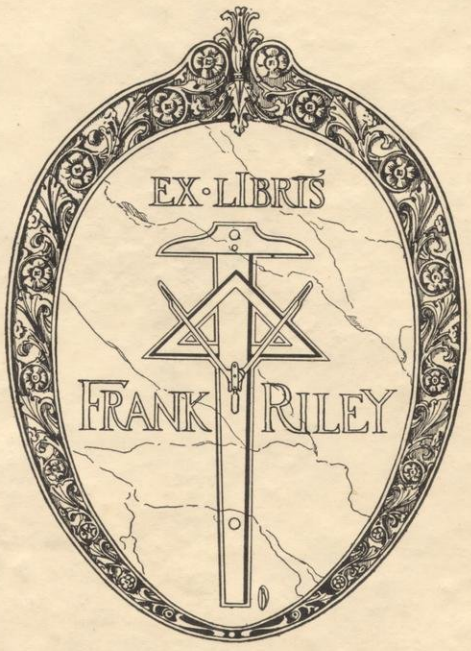
The American builder's companion; or, A new system of architecture: particularly adapted to the present style of building in the United States of America. 1806



THE

American Builder's Companion;

OR, A

NEW SYSTEM OF ARCHITECTURE:

PARTICULARLY ADAPTED

TO

THE PRESENT STYLE OF BUILDING

IN

The United States of America.

CONTAINING,

FORTY FOUR ENGRAVINGS,

REPRESENTING,

Geometrical Lines.
Twenty different Designs for Mouldings.
The five Orders of Architecture, with great alterations, both in size and expense.
Glueing up and diminishing of Columns.
How to find the different Brackets of a Groind Ceiling.
Base and Surbase Mouldings, Architraves, &c.
Twenty four different Designs for Cornices, both for external and internal finishing.
Stone Window Caps and Sills, showing the manner of setting them in a Brick Wall.
Sash Frames, Sashes, and Shutters.
Straight and Circular Stairs.
Roofs and finding the Length and Backing of Hips, either square or bevel.
Ornamental Capitals, Mouldings, Friezes, Leaves, and Ceilings.
Chimney Pieces.
Frontispieces.
Urns, Banisters, Key Stones, &c.
Plans and Elevations of three Houses for Town, and two for Country.
Plans and Elevations for two Meetinghouses.
Plan and Elevation for a Summerhouse.
Plan and Elevation for a Courthouse.
Plan, Elevation, and Section of the Branch Bank of Boston.
With particular Directions for executing all the above Designs.

BY ASHER BENJAMIN, ARCHITECT AND CARPENTER,

AND

DANIEL RAYNERD, ARCHITECT AND STUCCO WORKER.

Boston:

PUBLISHED BY ETHERIDGE AND BLISS, PROPRIETORS OF THE WORK.

.....

S. ETHERIDGE, PRINTER, CHARLESTOWN.

.....

1806.

DISTRICT OF MASSACHUSETTS, TO WIT:

BE IT REMEMBERED, that on the eighth day of September, in the thirty first year of the Independence of the United States of America, Asher Benjamin and Daniel Raynerd, of the said district, have deposited in this office the title of a book, the right whereof they claim as authors, in the words following, to wit:

"The American Builder's Companion; or, a new System of Architecture. Particularly adapted to the present style of Building in the United States of America. Containing, forty four Engravings, representing Geometrical Lines. Twenty different Designs for Mouldings. The five Orders of Architecture, with great alterations, both in size and expense. Glueing up and diminishing of Columns. How to find the different Brackets of a Groind Ceiling. Base and Surbase Mouldings, Architraves, &c. Twenty four different designs for Cornices, both for external and internal finishing. Stone Window Caps and Sills, showing the manner of setting them in a Brick Wall. Sash Frames, Sashes, and Shutters. Straight and Circular Stairs. Roofs and finding the Length and Backing of Hips, either square or bevel. Ornamental Capitals, Mouldings, Friezes, Leaves, and Ceilings. Chimney Pieces. Frontispieces. Urns, Banisters, Key Stones, &c. Plans and Elevations of three Houses for town, and two for Country. Plans and Elevations for two Meetinghouses. Plan and Elevation for a Summerhouse. Plan and Elevation for a Courthouse. Plan, Elevation, and Section of the Branch Bank of Boston. With particular Directions for executing all the above Designs. By Asher Benjamin, Architect and Carpenter, and Daniel Raynerd, Architect and Stucco Worker."

In conformity to the act of the Congress of the United States, entitled, "An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors of such Copies, during the Times therein mentioned;" and also to an Act, entitled, "An act supplementary to an act, entitled, An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books, to the Authors and Proprietors of such Copies during the times therein mentioned; and extending the benefits thereof to the Arts of Designing, Engraving and Etching Historical, and other Prints."

W. S. SHAW, Clerk
Of the District of Massachusetts.

RECOMMENDATION.

BOSTON, September 8th, 1806.

GENTLEMEN,

HAVING been chosen a committee by the government of the Boston Housewright Society, to examine the proofsheets of a new book you were publishing, entitled, "The American Builder's Companion; or, a New System of Architecture:" and being satisfied that a work of this kind has been much wanted, and that yours is better calculated to assist the American builder than any that has come within our knowledge, we therefore do not hesitate to say, we shall cordially recommend it whenever we have it in our power.

THAT your exertions may meet with success, and your book have an extensive circulation, is the wish,

Gentlemen,

Of your very humble servants,

THOMAS W. SUMNER,
JONATHAN LORING,
JAMES BOLTER. } COMMITTEE.

Mess'rs. RAYNERD and BENJAMIN.

PREFACE.

BOOKS on Architecture are already so numerous that adding to their number may be thought to require some apology; but it is well known to any one in the least conversant with the principles of Architecture, that not more than one third of the contents of the European publications on this subject are of any use to the American artist in directing him in the practical part of his business.

THE style of building in this country differs very considerably from that of Great Britain, and other countries in Europe, which is partly in consequence of the more liberal appropriations made for building in those countries, and of the difference of materials used, particularly in the external decorations. The American Mechanic is, therefore, in purchasing European publications, under the necessity of paying two thirds the value of his purchase for what is of no real use to him; and as the principal part of our designs have been executed by our own hands, we feel confident that this publication will be found to contain more useful information for the American workman than all the European works which have appeared in this country, and which, for the most part, are mere copies one from the other.

We are well aware that the magnificent temples of ancient times still retain a degree of romantic grandeur, which would do honour to the present age. It will, at the same time, be readily acknowledged, that an exact imitation of those noble productions of former times, on account of the present expense of materials and labour, would require no common degree of opulence for their completion: and, indeed, a strict conformity to the orders of Architecture seems to be demanded in the construction of public buildings only, and others of immense magnitude; in such situations they have a most noble and majestic appearance; but in private buildings, and others of less magnitude, their massy size and the expense attending them, are little suited to our convenience and means of appropriation. A principal part therefore of our design, in this work, is to lighten their heavy parts, and thereby lessen the expense both of labour and materials. This we expect to accomplish so as to effect a saving of one sixth, and, in many cases, one fourth part: the building shall occupy less ground, and, at the same time, be more commodious.

We do not conceive it essentially necessary to adhere exactly to any particular order, provided the proportion and harmony of the parts be carefully preserved. If, for instance, in any of the cornices an ovolo should be changed for an ogee, or for a hollow, so trifling an alteration could not destroy the effect of the whole, provided it were done with any degree of judgment.

Attempts which have sometimes been made to compose fancy orders, have only spoiled the work, and no reduction of the expense has been effected. It is, therefore, as necessary that these modern fancies should be reduced to a regular system, as it was in former ages, that the Grecian and Roman orders should assume a fixed character. One important object of improvement, is a method of preserving the apparent size of an object elevated above the eye, while, at the same time, the real size is considerably diminished. It is easy to conceive that the size and effect of a cornice for instance, does not so much depend on its height as it does on its projection; because cornices are always elevated a considerable distance above the eye, and, of course, the apparent size depends principally on the projection. [See Plate No. 15.] It will at once be perceived, that the diminution in the height of the cornice is not the most considerable advantage to be derived from this construction; but that the same is gained in the height of the wall that is taken from the height of the cornice.

We have ventured to make some alteration in the proportions of the different orders, by lengthening the shafts of the columns two diameters. Their entablatures and pedestals bear nearly the same proportion as formerly, except that the architrave has less height, the frieze more height (except in the Doric) and the cornice less height and more projection.

We have given a great variety of fancy cornices and capitals, both for external and internal finishing; and calculated both for wood and stucco.

Being the first who have for a great length of time, published any New System of Architecture, we do not expect to escape some degree of censure. Old fashioned workmen, who have for many years followed the footsteps of Palladio and Langley, will, no doubt, leave their old path with great reluctance. But impressed, as we are, with a conviction that a reform in some parts of the system of Architecture is loudly demanded, and feeling a confidence from our knowledge of the theory, and from having long been conversant in the practical part of that science, we have ventured, without the aid of subscription, to exhibit our work to public view.

BOSTON, 1806.

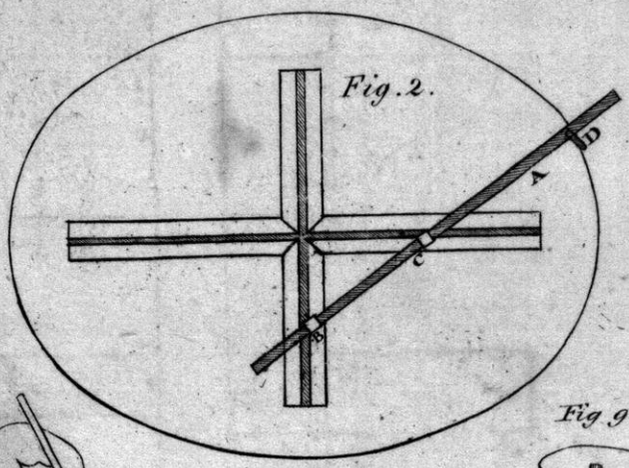


Fig. 2.

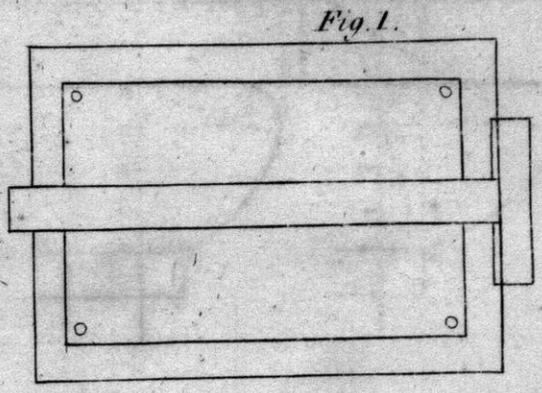


Fig. 1.

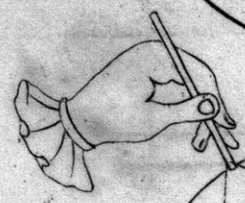


Fig. 9.

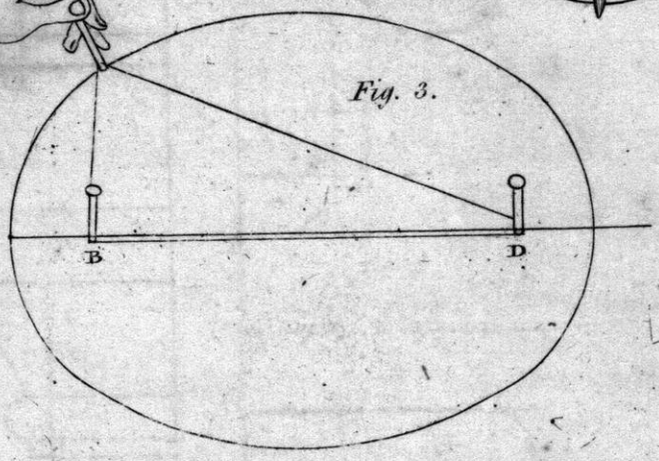


Fig. 3.

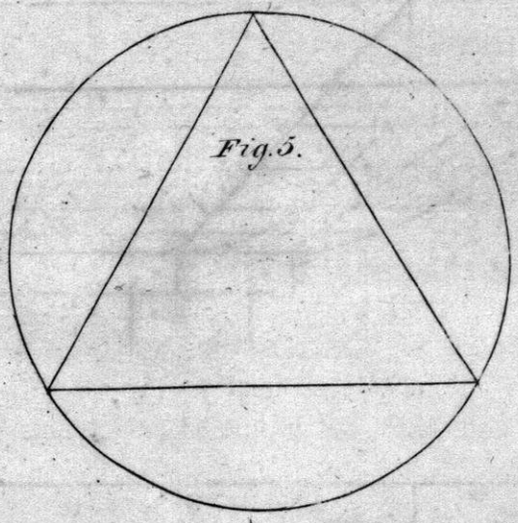


Fig. 5.

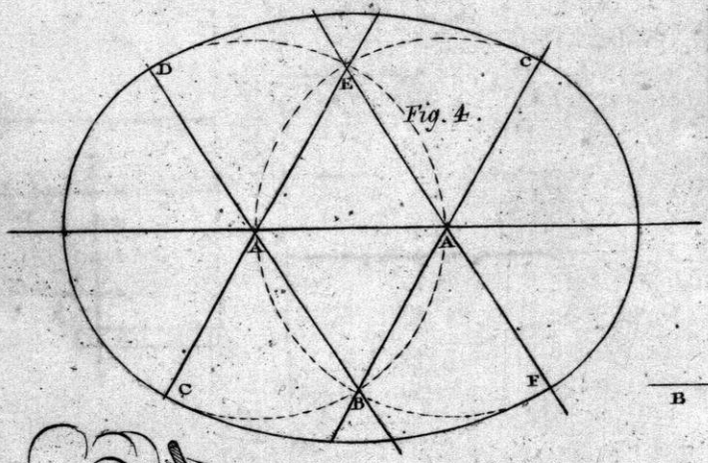


Fig. 4.

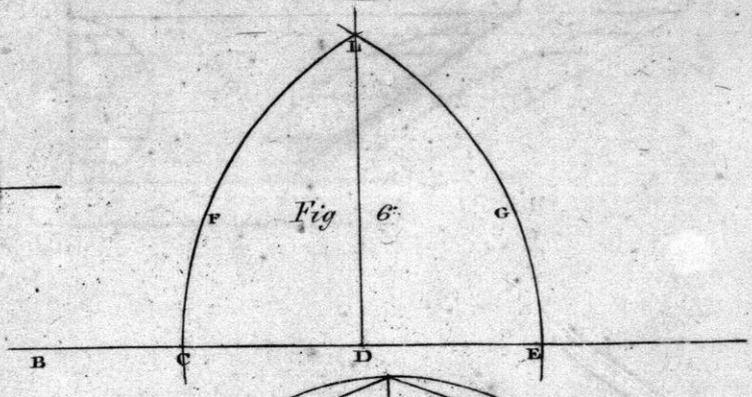


Fig 6.

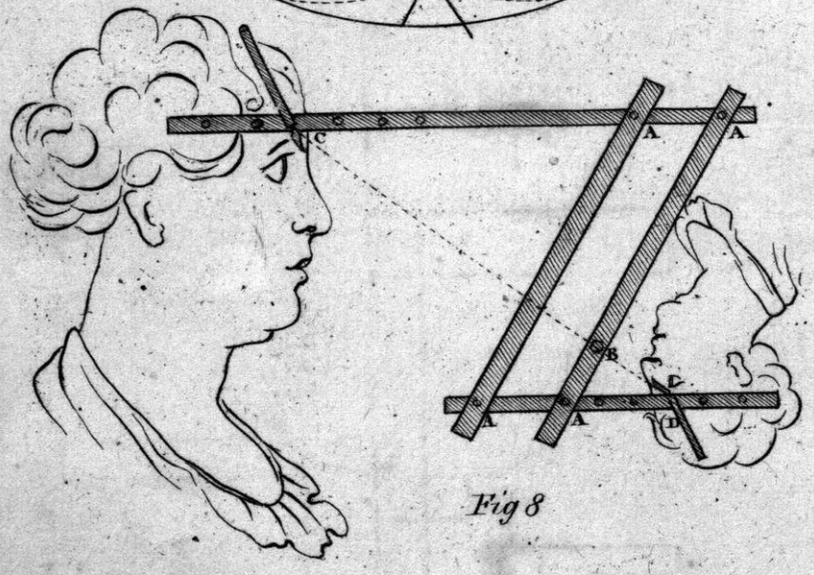


Fig 8

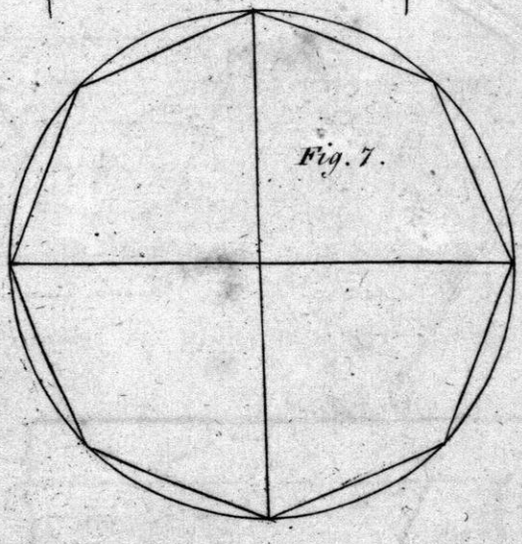
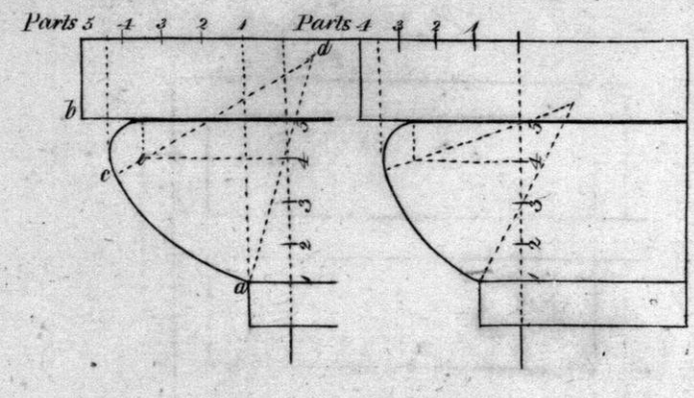
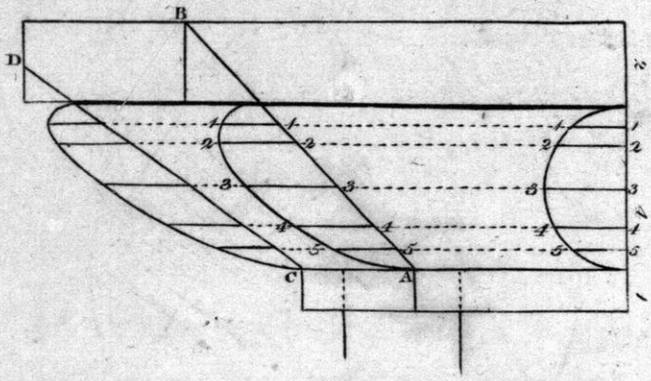


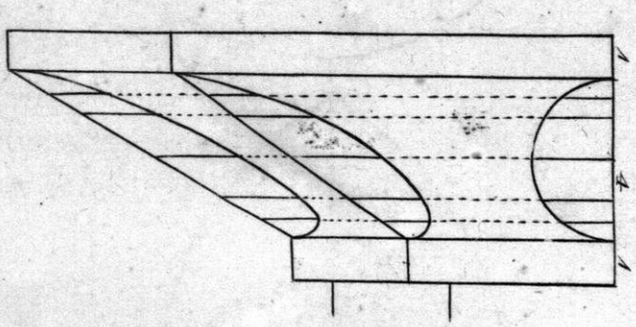
Fig. 7.

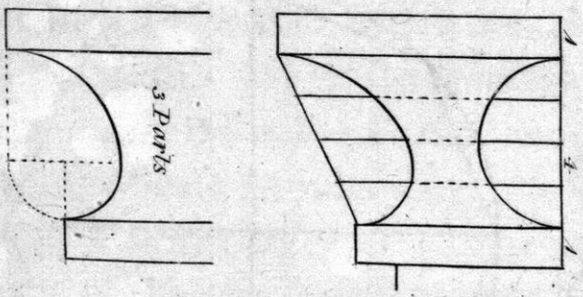
D. Raynerd Del.

