ten pairs of the celebrated Allis rolls in Gray's noiseless belt frames; the order embraces purifiers, Gray's centrifugal reels, bolting and scalping chests, etc.

The Stilwell & Bierce M'fg Co., have taken the contract to put the Odell system into the John St. mills of William Shaw & Sons, Cork, Ireland. Messrs. Shaw & Sons have put the Odell rolls into their Kilnan mills, and are so well pleased with them, that they have ordered a complete line of ten machines for their other mill, which is to be built on the Odell system at once. The Stilwell & Bierce M'fg Co. will send competent men to Ireland to superintend its construction and to start the mill when finished.

The Stilwell & Bierce M'fg Co. have, the last week or ten days, started up a large number of mills which they have been building on the Odell system. Every one of them, without exception, did splendid work from the time they were started, and in many of the mills not a single cloth had to be changed or a single spout, and no flour rebolted. All the mills running on the Odell system are doing exceedingly well and most of them are away behind their orders.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., lately received the folfowing orders from the mill furnishing trade: Chisholm Bro's & Gunn, Chicago, an Allis-Gray roller mill; Holcomb & Heine Silver Creek, N. Y., a No. 2 four-break machine, and a Gray's noiseless belt roller mill; Wilford & Northway, Minneapolis,, eleven pairs Allis rolls in Gray's noiseless belt roller frames, for R. F. Pettigrew, St. Olaf, D. T., and a roller outfit for the Bismarck Mill Co., Bismarck, D.T,; Johnson & Jarrett, Des Moines, Iowa, three pairs of Allis rolls in Gray's noiseless belt frames; Lenoir M'fg Co., Lenoir, Ten., a gradual reduction machine, and ten pairs Allis rolls in Gray's noiseless belt frames: Gt. Western M'fg Co., Leavenworth, Kas. a Gray's noiseless belt roller mill for Enos Clark, Arrapahoe, Neb.; a Gray's noiseless roller mill for W. F. Soden, Emporia, Kas.; and a Gray's noiseless roller mill outfit for D. McTagger, Liberty Kas.; Chisholm, Bro's & Gunn, Chicago, a Gray's noiseless belt roller mill; Wolf & Hamaker, Allentown, Pa., fourteen pairs of Allis rolls in Gray's noiseless belt frames, for B. C. Kable, Kabletown, W. Va; and six pairs of Allis rolls in Gray's noiseless belt frames for Thos. Strauss, Allentown, Pa; Haggerty, Hunter & Co., Peoria, Ill., eight pairs Allis rolls in Gray's noiseless belt frames, for J. Kutuewsky, Redfield, D.T.; Johnson & Jarrett, Des Moines, Ia., a Gray's noiseless belt roller mill for S. Kinworthy, Perry, Ia.

The Case M'fg Co., Columbus, O., have been awarded the contract of Sam'l Sherman, Kingsville, O., for a full gradual reduction mill on the "Case" system, using ten pairs rolls in connection with their breaks, scalpers, centrifugals, &c

The Stilwell & Bierce M'fg Co., have recent orders from W. I. Green, Waterford, Mich; C. E. Essenhain, Lyons, N. Y.; A. L. Williston, Northampton, Mass.; The Mattoken M'fg Co., Petersburg, Va., Umbagog Pulp Co., Portland, Me.; S. W. Hitchings, Portland, Me.; Willard Russell, & Co., Bellows Falls, Vt; Niagara Falls Hydraulic Power and M'fg Co., Niagara Falls, N. Y.; Fred Nell, London, Eng.; Berg & Bro., San Antonio, Tex.; Eugene W. Gray, Middletown Springs, Vt., Robert Koan & Bro,, Lynchburg, Va.; and Edward Waldon, Cobleskiil, N. Y.; for their celebated Victor turbine water wheels.

The following are a few of the recent orders received by Edw. P. Allis & Co., Milwaukee, Wis,, from the trade: Richards & Butler, Indianapolis, Ind.; A. E. Griffith, Auburn, Ky , twelve pairs of Allis rolls in Gray's noiseless belt frames; Halsen Bro's, Allendale, Ill., eight pairs Allis rolls in Grav's noiseless belt frames; Louis Camp, Mt. Carmell, Ill,, eight pairs Allis rolls in Gray's noiseless belt frames; Springfield & Memphis Mill Co., Springfield, Mo., eight pairs Allis rolls in Gray's noiseless belt frames; Willard & Northway, Minneapolis, W. Johnson & Bro., New Richmond, Wis , two pairs Wegmann's porcelain roller mills; Madelia Mill Co., Madelia, Minn., two pairs porcelain rolls in Gray's noiseless belt frames: F. A. Townsence & Co., Columbia, D. T., two pairs Wegmann's porcelain rolls in Gray's noiseless belt frames; Bradford Mill Co., Cincinnati, Dronge & Douseman, Aurora, Ind., a Gray's noiseless belt roller mill; Gt. Western M'fg. Co., Leavenworth, Kas., Vreeland & Sheldon, Beloit, Kas., a Gray's noiseless belt roller mill; Russell & Bailey, Wetmore, Kas., a Gray's noiseless belt roller mill; Slater Mill Co., Blanchester, O., A. E. McNeal, Bowensburg, Ill., a Gray's noiselesss belt roller mill; Dehner-Wuerpel M. B. Co., St. Louis, a Gray's noiscless belt roller mill.