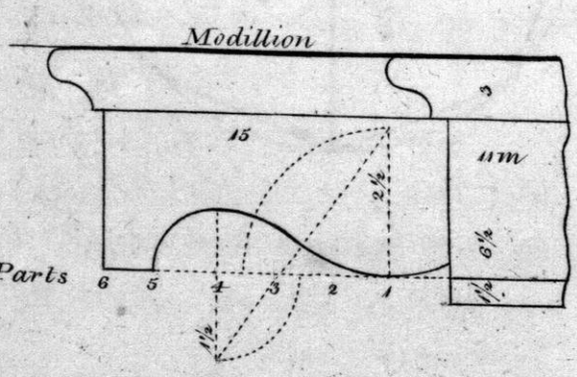
Wightman Sc

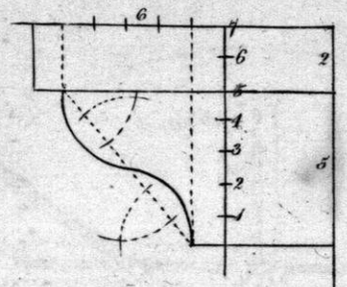


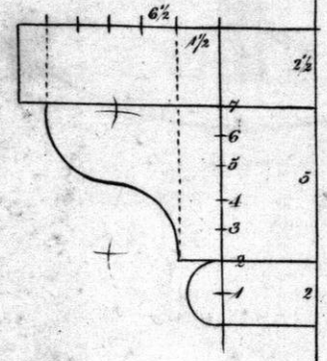


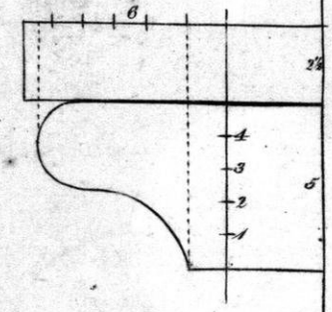


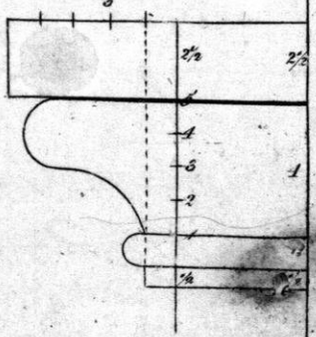


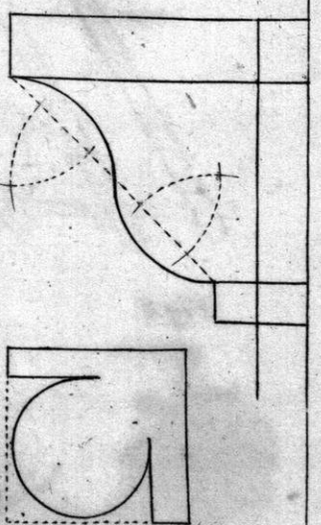


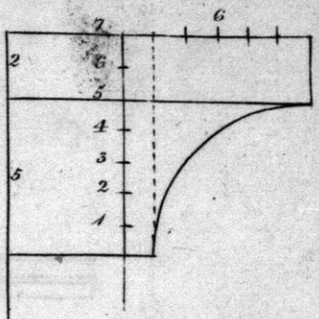


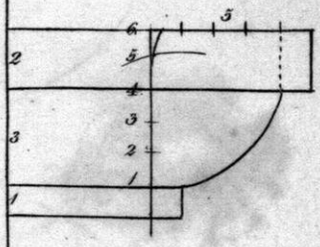


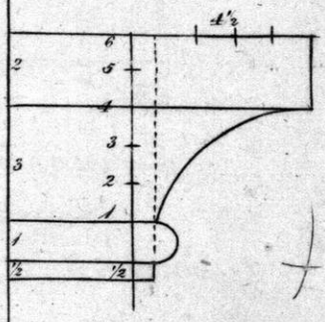


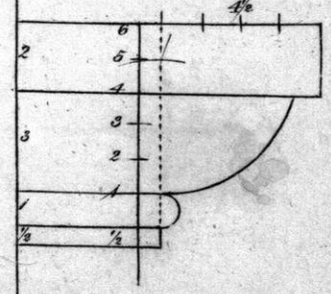


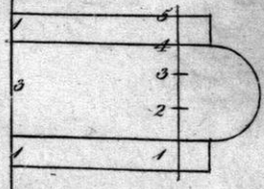


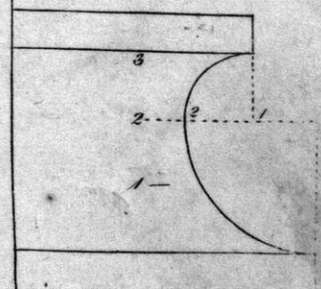












A Benjamin Del.

T. Vaghan

THE

AMERICAN BUILDER'S COMPANION.

PLATE 1.

FIG. I,

Is a drawing board, and a T square; a pine board will do for common use, which must be perfectly square on every side, the size conformable to the paper, which may be secured to the board by four pins, fig. 9, or by sealing-wax; the T square may be made of mahogany, or any other hard wood; the blade may be bevelled a little on the under side, to prevent the ink from blotting the paper.

FIG. 2,

Is a trammel which is a useful machine to strike ovals or ellipsis of any size; a trammel is made of two pieces of wood, with a channel grooved in the centre, and mitred together at right angles; the rod A is a straight strip of wood with 2 pins B C, which are sometimes made to slide on it, with screws to fasten them. When the length and breadth of an oval are determined, bore a hole in the rod at D, then move the pin B to half the intended length of the oval from D, then move the pin C to half the breadth from D, and proceed to describe your ellipsis; thus an oval of any dimensions may be drawn. When an oval is wanted for stucco mouldings, the mould may be nailed on the rod at D, by which means a moulding of any size may be run all in one piece.

FIG. 3,

Shews how an oval may be drawn by means of two pins, D B, and a string or cord. By this method you may draw an oval similar to the one made by

the trammel; but on account of the elasticity of the cord, it will not answer where accuracy is wanted, but is of use in gardening, to lay out grassplats, &c.

FIG. 4,

Shews how an oval may be drawn with the compasses by first describing two circles around the centres A A, then from the centre B, describe the segment C D, then from E to F C, which completes the oval.

FIG. 5.

To draw a triangle, first describe a circle, then divide it into three equal parts and draw the lines from point to point.

FIG. 6.

To draw a square, on the base line B, set off two equal parts C D E, then describe the arc F G, and draw the perpendicular line L D.

FIG. 7.

To draw an octagon, first describe a circle, then divide it through the centre at right angles, and divide each section in two.

FIG. 8,

Is a pentigraph or physiognotrace. This is a useful machine to diminish drawings, and is simply made by four strips of wood which are pinned together at A A A A, and all of them moveable. It is secured to a table, or partition, by the pin B, which is likewise moveable. When thus secured if a pencil be put in the arm at C, and another at D, then will the pencil C trace the outlines of any figure, (a profile for instance); the pencil D will move in a transverse direction, and will form a figure similar but upside down. It may be made smaller or larger by moving the pencils nearer to or further from the centre. Observe that the two pencils and the pin B are always on a straight line.

This machine has been used of late in the United States for drawing profiles, and is said to have been invented by a Mr. Hawkins, of Philadelphia; but this is a mistake, as it is an old invention, and has been in use in Europe for a century at least.

PLATE 2.

On plate 2 are eighteen different mouldings. To draw the quirk ovolo on the top and left hand side of the plate, divide its height into five parts; give one part to the lower fillet; make the projection of the fillet and ovolo equal to the height, and divide it into five parts; make the dotted line 4 *e* parallel to 5 *b*, and equal to three and a half parts; make the line *a d* and *d c* cutting *e* equal to the distance *a b*; *e* is the centre for drawing the curve from the line 5 *b* to *c* and *d* the centre for drawing the curve *c a*.

The quirk ovolos and hollows, on the left hand side of the plate, cannot be drawn by centres. We therefore shall proceed to explain the quirk ovolo A B, which will make the others sufficiently clear.

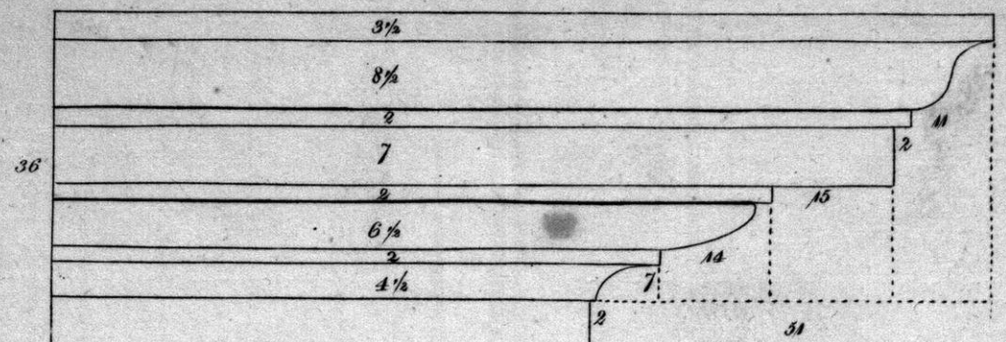
Divide the ovolo and fillets into seven parts; give one to the lower fillet, four to the ovolo, and two to the upper fillet; divide the ovolo into four parts, and the two extreme fourths in two; from 3 describe a half circle touching the lines of the fillets; draw the line A B, and draw lines from 1 to 1, 2 to 2, 3 to 3, 4 to 4, 5 to 5, parallel to the fillets. Suppose the ovolo to project seven parts equal to its height and height of its fillets, transfer the distances from 1 1, 2 2, 3 3, 4 4, 5 5, on the half circle, to 1 1, 2 2, 3 3, 4 4, 5 5, on the line A B, and from those points trace the curve A 5 4 3 2 1 up to the fillet of the ovolo. Observe that the greater the projection the lower the upper end of the line A B must be dropped, as is shewn by the line C D.

PLATE 3.

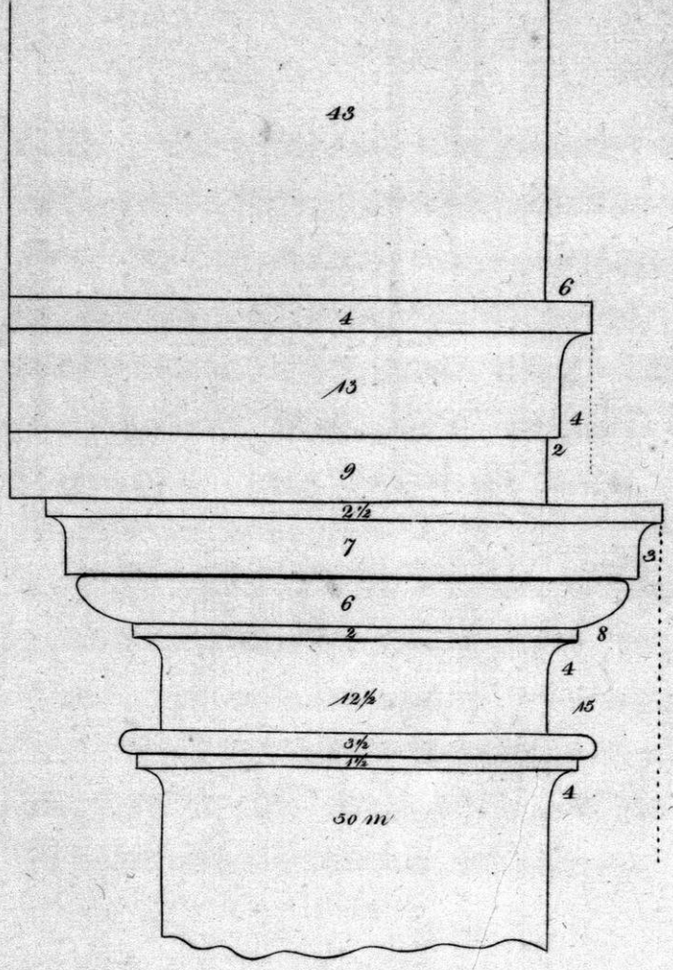
To proportion the Tuscan order on a subplinth, divide the line *c d* into twenty three parts, two of which are the diameter of the column at its base; give forty five minutes to the subplinth, give nine diameters to the height of the column including base and capital, and one diameter and forty five minutes to the height of the entablature. If a pedestal is required, divide the line *e f* into thirteen parts, one of which is the diameter of the column; give to the height of the pedestal two diameters and fifteen minutes; give the column and entablature the same height as if they stood on a subplinth. All the mouldings and parts of the Tuscan, Doric, Ionic, Corinthian and Composite orders, are figured from a scale of sixty parts, or minutes, made on the diameter of their respective columns: see the scale *a c* on the Tuscan column, which is first divided into twelve parts, and one and a half into five, and those parts to be given to the mouldings in height and projection, as figured on the plate. The column diminishes ten minutes as is figured on the plate.

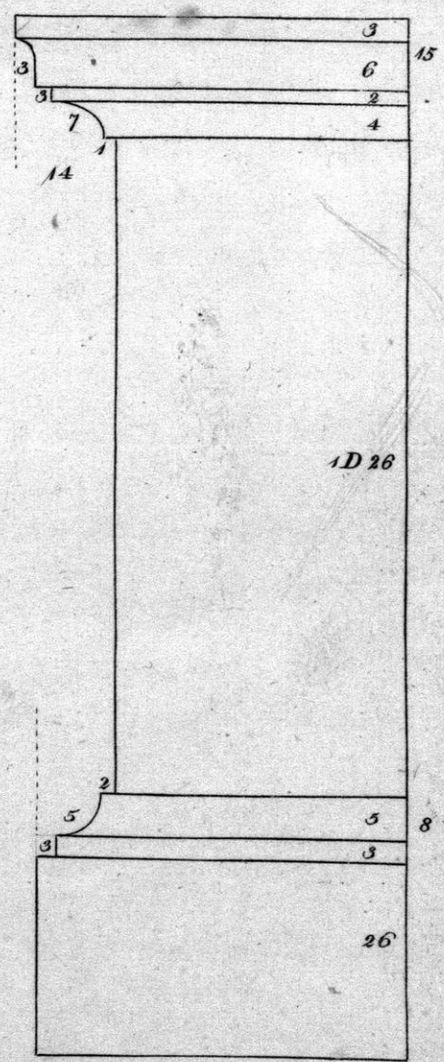
Tuscan Order

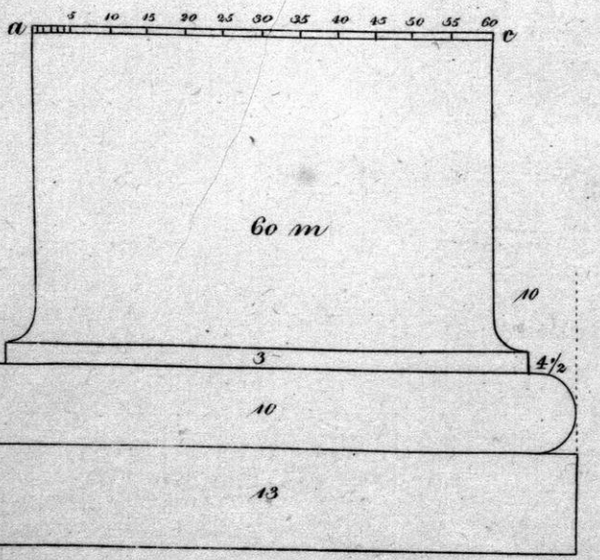
Plate

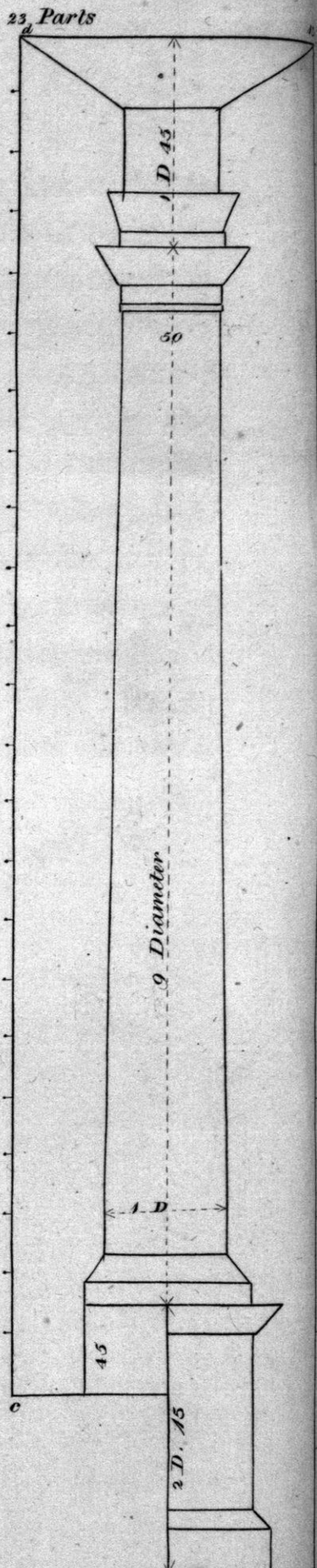


Tuscan Order



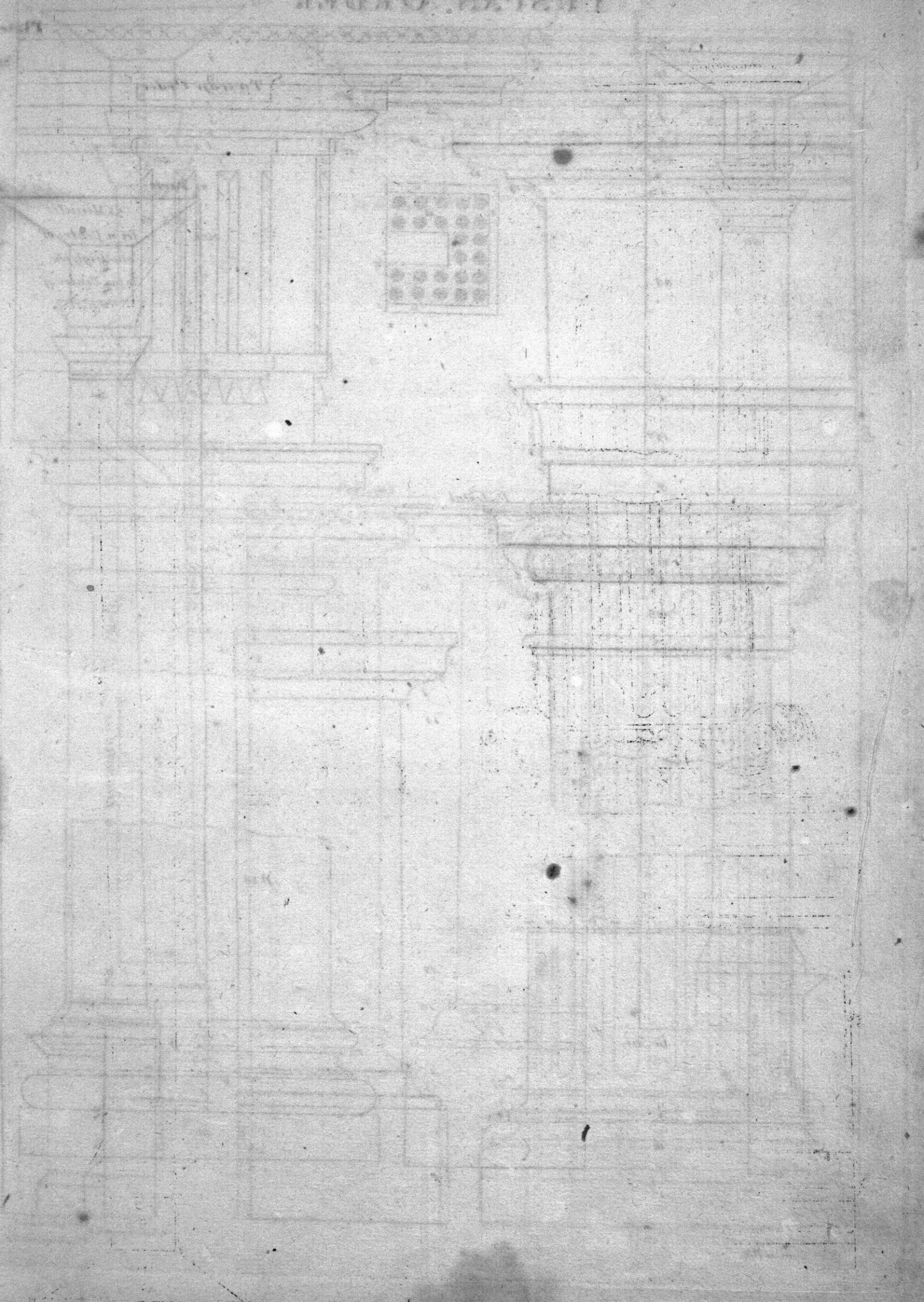






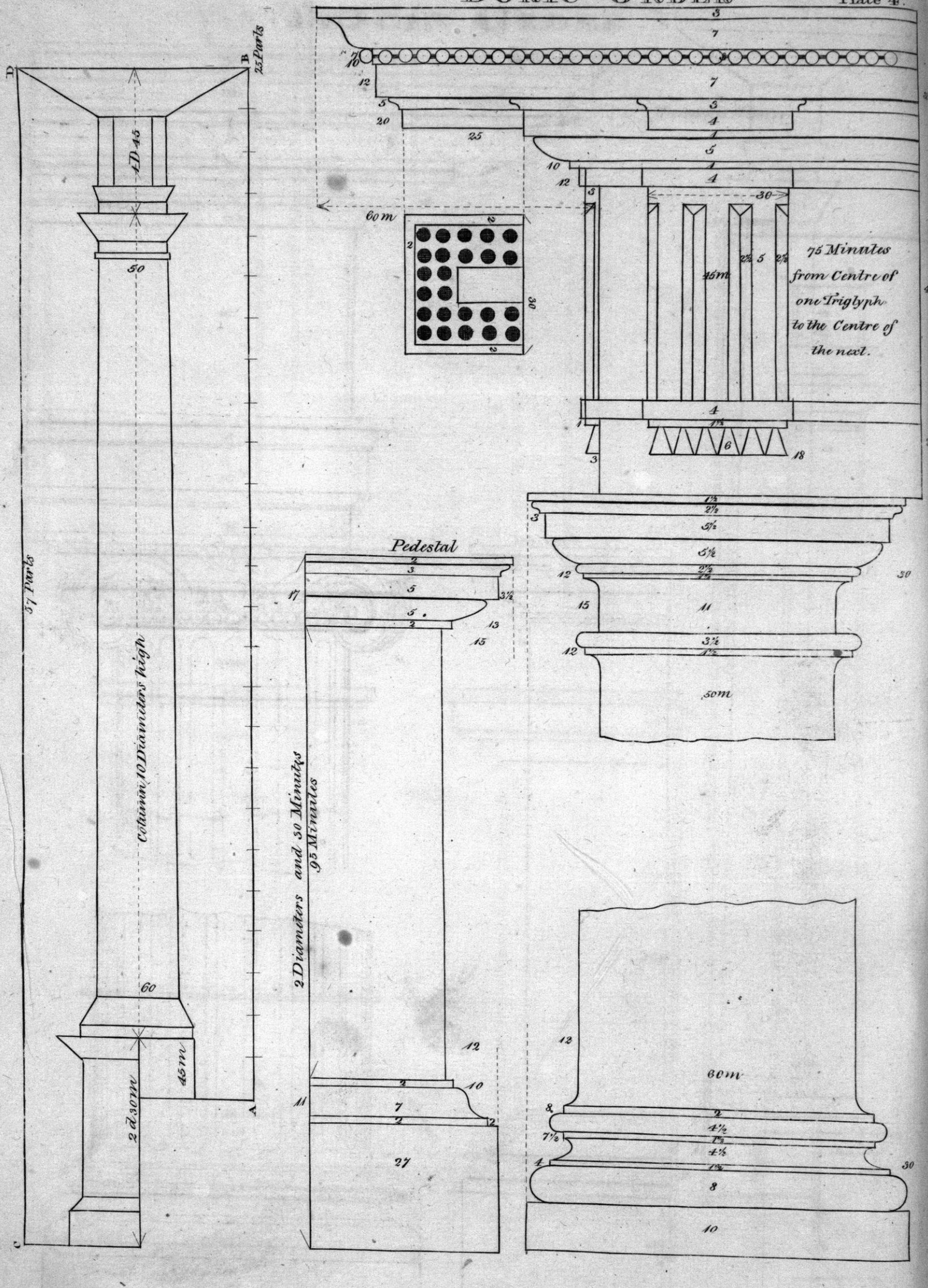
A Benjamin Del.

Wightman Sc.



DORIC ORDER

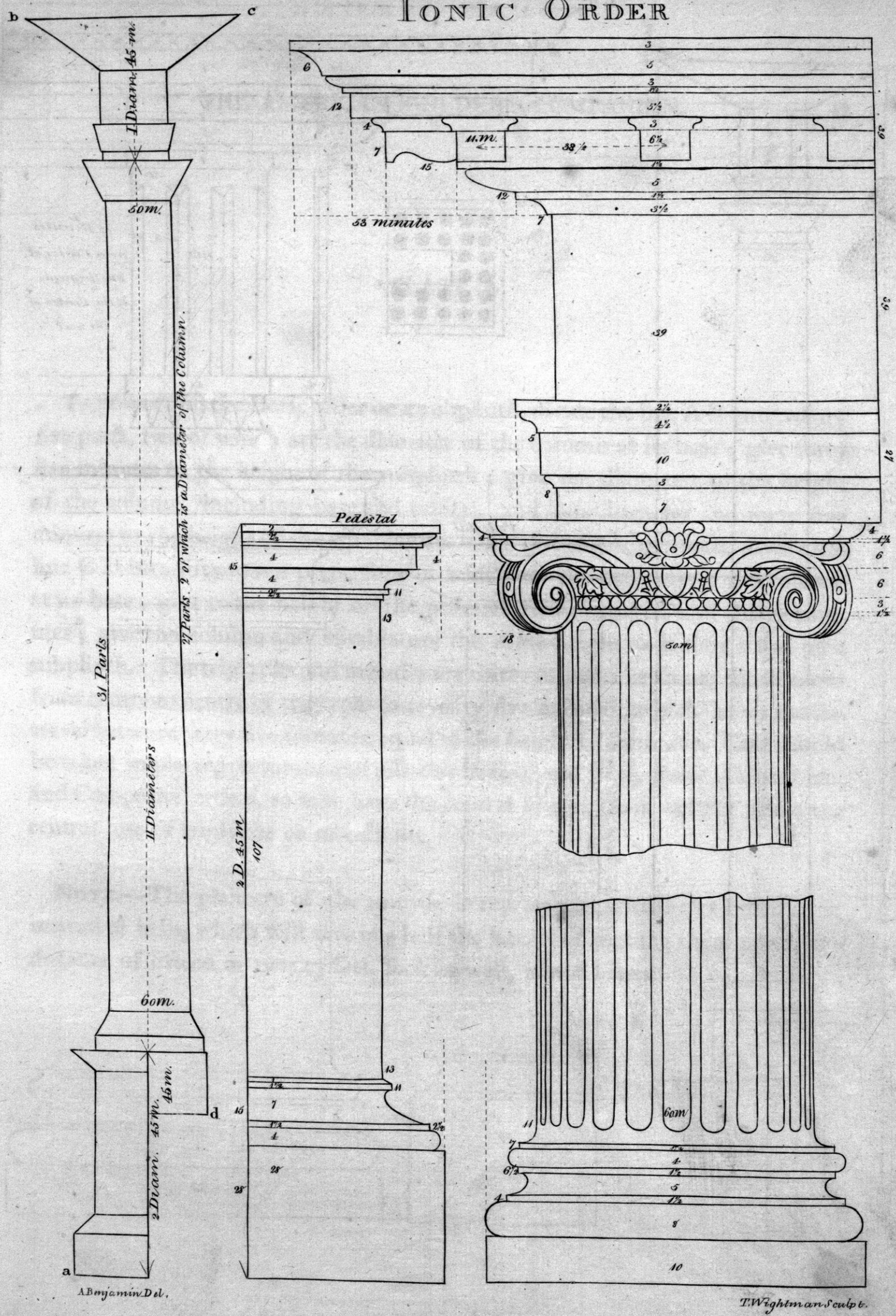
Plate 4.



Benjamin Del.

T. Wightman Sc.

IONIC ORDER


b
c
1 Diam. 45 m.
60m.
31 Parts
27 Parts 2 of which is a Diameter of the Column.
11 Diameters
60m.
45m.
2 Diam. 45 m.
d
a
A. Benjamin Del.
53 minutes
11 m.
38 ½
6 ½
Pedestal
2 D. 45 m.
107
50m.
60m.
T. Wightman Sculpt.

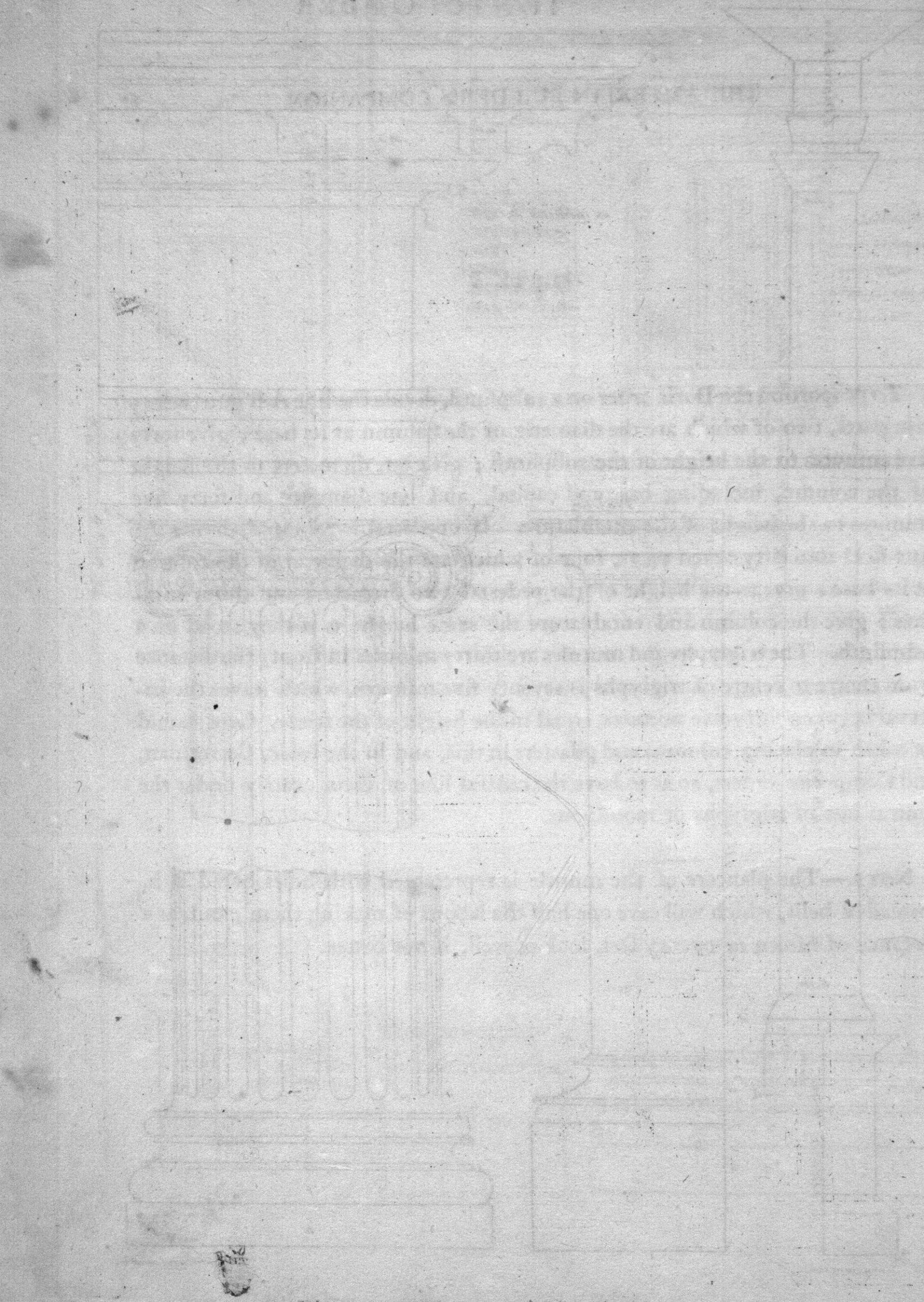


PLATE 4.

To proportion the Doric order on a subplinth, divide the line A B into twenty five parts, two of which are the diameter of the column at its base; give forty five minutes to the height of the subplinth; give ten diameters to the height of the column, including base and capital, and one diameter and forty five minutes to the height of the entablature. If a pedestal is required, divide the line C D into fifty seven parts, four of which are the diameter of the column at its base; give to the height of the pedestal two diameters and thirty minutes; give the column and entablature the same height as if they stood on a subplinth. The triglyphs and mutules are thirty minutes in front; the distance from centre to centre of triglyphs is seventy five minutes, which leaves the interval between forty five minutes, equal to the height of the frieze. Care should be taken in placing columns and pilasters in this, and in the Ionic, Corinthian, and Composite orders, so as to have the central line of them exactly under the central line of triglyphs or modillions.

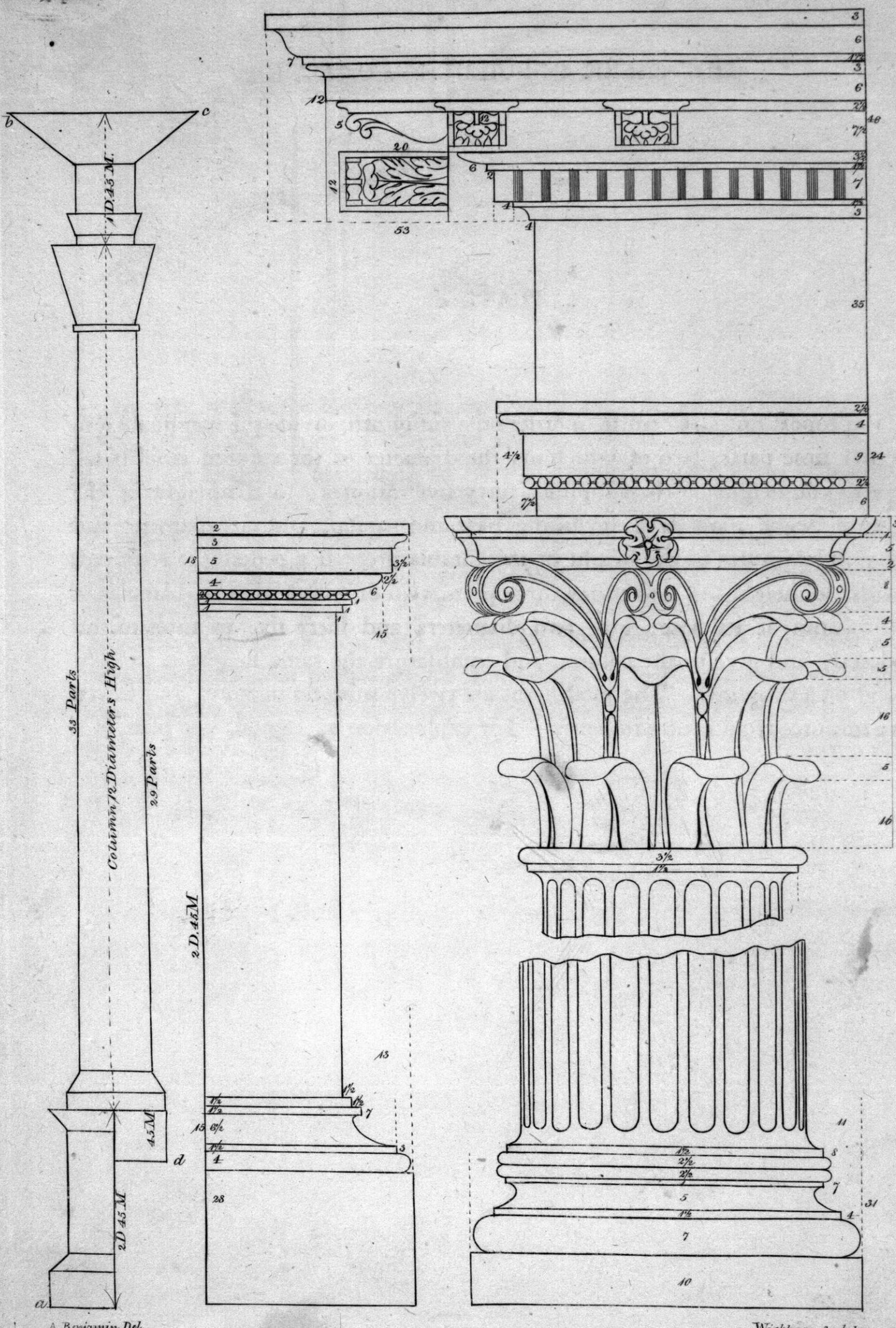
NOTE.—The plancere of the mutule is represented with holes bored in it, instead of bells, which will save one half the labour of making them; and, at a distance of fifteen or twenty feet, look as well, if not better.

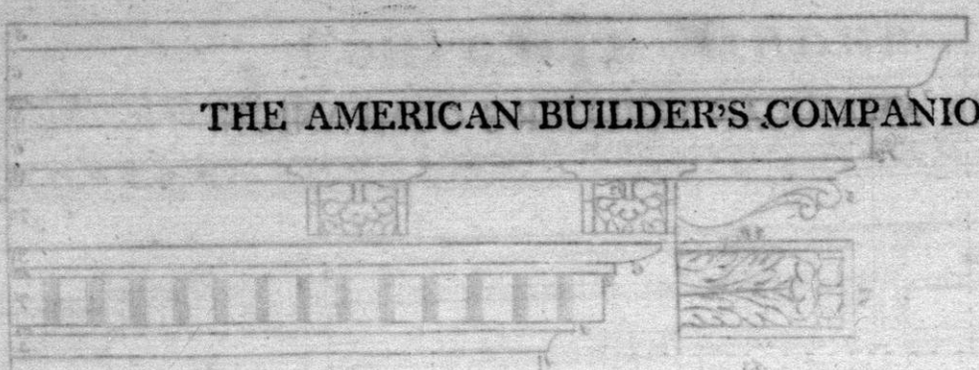
PLATE 5.

To proportion the Ionic order, on a subplinth, divide the height *d c* into twenty seven parts; two of which are the diameter of the column at its base; give to the height of the subplinth forty five minutes; give eleven diameters to the height of the column, including base and capital, and one diameter and forty five minutes to the height of the entablature. If a pedestal is required, divide the height *a b* into thirty one parts, two of which are the diameter of the column at its base; give two diameters and forty five minutes to the pedestal; give the column and entablature the same heights as if they stood on a subplinth. The modillions are eleven minutes front, and thirty eight and a half minutes from centre to centre. For explanation of capital, see plate 8.

CORINTHIAN ORDER

Plate 6.





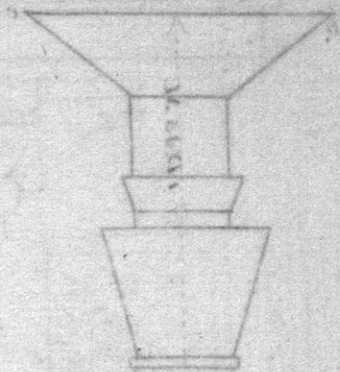
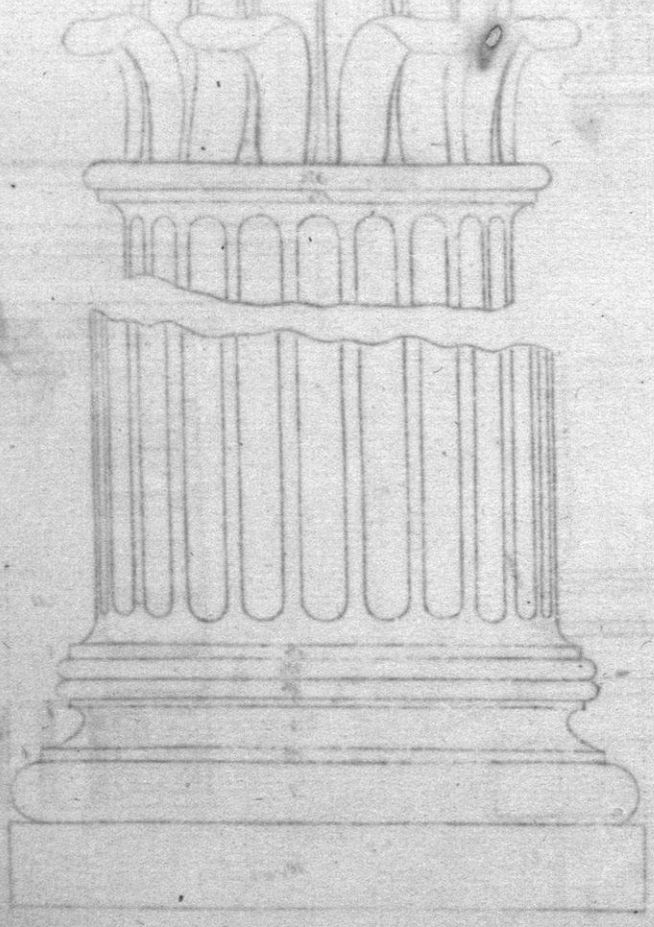


PLATE 6.

To proportion the Corinthian order on a subplinth, divide the height *d c* into twenty nine parts, two of which are the diameter of the column at its base; give to the height of the subplinth forty five minutes; to the height of the column twelve diameters, including base and capital, and one diameter and forty five minutes to the height of the entablature. If a pedestal is required, divide the height *a b* into thirty three parts, two of which are the diameter of the column at its base; give two diameters and forty five minutes to the pedestal; and give to the column and entablature the same height as if they stood on a subplinth. The modillions are twelve minutes in front, and thirty five minutes from centre to centre. For explanation of capital, see plate 9.



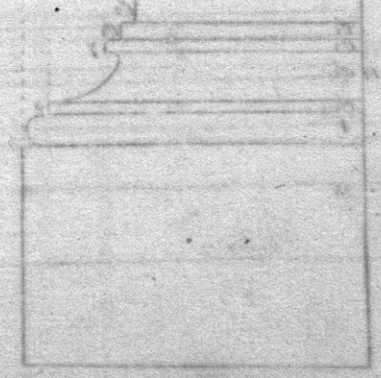
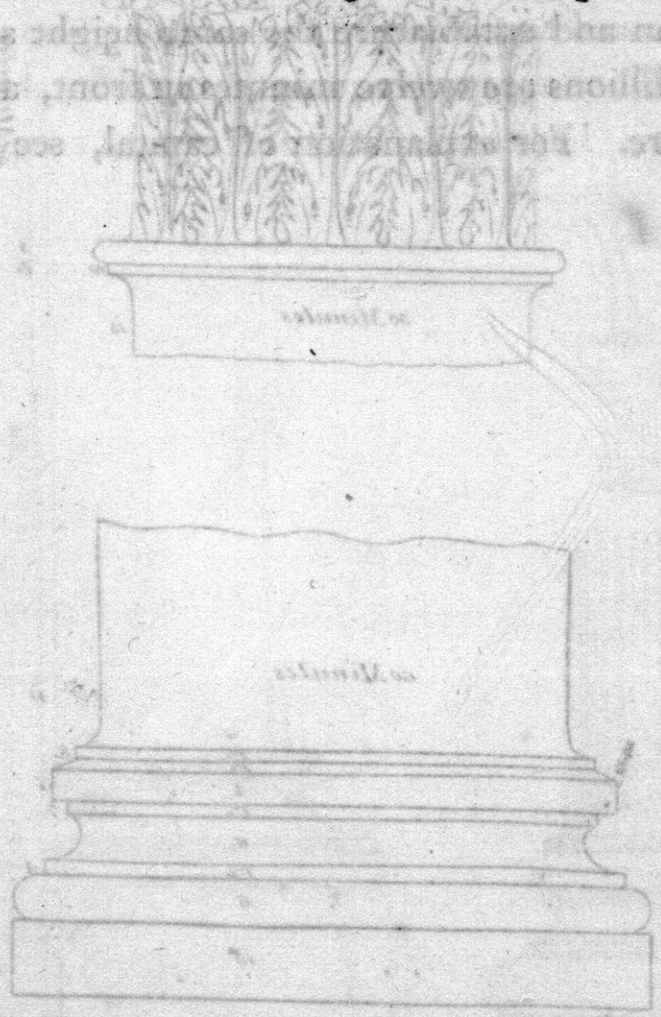
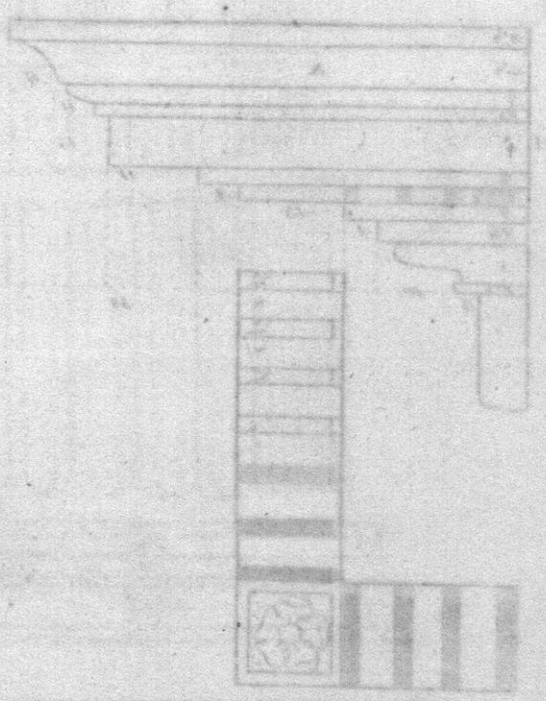


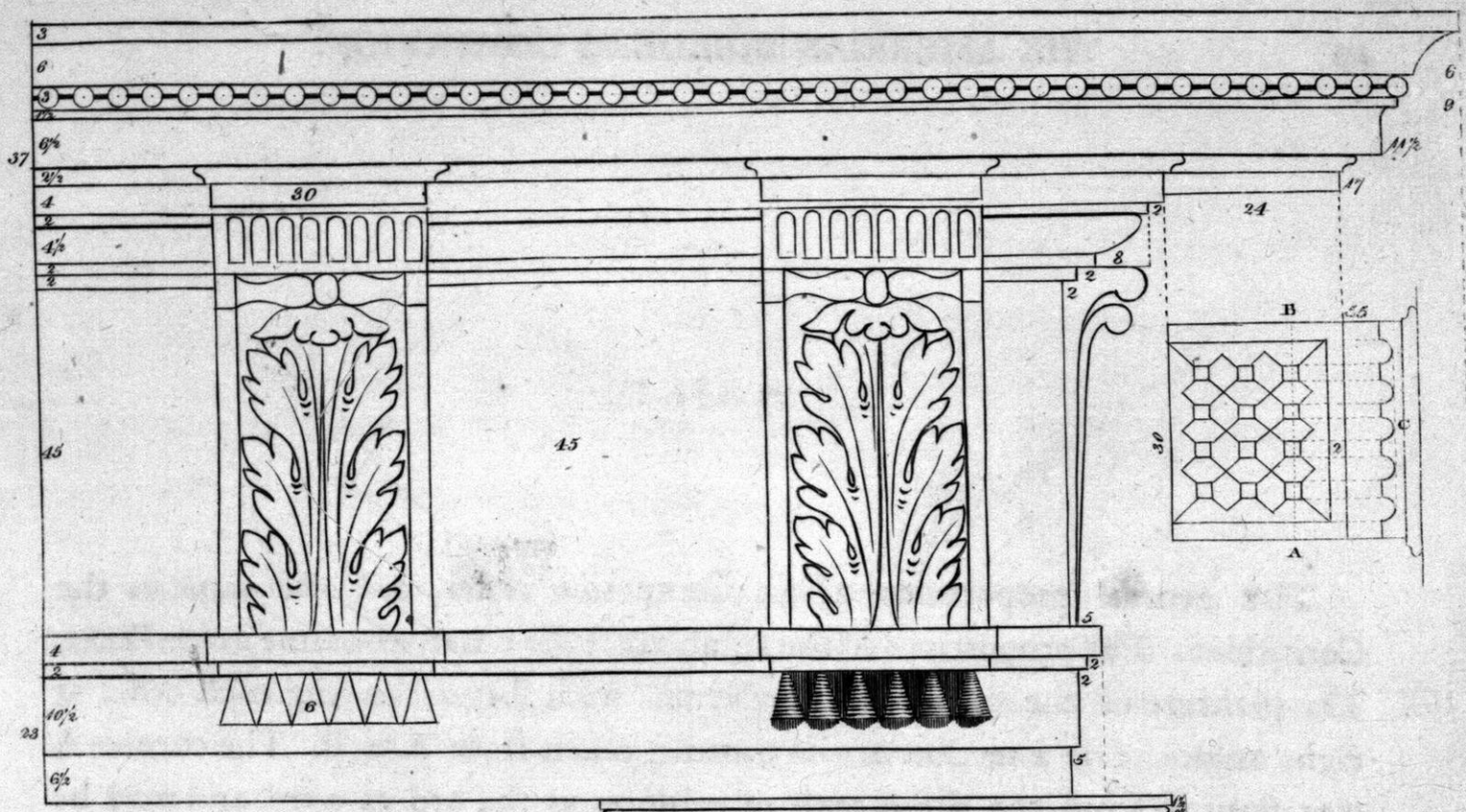
PLATE 7.

THE general proportions of the Composite order, are the same as the Corinthian. The proportions of the entablature are nearly the same as the Doric. The plancere of the mutule is represented with flutes crossing each other at right angles. C is a section of the mutule, taken from A to B. The cornice A was figured from the same scale of minutes as the orders were, and may be used with the columns of the Doric, Ionic, Corinthian, or Composite orders, for inside or outside finishing, for frontispieces, or for capping of posts.





COMPOSITE ORDER



AB enjamin Del.

Wightman Sc.

Ionic Capital

Fig 1.

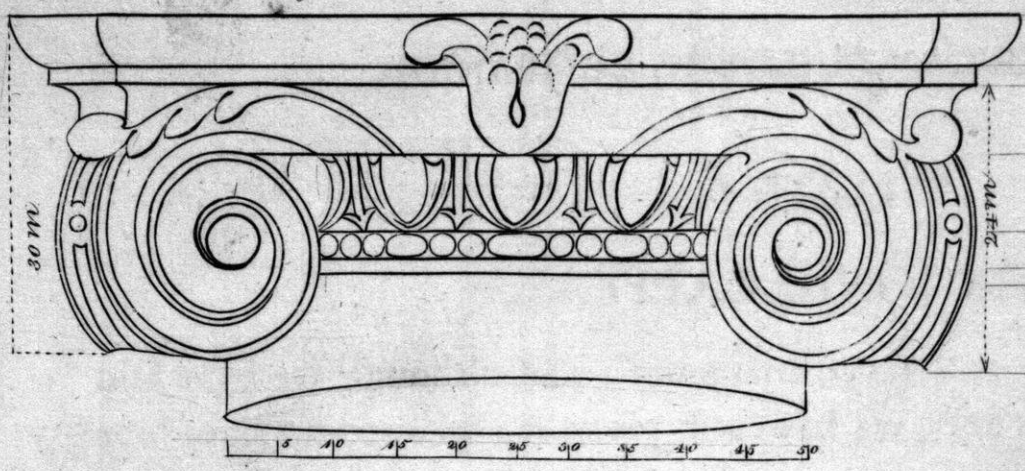
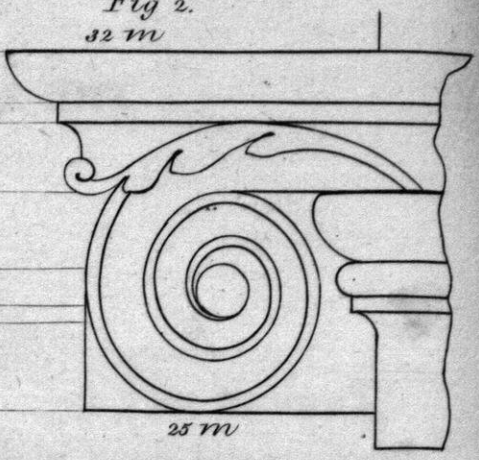


Fig 2.



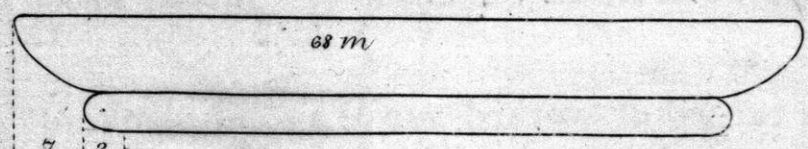


Fig 3

Fig 4.

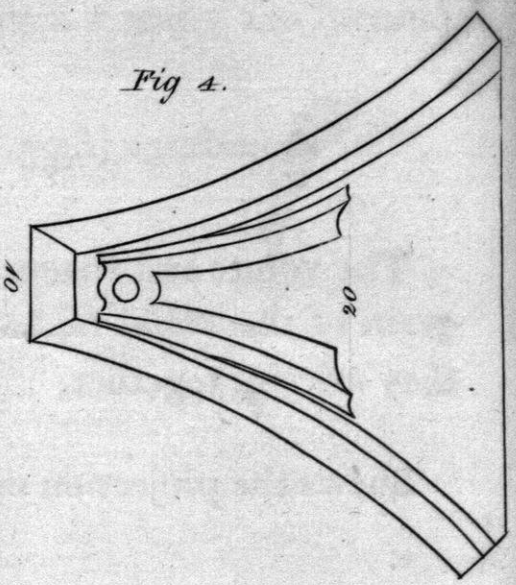


Fig 5.

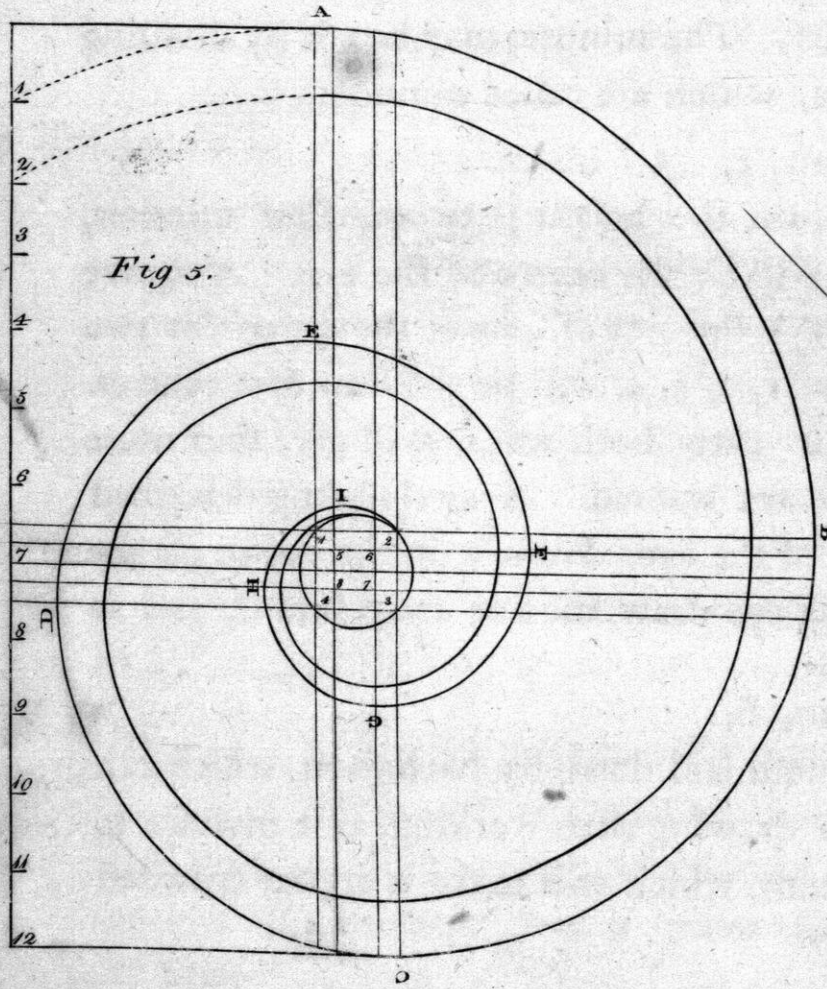
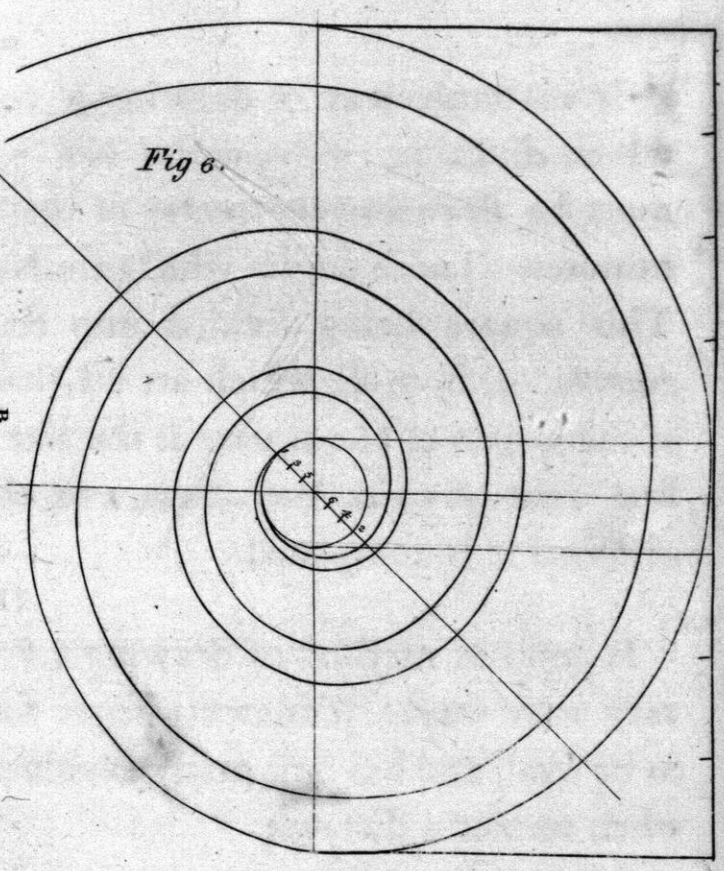


Fig 6.



D. Raynerd Del.

Wightman Sculpt

PLATE 8.

THE IONIC CAPITAL,

THOUGH very ancient is still very ornamental; and although we have laid down several more modern ones, we have still given it a place; and have here pointed out a better method than the one mostly used in the working of it.

FIG. 3.

The mouldings (fig 3,) may be turned or worked out of a solid plank.

FIG. 4.

The volute and abacus may be made out of a solid piece of timber. Let the grain of the wood be horizontal. Those may be completely finished before they are put together.

FIG. 2,

Shews the projection of the volute and abacus from the face of the column.

FIG. 1,

Is the appearance when put together. The minutes may be got by dividing the neck of the column into fifty parts, which are called minutes.

FIG. 5,

Is a simple way of drawing a volute, the height is twenty four minutes, which divide in twelve parts; No. 7 will be the centre of the eye. A square must be drawn in the centre of the eye the size of one of those parts or two minutes. Those angles which are No. 1, 2, 3, 4, will be the four first centres. This square being divided into four parts both ways, will give four more centres, 5, 6, 7, 8, which are all that are wanted. A circle being described at the angles of the square is the size of the eye. From 1 on the eye draw the line from A to B, then from 2 on the eye draw the line from B to C, and so on until it is completed.

FIG. 6,

Is another method of drawing a volute laid down by Nicholson, which is a very easy way. It answers better for drawing than working, as it inclines to to be oval, and has two many revolutions, which will make it appear crowded when seen at a distance.

PLATE 9.

EXPLANATION

OF

THE CORINTHIAN CAPITAL.

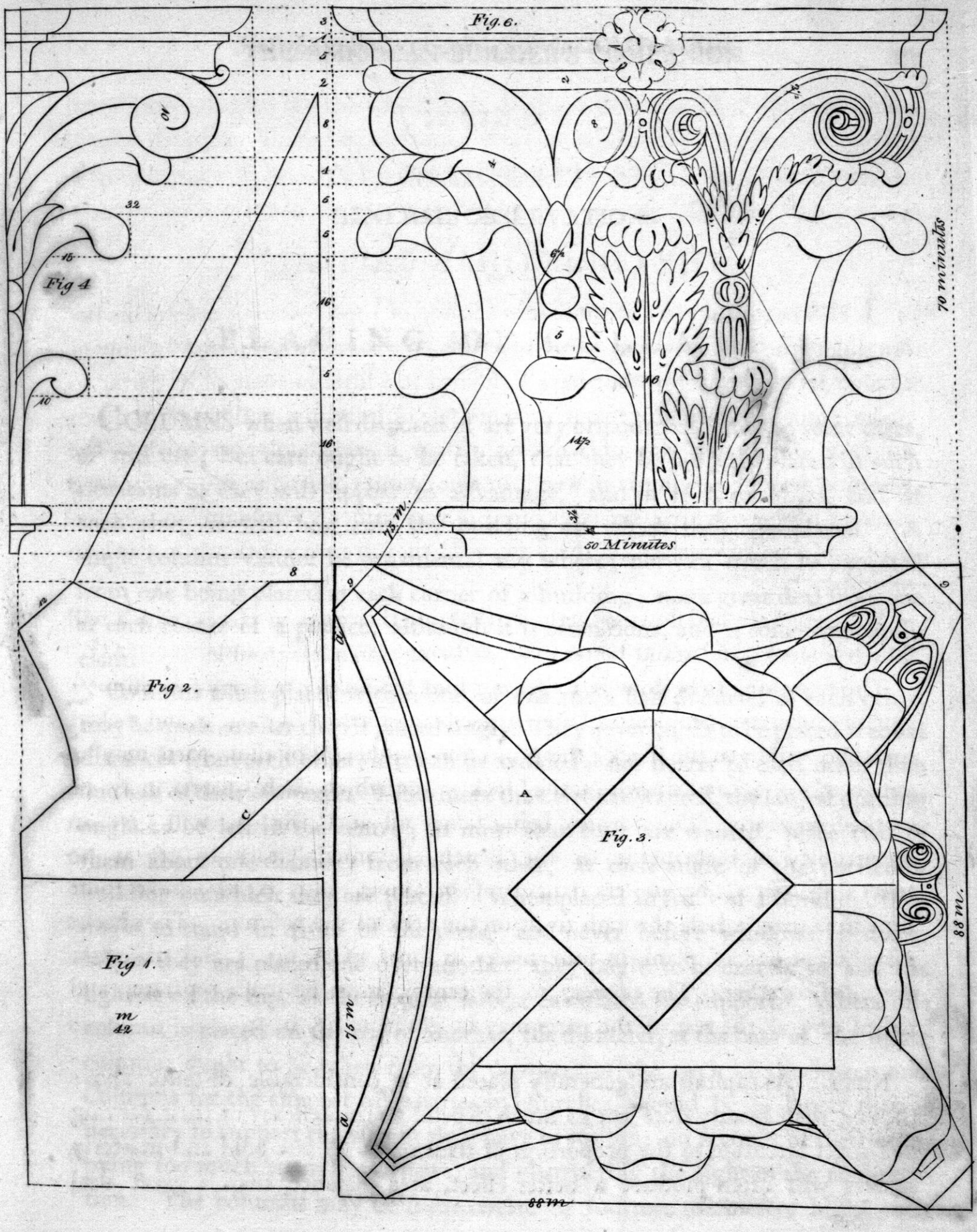
THIS beautiful piece of mechanism is one of the most noble ornaments belonging to the whole System of Architecture. We have, therefore, not attempted to alter its elegant form, but have lightened it a little in some of its parts, to make it more conformable to our present style of building; and have laid down an easy and better way of working it than is commonly practised. The common way of carving it in wood, in this country, is, to get it out of a solid piece of timber ; which, for large ones, is very difficult to obtain, and are liable to split when exposed to the sun, and they are very difficult to work in one piece.

We have here laid down a method of getting them out in pieces, which will take less stock, and stand better ; beside being much less trouble.

The first thing to be done is, to get out four blocks, fig. 1, forty two minutes square and sixty one minutes long ; these being formed like fig. 2, and tacked together, will form the block ; the projection and height of all its parts may be got from fig. 4, and drawn on the block, after which, each quarter may be worked separate. The corners being taken off at C, fig. 2, will give an opportunity of securing it to the bench, be much easier to get at to relieve its parts, be in less danger of breaking, and likewise save some time in cutting a hole through to fit on the neck of the column. The abacus may be got out of plank in four pieces in form of A, fig. 3 and nailed or dowelled together. The flower, in the centre, must be made separate, and nailed on ; all the rest of the parts may be got from fig. 6.

NOTE. As capitals are generally placed at a considerable distance above the eye, their beauty does not so much depend on the delicacy of their carving as a strict attention to the proportion of their parts. A few bold and masterly strokes will often produce a better effect, at a distance, than a great deal of labor.

CORINTHIAN CAPITAL



GENERAL OBSERVATIONS

ON

PLACING OF COLUMNS.

COLUMNS when well disposed of are very ornamental, and, in some cases, of real use; but care ought to be taken, that they be properly placed in such situations as they will appear to advantage, and in such numbers, and of such size, as will best suit the building on which they are placed. A single column cannot be ornamental any where; nor can much be expected from one being placed at each corner of a building; nor a great deal from one at each corner of a portico, although it is often done, and is sometimes sufficient.

Columns when placed within one, or one and a half diameter of each other, may be made smaller than if placed singly. They never ought to be placed at equal distances from each other, if it can be avoided; nor nearer to each other than one half of their diameter. When more than two are wanted, the largest opening ought to be left in the centre; if more than four are wanted, place two of them about one diameter from each other, at each angle of the portico or building on which they are placed. When placed in front of a building, they ought to stand in front of the piers, and never before windows or doors. When they are placed one over another, they ought to be exactly so, and the lightest on the top, as the stoutest is best calculated for support. Where one column is placed on the top of another, the diameter, at the base of the upper column, ought to be taken from the diameter of the neck of the lower one. Columns for the support of galleries in churches, should be no larger than is necessary to support the weight they have to sustain; on account of their occupying too much room in the pews, and obstructing the sight of the congregation. The columns may be from twelve to fourteen diameters high; their

entablature taken from a scale made on their diameter. If columns are placed over them for the support of the roof, they must be placed on a pedestal, which will continue round the front of the gallery, and ought to be ornamented with the base and cornice of the pedestal, or some other mouldings of their size, or nearly so. Avoid making the cornice of the pedestal from five to nine inches, and placing a small cornice (nearly the size the cornice of the pedestal ought to be) just above the lower columns, which awkward manner of finishing fronts of galleries is very often to be met with in churches and meetinghouses, especially in country towns.

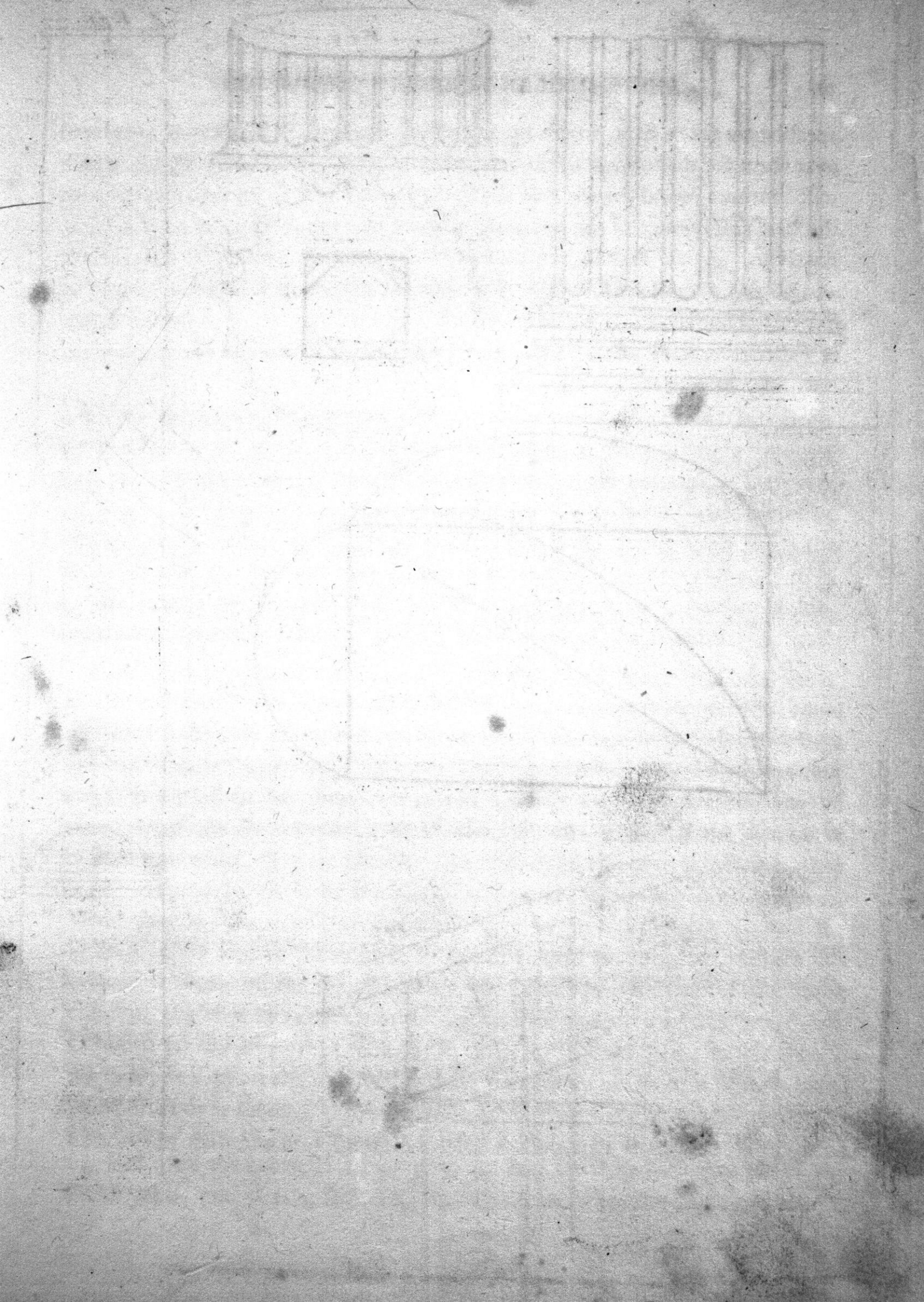


Fig 3.

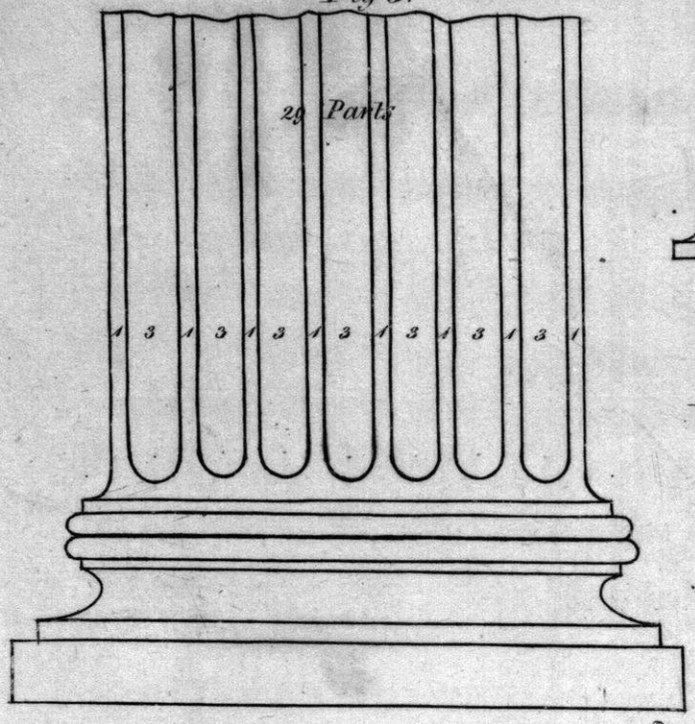


Fig. 2.

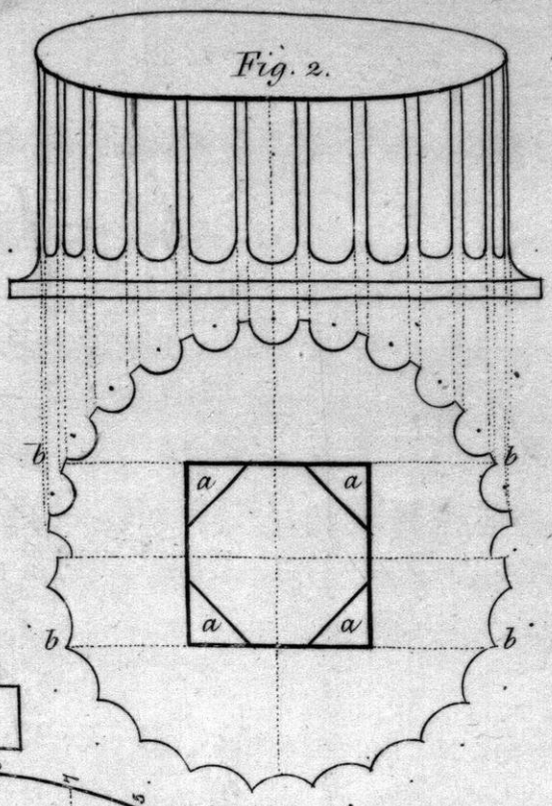
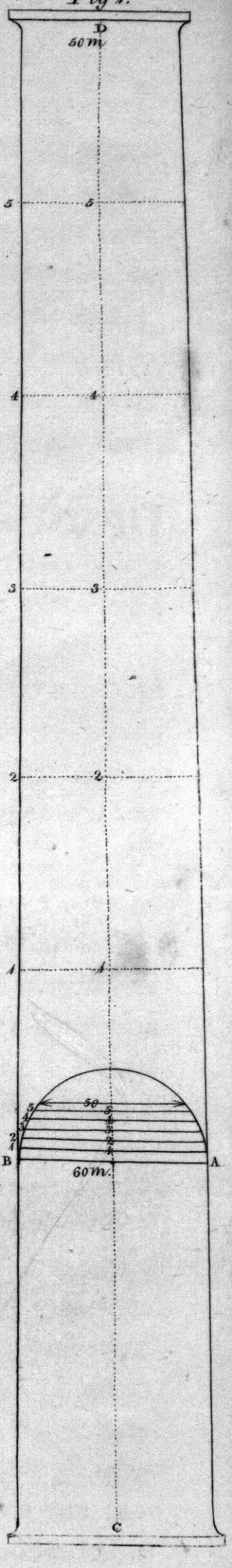


Fig 1.



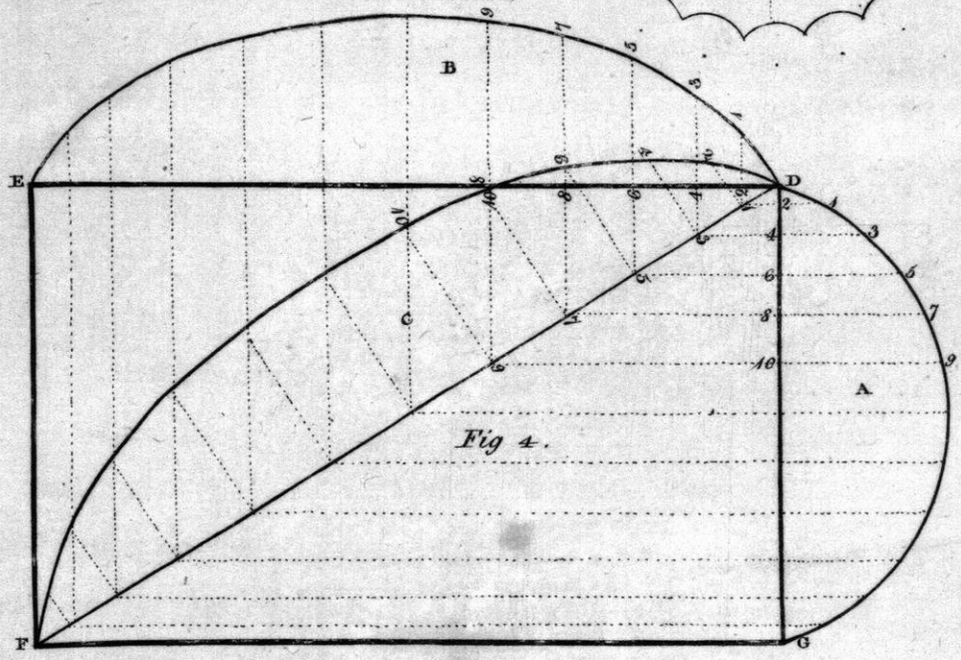


Fig 4.

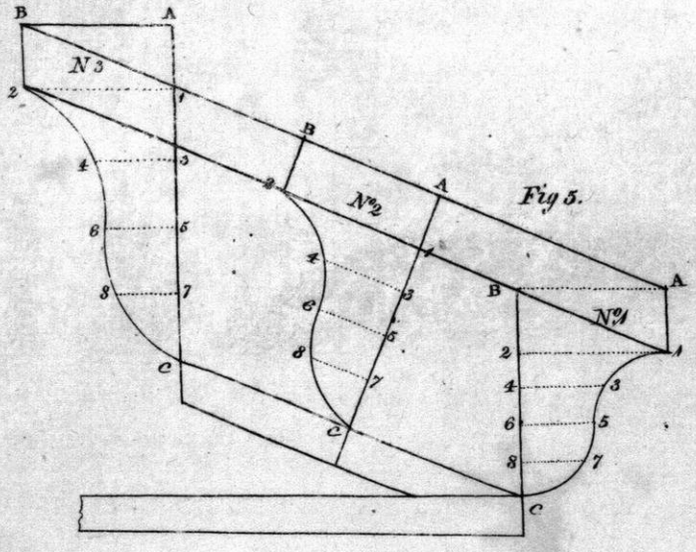


Fig 5.

PLATE 10.

OF DIMINISHING OF COLUMNS.

FIG. 1.

DIVIDE the shaft of the column C D into four equal parts; draw a half circle at one quarter the height A B; divide the remaining three quarters into six parts; take twenty five minutes, half the diameter of the column, at D; place one foot of the compasses on the central line of the column, with the other foot at a right angle; make a point on the circle B A; divide from B, on the circle, to the line 50, and transfer the distances from 1 to 1, 2 to 2, 3 to 3, 4 to 4, 5 to 5, on the circle A B, to 1 1, 2 2, 3 3, 4 4, 5 5, on the column, and trace the curve line B 1, 2, 3, 4, 5, to the neck of the column.

FIG. 2 AND 3,

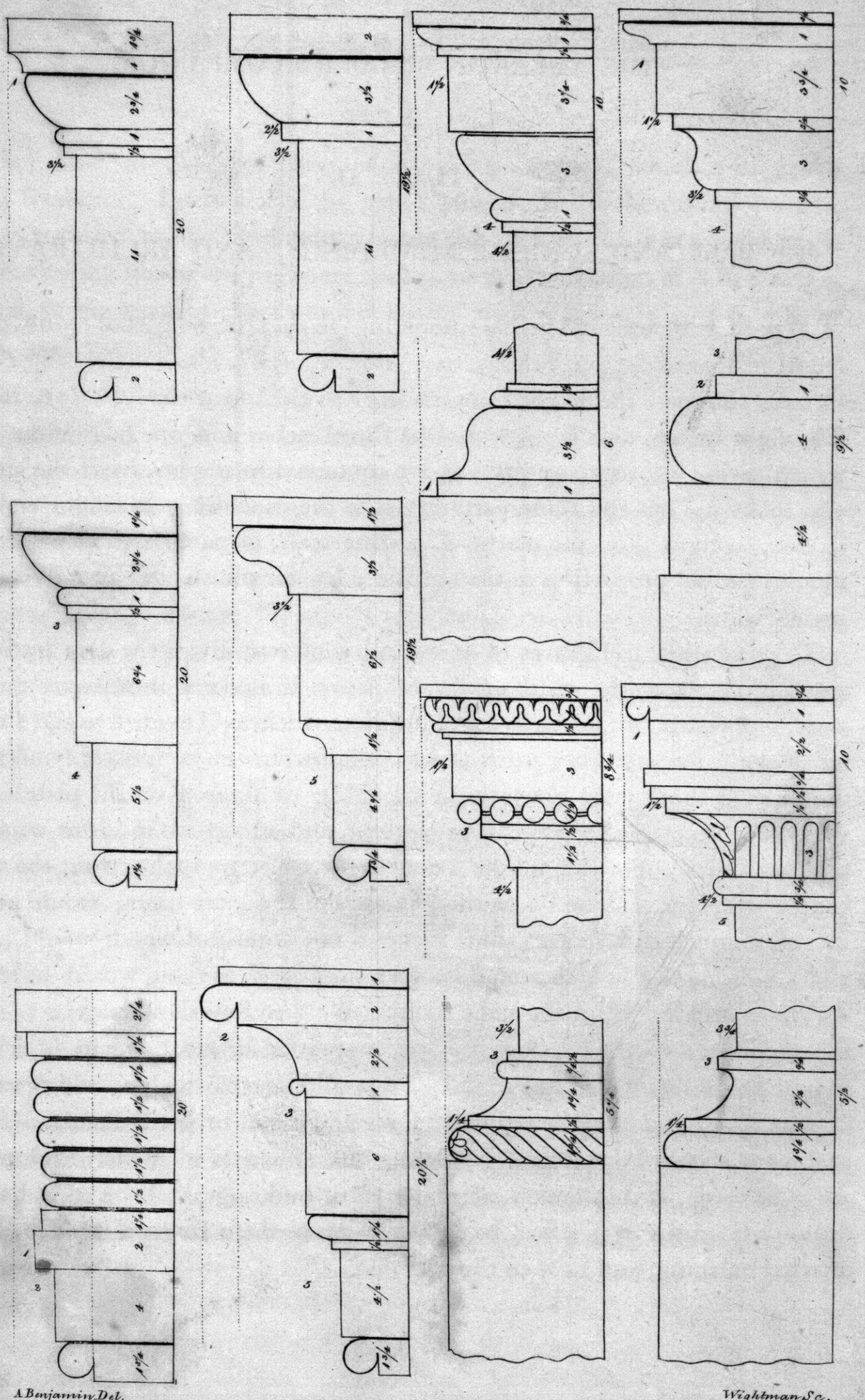
Show the manner of laying out flutes and fillets on columns and pilasters, and of gluing up the column with four pieces of plank. The dotted lines *b b* and *b b* show where the planks are glued, and *a a a a* shows the sections of blocks glued in the internal part of the column to strengthen the joints *b b* and *b b*.

FIG. 4,

Shows how to draw the ribs of a groin ceiling. Let E D G F be the plan, or sides of the room; let A, be a given arch; divide its circumference into twelve or more parts; draw the diagonal line D F, which is the base line of the angle bracket; draw lines from 1, 3, 5, 7, 9, &c. on the circle D G, cutting the base line D F at 1, 3, 5, 7, 9, &c. and at right angles to 2, 4, 6, 8, 10, &c. then transfer the distances in A from 1 to 2, 3 to 4, 5 to 6, 7 to 8, 9 to 10, to C, and B from 1 to 2, 3 to 4, 5 to 6, 7 to 8, 9 to 10, and trace the curve D 1, 3, 5, 7, 9, &c. on B, which completes the side bracket, and D 2, 4, 6, 8, 10, &c. which complete the angle bracket C.

FIG. 5.

Shows how to find the form of a raking cornice, which will mitre with a level one. Let No. 1 be the given cornice, No. 2 the raking cornice, No. 3 return for an open pediment; make the back of No. 2 at a right angle with the raking line of the pediment, and cause the thicknesses at A B, 1 2, 3 4, 5 6, 7 8, to No. 2 and 3 exactly to correspond with A B 1 2, 3 4, 5 6, 7 8, of No. 1, and trace the curves *c* 8, 6, 4, 2.



A. Benjamin Del.

Wightman Sc.

PLATE 11.

OF BASE AND SURBASE MOULDINGS, AND ARCHITRAVES.

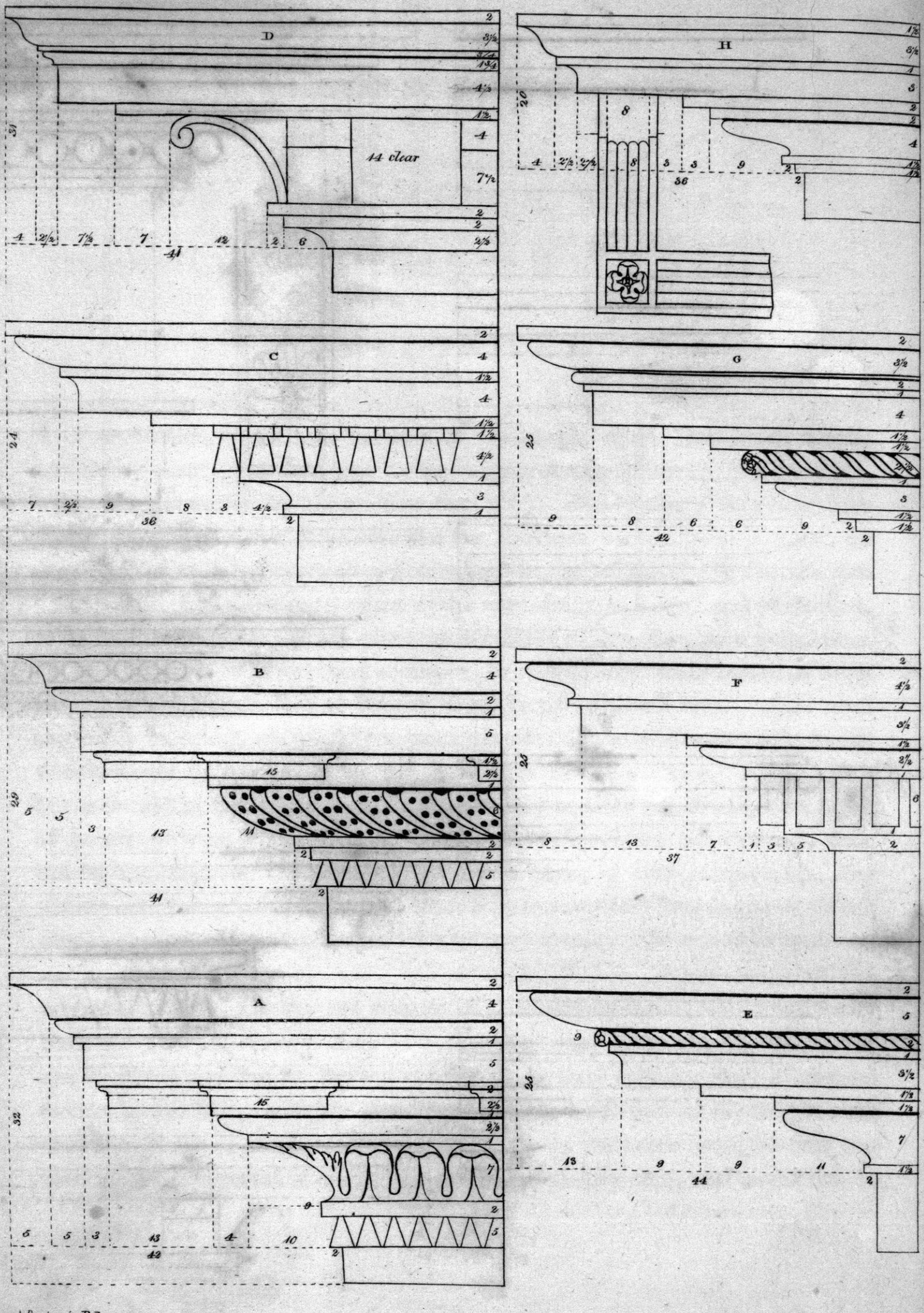
TO proportion base and surbase mouldings to the pedestal part of rooms, divide from the floor to the top of the surbase into ten parts, give one to the height of the surbase. Suppose the height from the floor to the top of the surbase to be two feet, eight inches, one tenth would be three inches and one fifth of an inch, which divide into as many parts as are contained in the height of the surbase you make use of, and those parts given to the mouldings in height and projection, as figured on the plate. The same scale, or parts, will draw the base mouldings in proportion to the surbase; let the plinth be from five to six inches wide.

To proportion architraves to doors and windows, divide the door into eight parts, give one to the width of the architrave. If a door is three feet six inches wide, one eighth would be five and a quarter inches. Divide five and a quarter inches, into as many parts as are contained in the architrave you make use of, and those parts given to the moulding as figured on the plate. It is very often necessary to vary this proportion, and oftener for inside of windows than for doors. For example, if a door is three feet six inches wide, the opening between the architraves to the windows of the same room, would probably be as much as four feet, four inches; one eighth of which would be six and a half inches, which would be very improper, as you would have two widths of architraves in the same room. We therefore should advise to make the architrave to the window five and a quarter inches. Again, if a door should be six feet wide, one eighth of it would be nine inches, which would be too large, and may be reduced to six and a half or seven inches. Some judgment should be exercised respecting the situation in which architraves are to be used. If they are on external parts of buildings, and at a considerable distance from the eye, it will be proper to make them larger than if used on internal finishing, and near to the eye.

PLATES 12 AND 13.

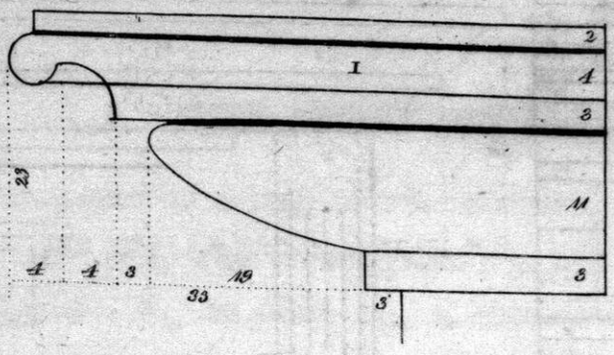
OF CORNICES.

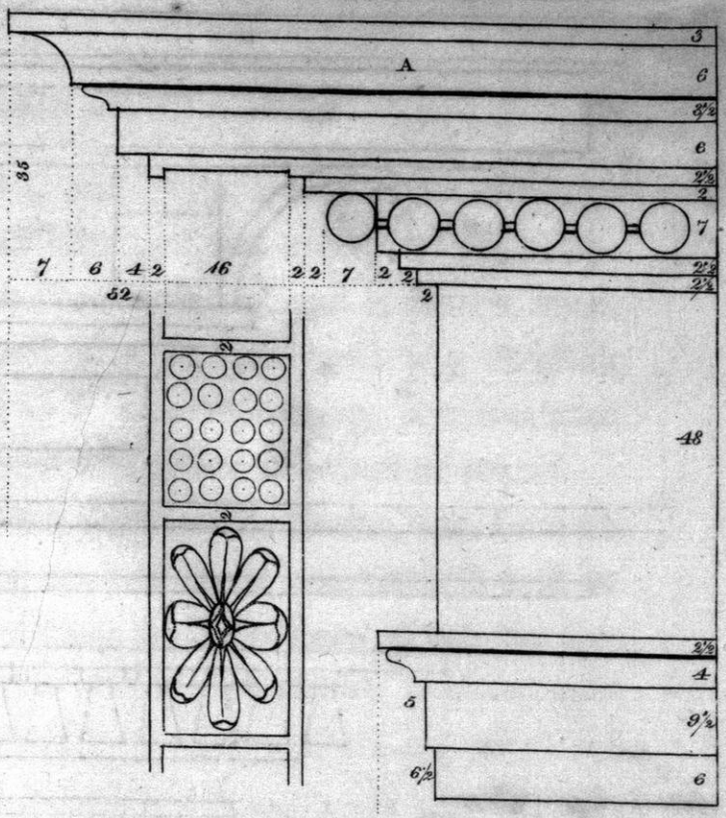
TO proportion cornices to the eves of buildings, divide the whole height into thirty parts, give one part to the height of the cornice. For example, suppose a house to be thirty five feet high, divide thirty five feet into thirty parts, and one thirtieth will be fourteen inches, which must be divided into as many parts as are contained in the height of the cornice you make use of, and those parts given to the mouldings in height and projection, as figured on the plate. It is sometimes necessary to vary the above proportion. If it is required to proportion a cornice to a basement story house of forty feet high, and twenty five or twenty seven feet front, and unconnected with any other building, we would recommend to divide the height into forty parts, which would be twelve inches for the height of the cornice. Again, if a house should be forty feet high, and from fifty to sixty feet front, or a block of buildings from seventy five to one hundred feet front, one thirtieth may not be too large for the cornice; and if a house of two stories high, say twenty five feet whole height, and from fifty to sixty feet front, one thirtieth would be ten inches, which would not be large enough; we would in that case advise to make it eleven and a half or twelve inches. A, is a copy of the original drawing, for the eve cornice of that elegant house which was lately built for Thomas Amory, Esq. in Park place, sixty four feet on Park street, one hundred and five on Beacon street; walls sixty two feet high; cornice twenty inches high, which is about one thirty seventh part of the height; the drops, or bells, at the foot of the cornice, lie on the brick wall, so that the bricks in the interval between the drops are plainly seen, and ought not to

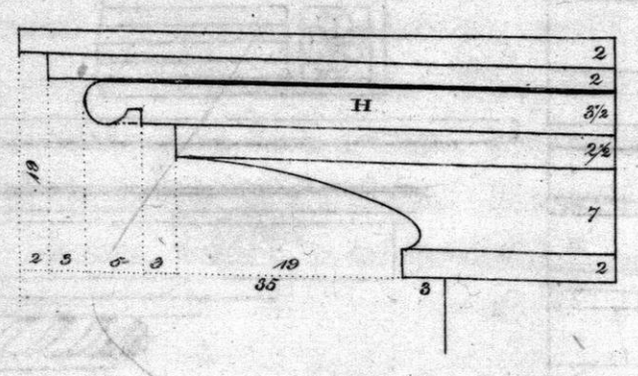


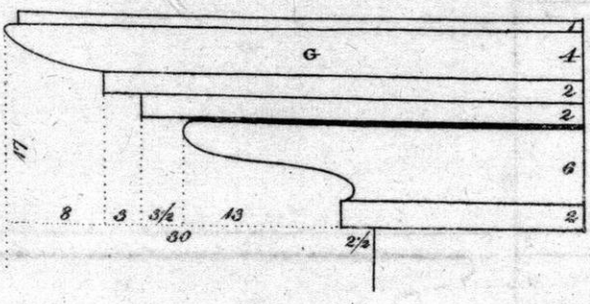
A Benjamin Del.

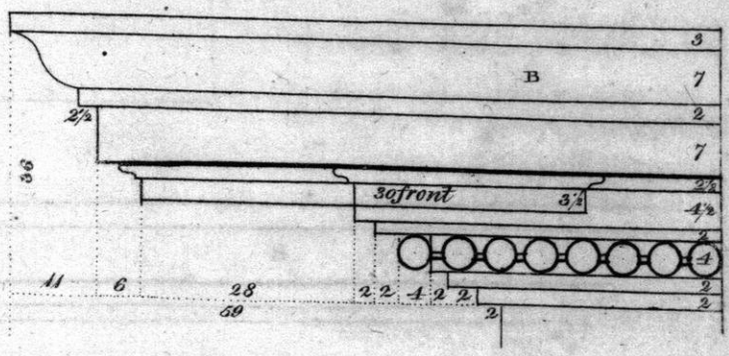
Wightman Sc.

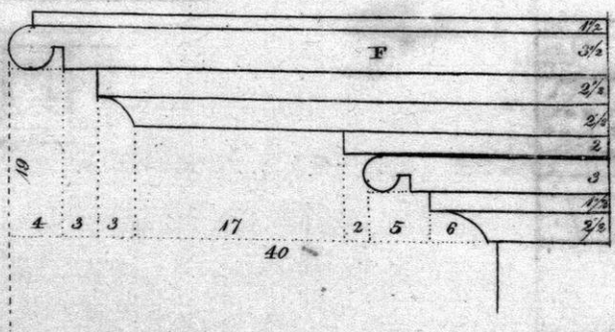


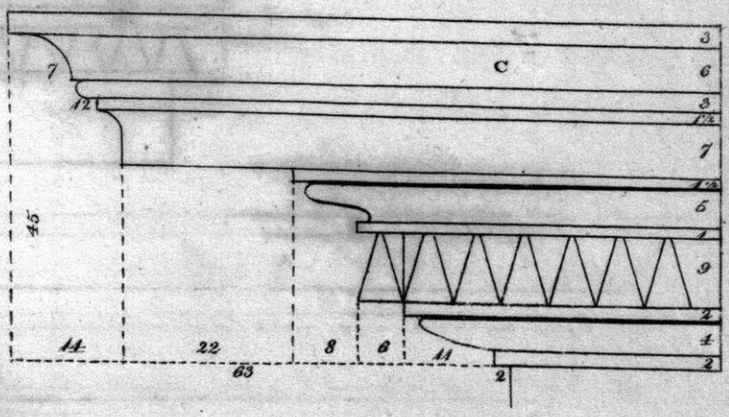


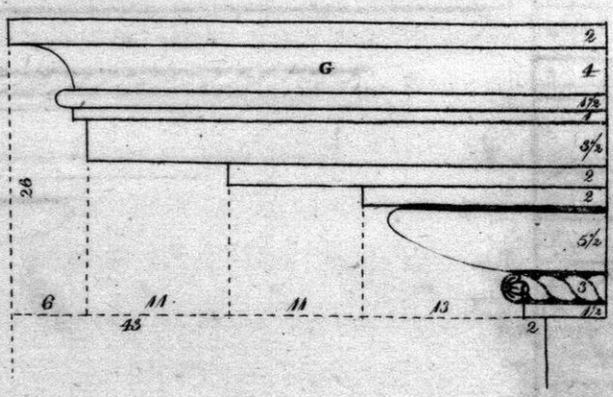


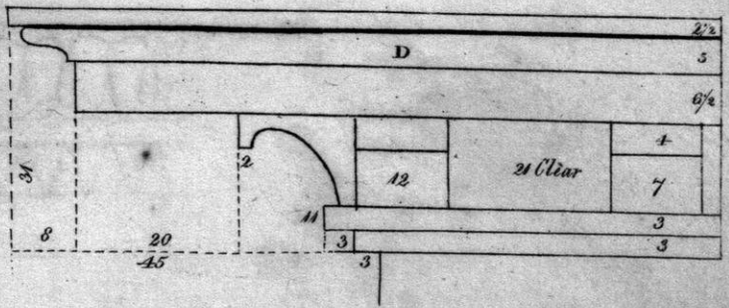












A. Benjamin Del.

Wightman Sculpt.

be considered as a part of the cornice. B C and D are intended for eve cornices, and B C and D, on plate 13, are also intended for eve cornices. The entablature A, in plate 13, is intended for frontispieces, and is drawn from the same scale of minutes as the orders, and may be used with any of their columns. H G F E, on plate 12, and I H G F G, on plate 13, are intended for cornices for rooms, &c. They may be made either of wood or stucco.

We shall give as a general proportion for cornices to rooms, one fortieth part of the height of the room. If a room is ten feet high, one fortieth will be three inches, which is to be divided according to directions given for eve cornices.

REMARKS ON CORNICES.

As cornices make a very considerable part of Architecture, there cannot be too much care taken to make them appear to as much advantage as possible, and to manage their mouldings so as to take up no more room than is sufficient to answer the purpose; for it ought to be remembered, that every inch that is added to the height of the cornice on the wall line, beside increasing size and expense, is robbing so much from the height of the wall, which is increasing another expense, therefore a large projection ought to be recommended. It has always been remarked, that the Doric cornice has a more noble appearance than the cornice of any other order; and, by examination, we find that its parts are few in number, but bare a just proportion to each other, and are of simple construction; and that it projects one fourth more than it rises on the wall line, which is one fourth more than any of the other orders. Now, if this is all the Doric order has to give it a preference, for it really has nothing else, we can easily imitate it; at the same time, make a saving of nearly one fourth part of the expense. As we have had a good deal of practice in this part of our business, we have paid particular attention to it. We have appropriated plate 15 to prove, geometrically, that the size and beauty of cornices do not so much depend on their height as on their projections; but as that, and the size, are treated in their places, we shall here only make a few remarks on their constructions.

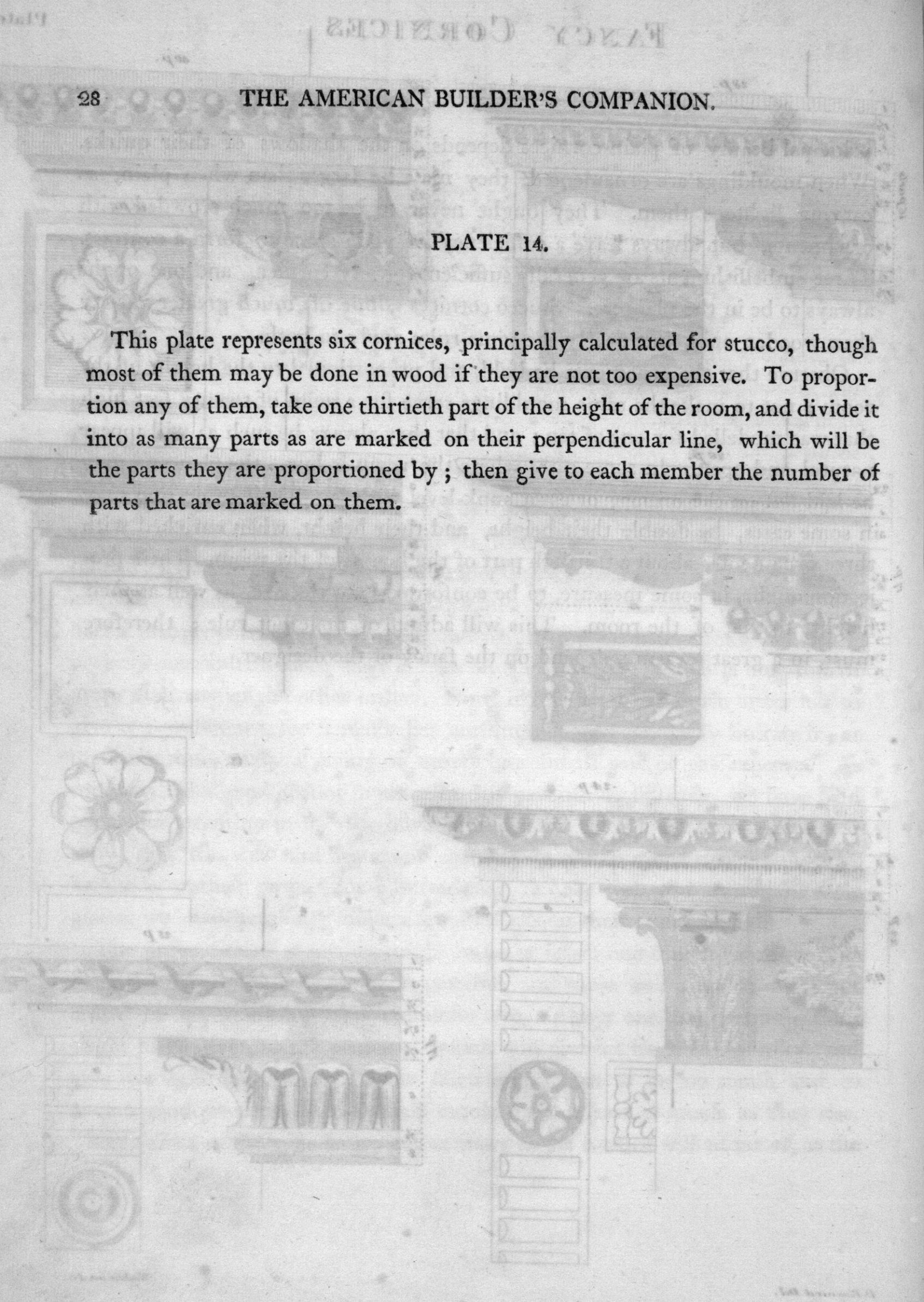
The projection of a cornice ought to be, at least, one fourth more than its rise; the parts should be as few as possible, and those well proportioned; not crowd in any moulding that cannot be seen. About one half the projections ought to be given to the plancere, which will prevent its looking bulky, and give it a light appearance. Their fillets ought not to be too small, and to have a good projection before each moulding; at least as much as they rise. Their quirks ought to be large, and as many as the cornice will admit of, as the

principal beauty of plain cornices depends on the shadows of their quirks. When mouldings are ornamented, they may be larger than when plain, as carving lightens them. They ought never to be too much crowded with ornaments, but always leave a sufficiency of plain space to form a contrast. Three embellishments are generally sufficient for any cornice, and one ought always to be in the plancere. Stucco cornices admit of much greater variety than wooden ones, but nearly the same rules apply to both.

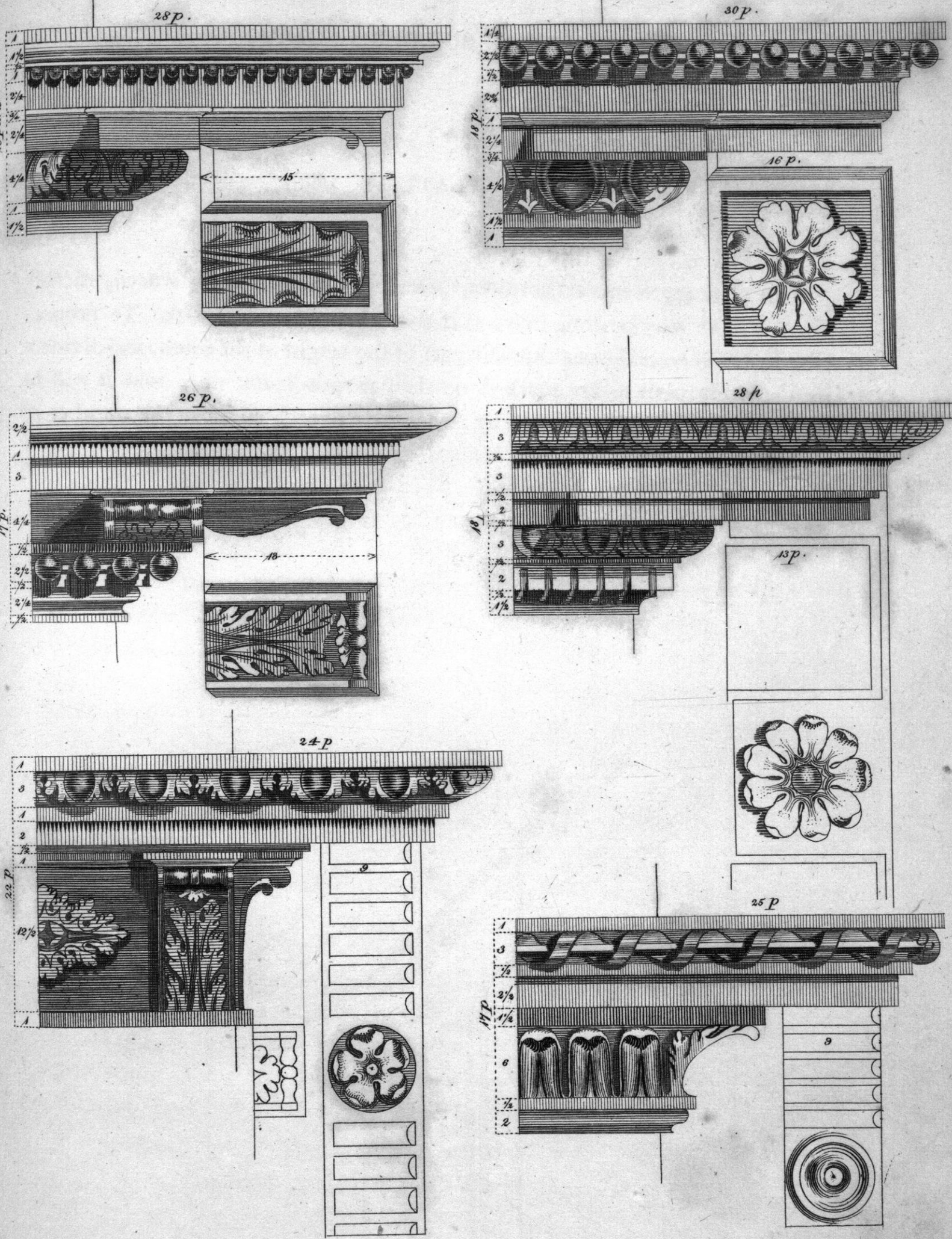
Observe that the ornaments be bold, and proportioned to the height of the room; not to make the same mouldings serve for a room of twenty feet high that was modelled for one of ten; and that they always be such as will appear natural and open. In some cases where the room is low, the plancere may be laid flat on the ceiling, or even sunk level with it. Their projection may in some cases, be double their height, and their height, when enriched with three ornaments, about a thirtieth part of the height of the room. Their projection ought, in some measure, to be conformable to the size, as well as their height, to that of the room. This will admit of no exact rule; therefore must, in a great measure, depend on the fancy of the designer.

PLATE 14.

This plate represents six cornices, principally calculated for stucco, though most of them may be done in wood if they are not too expensive. To proportion any of them, take one thirtieth part of the height of the room, and divide it into as many parts as are marked on their perpendicular line, which will be the parts they are proportioned by; then give to each member the number of parts that are marked on them.



Fancy Cornices



D. Raynard Del.

Wightman Sc.

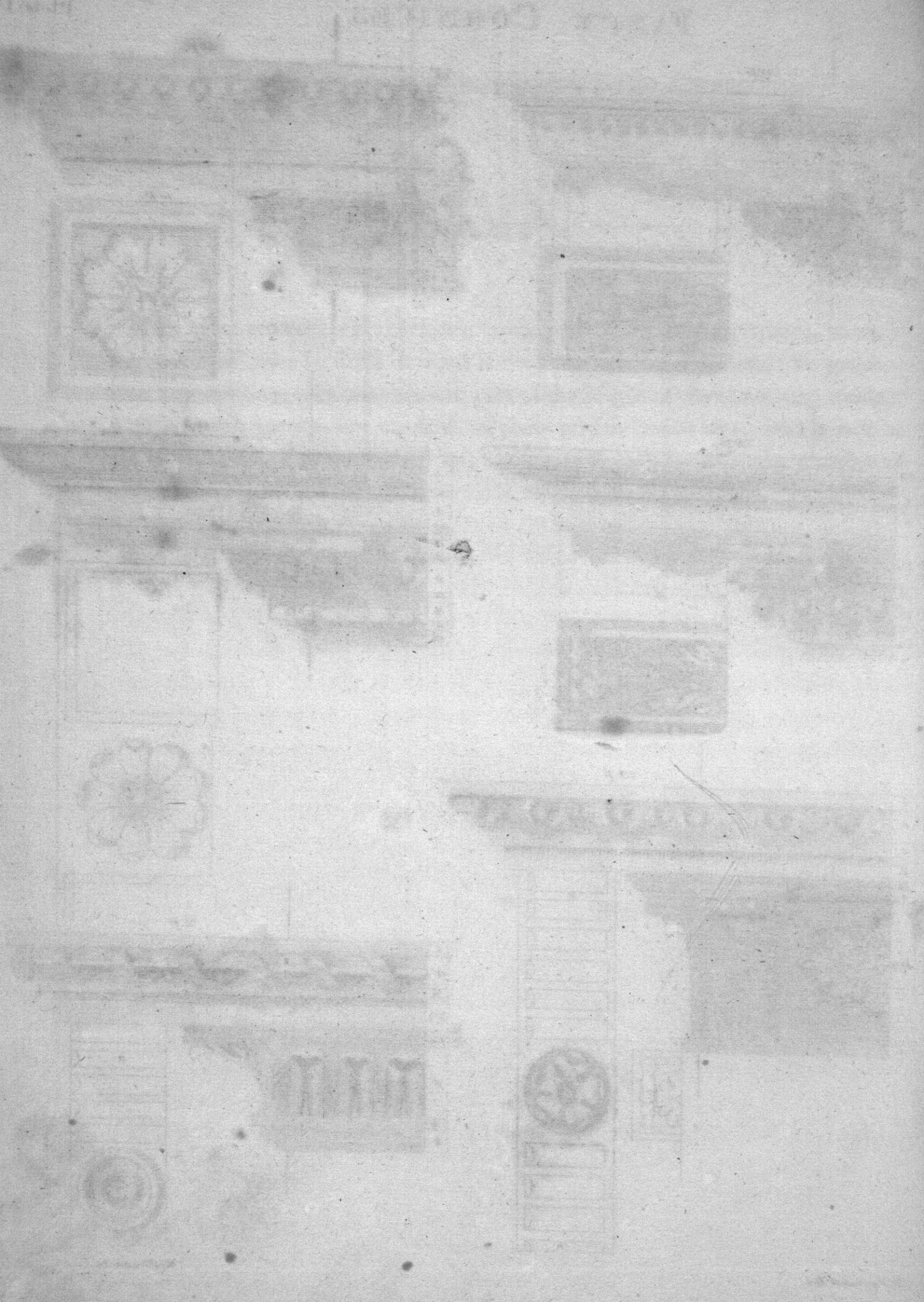


Fig 1.

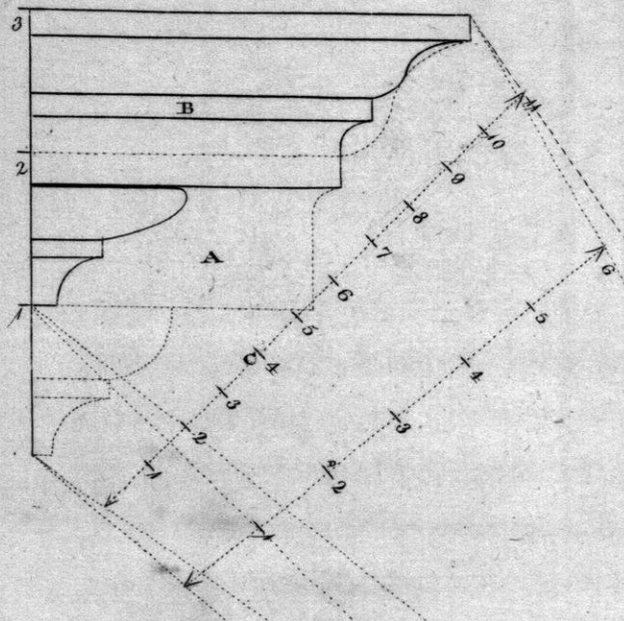
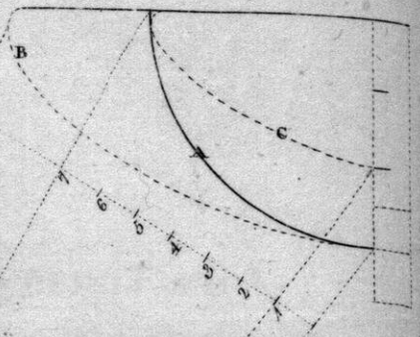


Fig. 4.



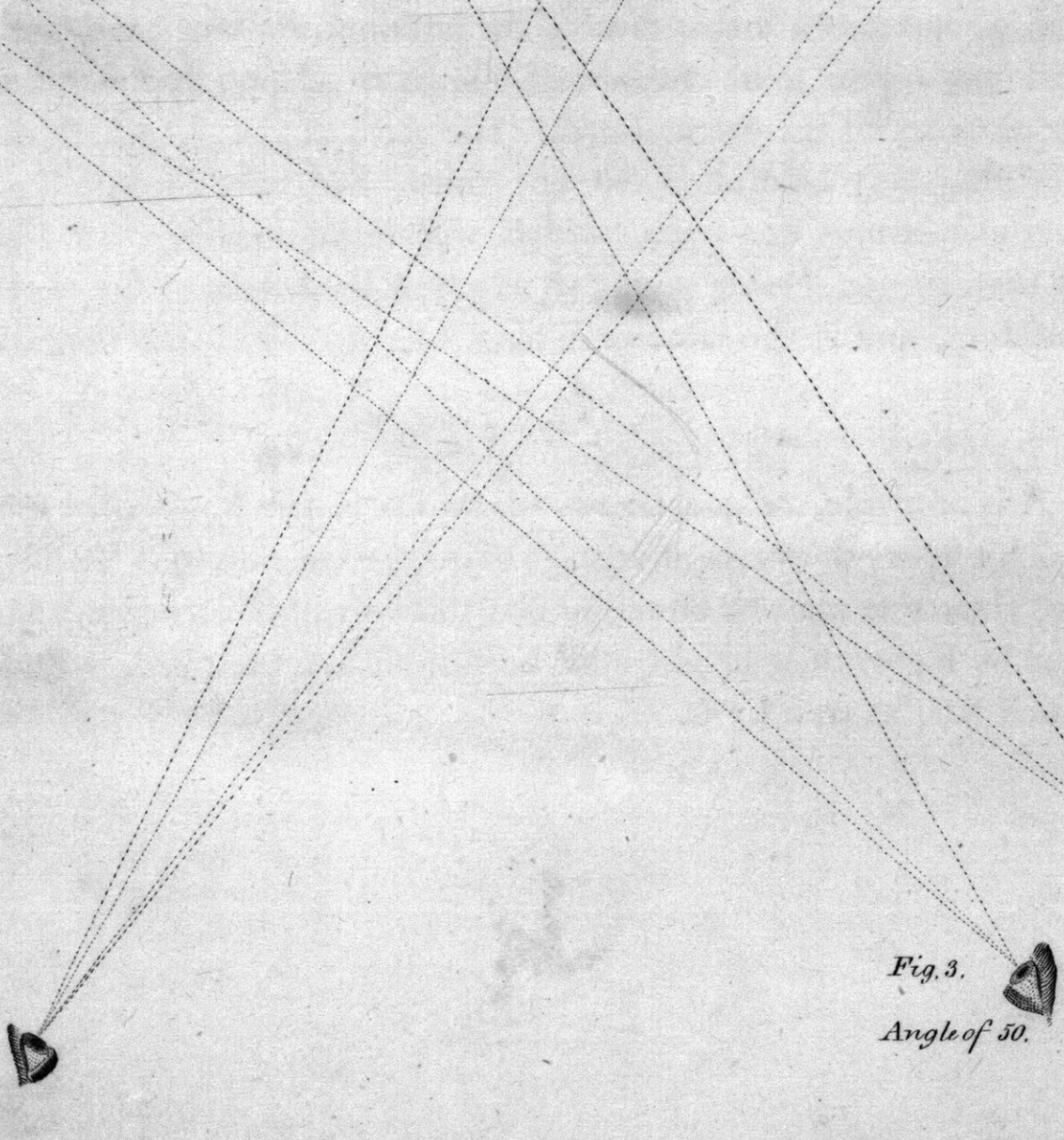


Fig. 3.

Angle of 50.

Fig

Angle of

PLATE 15.

FIG. 1.

A is a Tuscan cornice copied from Langley, and seen at an angle of forty five degrees from the horizon, (fig. 2,) which is the angle cornices are commonly seen at. B is a modern cornice, which is only two thirds of the height. This experiment proves, that a cornice, when seen at the angle of forty five degrees, may be diminished one third of its height, and appear to the spectator to be diminished only two elevenths ; and when seen at an angle of fifty degrees, (fig. 3) which is a little nearer to the building, it may be diminished one third, and only appear to be diminished one sixth. Now, by this it appears, that if cornices are in the original orders one sixth too large, which they really are, that they may be diminished one third, and have the appearance of being diminished only one sixth, which will make a saving of at least one fourth of the expense, beside saving so much of the height of the wall of the whole building, and at the same time have a lighter and better appearance.

FIG. 4.

A is an ovolo, or quarter round, which is commonly used in the orders.

This figure shows the advantage of quirked mouldings. Beside looking better, their size may be increased one third without increasing their height, as seen by B ; or their height may be diminished one third, without appearing much less, as seen by C.

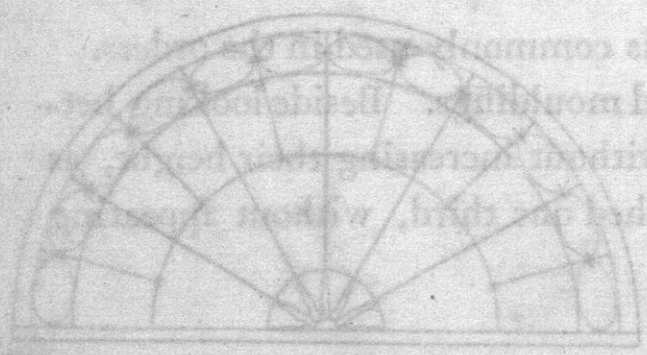
PLATE 16.

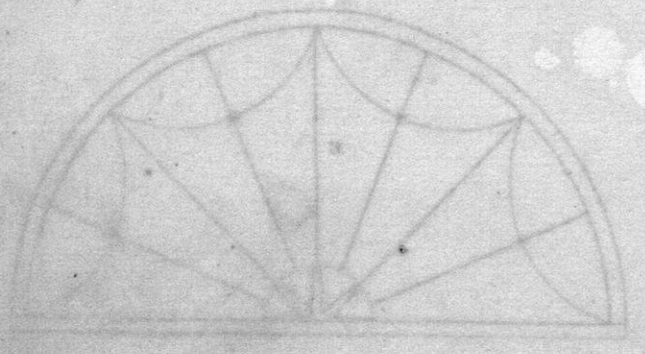
OF DOORS AND SASHES.

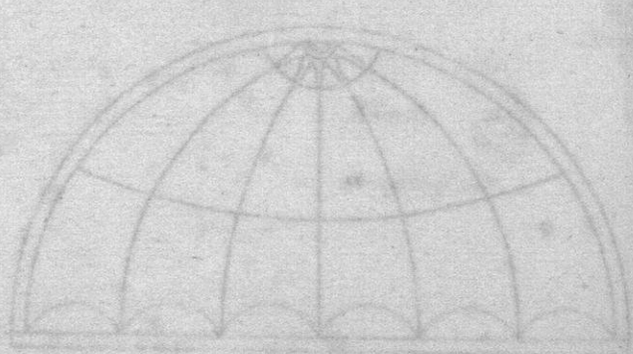
A is intended for an inside door. To proportion the frieze panel; divide its width into four parts; give three of them to the height of the panel. All the other parts are figured in feet and inches on the plate.

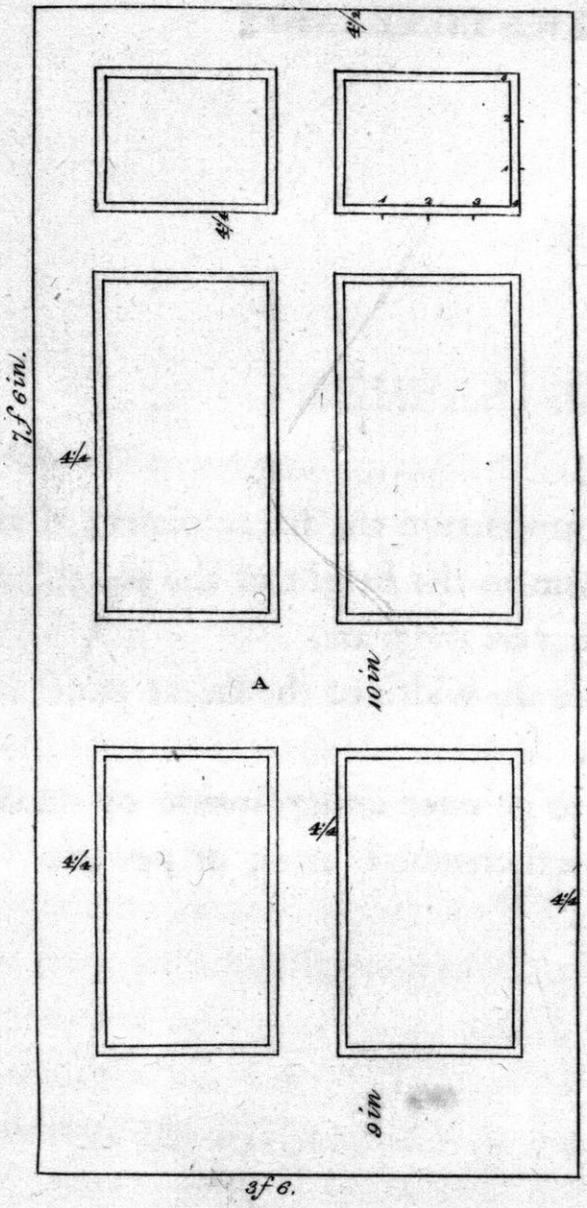
B is intended for an outside door; divide the width of the frieze panel into five parts; give four of them to its height.

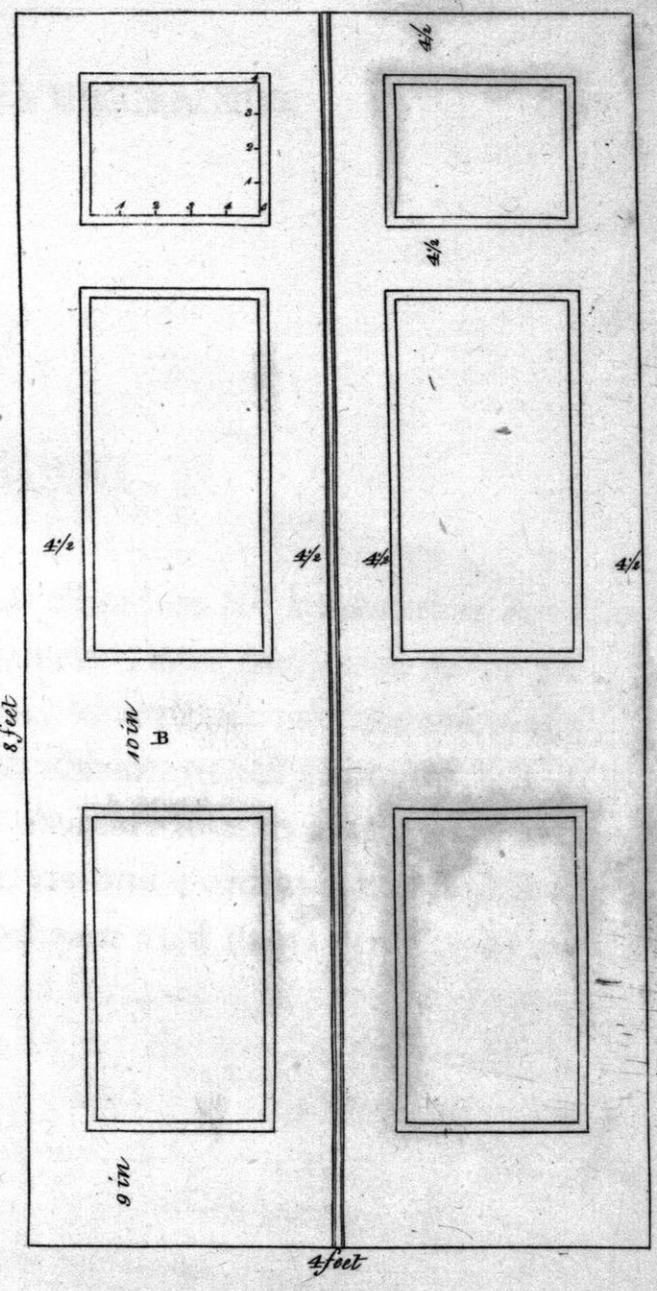
C D E and F sashes; and are intended to go over either inside or outside doors. Their small bars may be made of either wood, iron, or pewter.

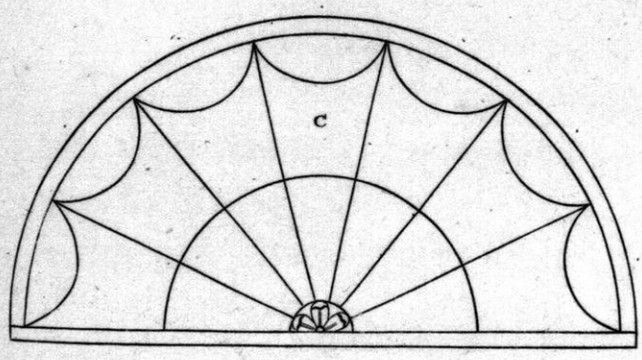


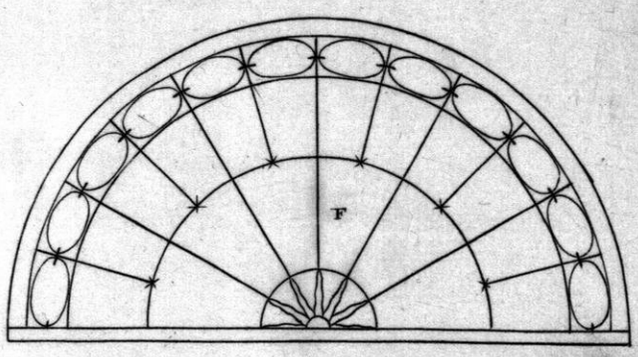


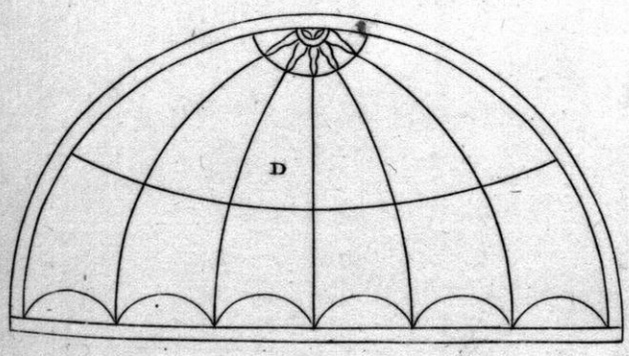


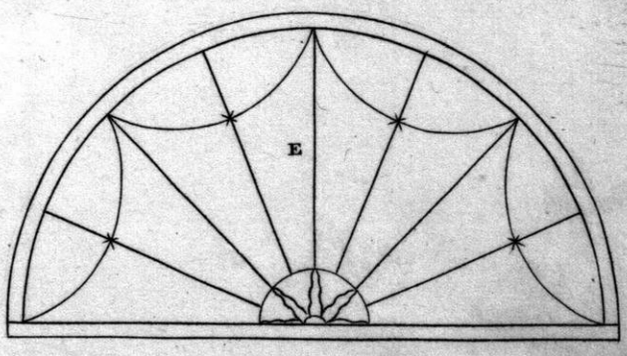












A Benjamin Del.

Wightman Sc.

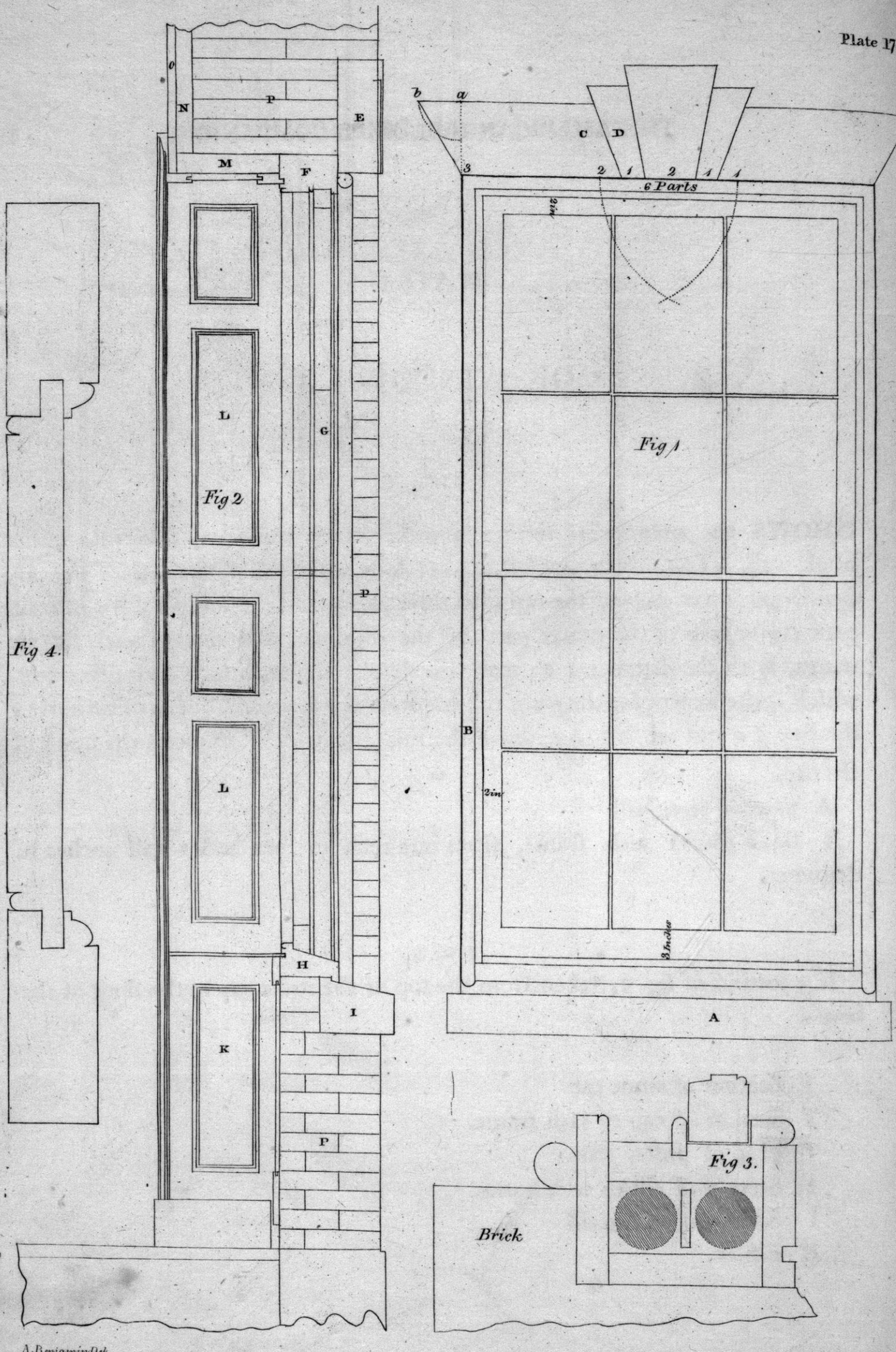

b
a
C
D
3
2
1
2
1
1
6 Parts
2in
Fig 1
B
2in
3 Inches
A
O
N
P
E
M
F
L
G
Fig 2
P
L
H
I
K
P
Fig 4.

Fig 3.
Brick

PLATE 17.

OF WINDOWS, &c.

FIG. 1,

SHOWS the manner of setting a sash, frame stone cap and sill, into a brick wall. To find the size of the keystone and bevel of the ends of the cap, divide the lower edge of the cap into three parts, and the middle third into six parts; give two to the centre part of the keystone, and one to each of its wings, with the distance 1 2; make the dotted circular lines 1 and 2 intersect, which is the centre for drawing the edges of the keystone. Take one half of the line 3 *a* and set it to *b*; draw the line 3 *b*, which completes the bevel of the cap.

A Face of stone sill.

B Bead round sash frame, from one inch to one and a half inches in diameter.

FIG. 2,

Is a section of fig. 1, taken from the top of the stone cap to the floor of the house.

E Section of stone cap.
F Section of cap to sash frame.
G Face of pulley stile.
H Section of sill to sash frame.
I Section of stone sill.
K Elbow.

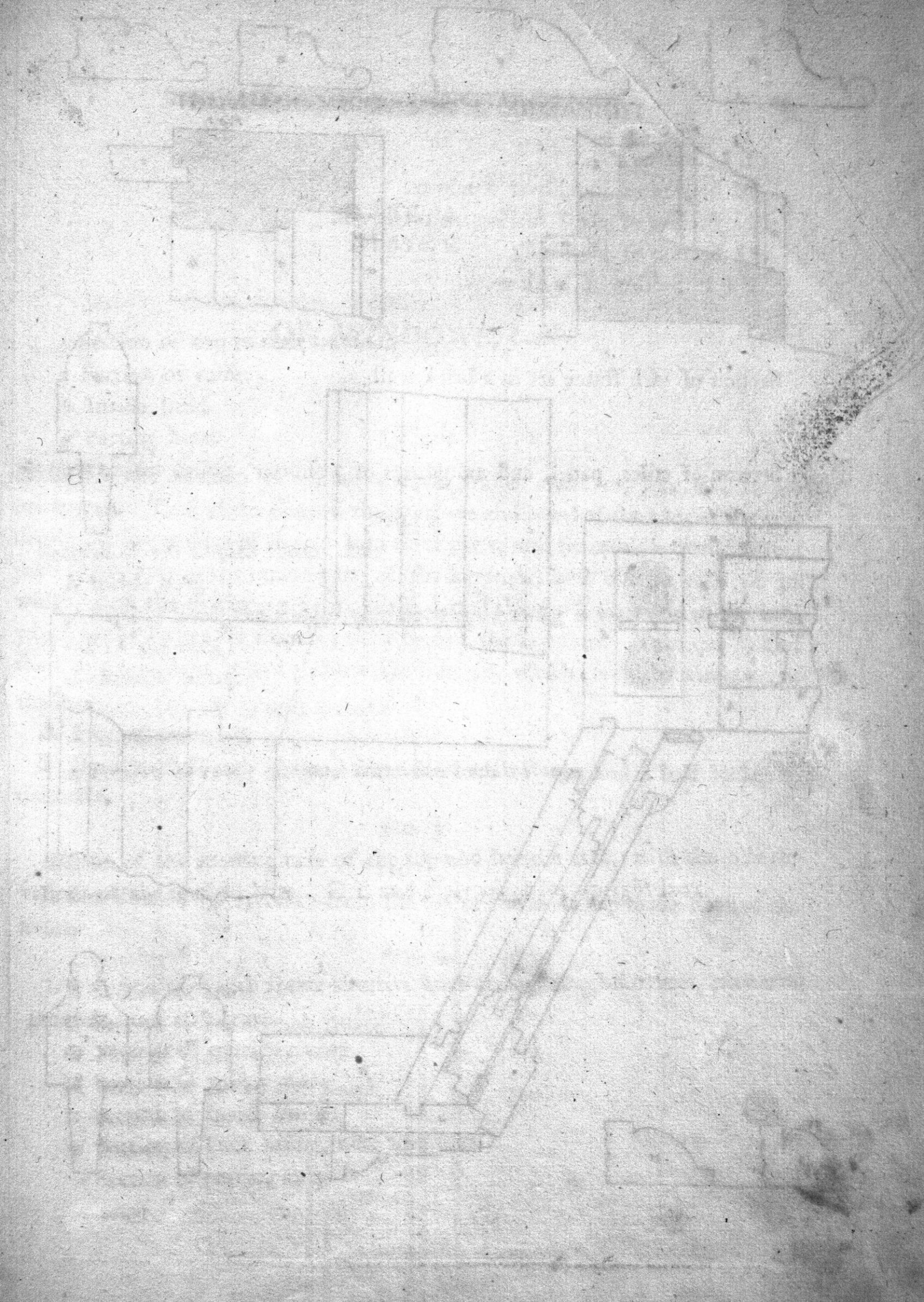
L L Shutters.
M Section of lintel over windows.
N Section of plank furring on brick wall.
O Section of plastering.
P P P Section of brick work.

FIG. 3.

Section of sash frame set in a brick wall.

FIG. 4.

Section of stiles, panel, and mouldings of a shutter.



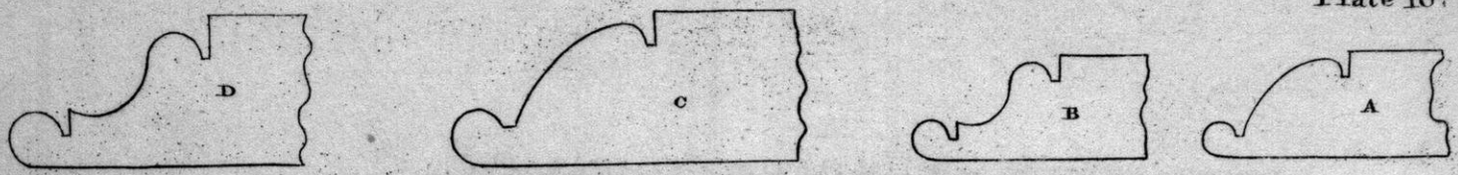


Fig 2.

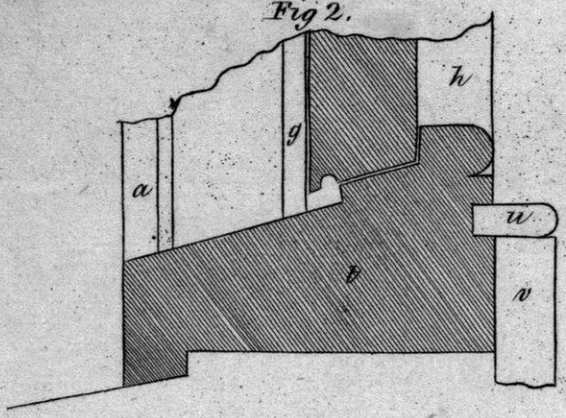
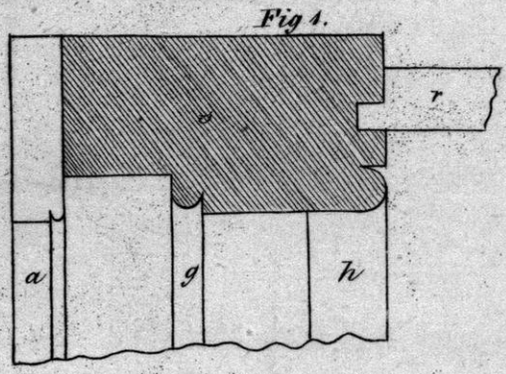


Fig 1.



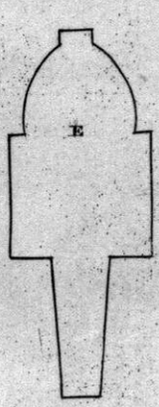
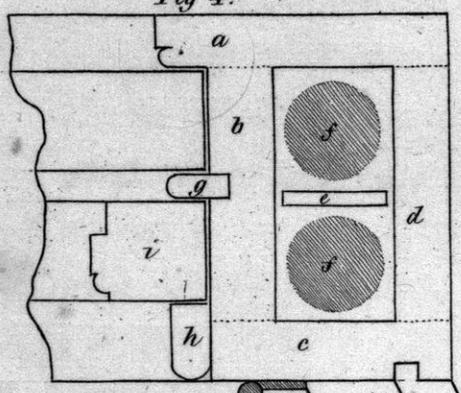
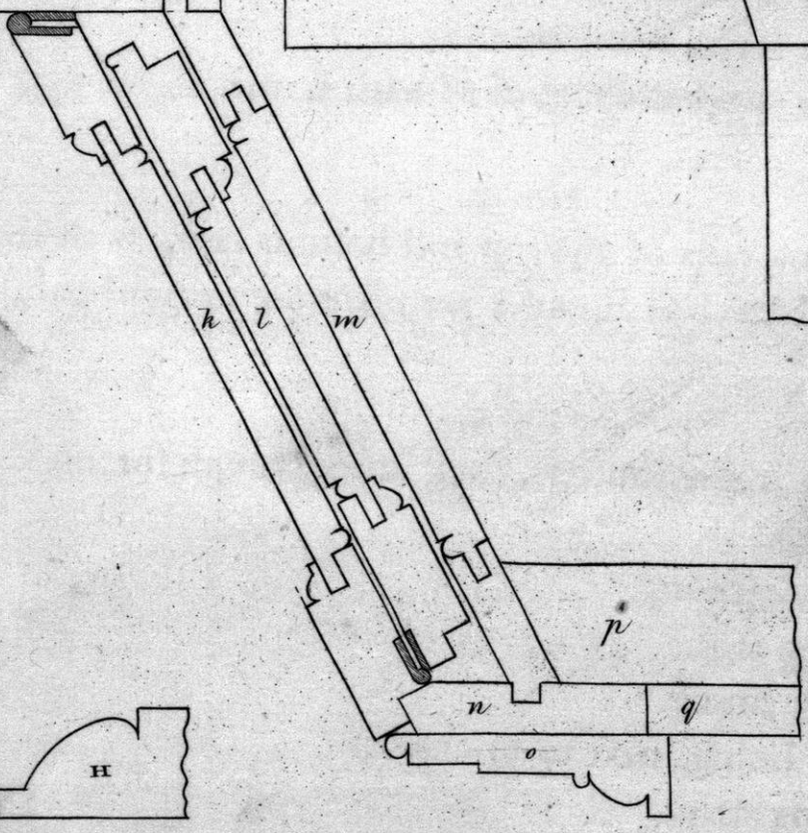
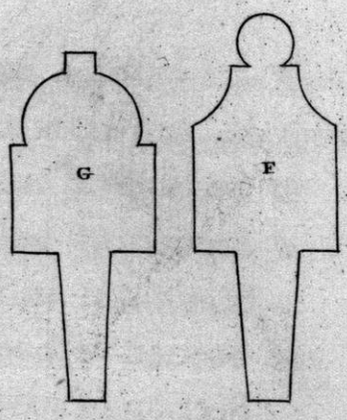
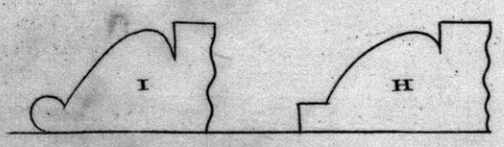


Fig 4.









A. Benjamin Del.

Wightman Sc.

PLATE 18.

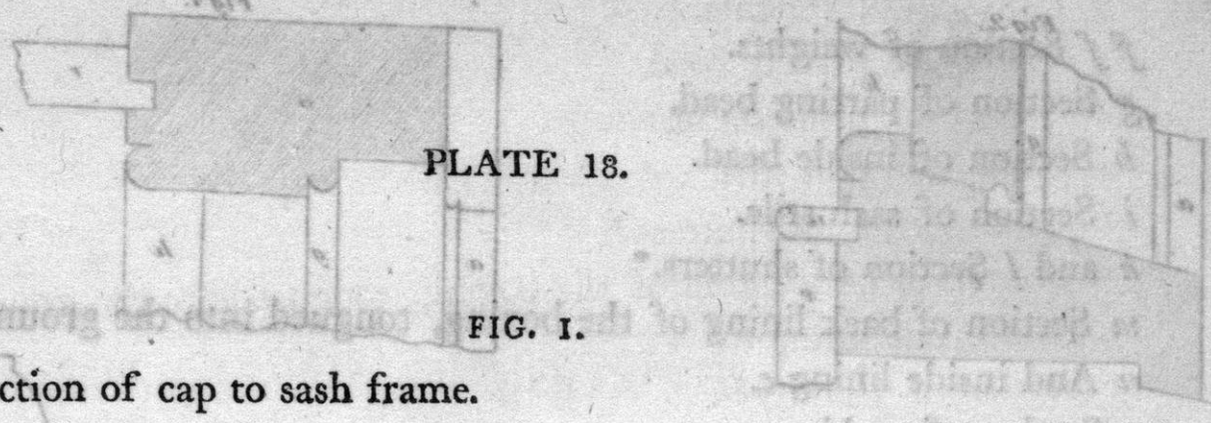


FIG. 1.

s Section of cap to sash frame.
r Section of soffit.
h Inside bead.
g Parting bead.
a Outside lining.

FIG. 2.

Section of sill to sash frame, &c.

h Inside bead.

g Parting bead; the shaded part between *h* and *g* is a section of the bottom rail of the sash.

a Outside lining.
t Section of sill to sash frame.
v Section of back under window.
u Section of bead, tongued into sill of sash frame.

FIG. 3.

Section of the meeting rails of the top and bottom sash, with the side elevations of the upright bars. G E and F are plans for upright bars.

FIG. 4,

Is a section of a sash frame shutters, back lining, rough furrings, plastering grounds, and architrave.

a Section of outside casing.
b Section of pulley stile.
c Section of inside lining.
d Section of back lining, next to bricks.
e Section of parting strip.

f f Section of weights.
g Section of parting bead.
h Section of inside bead.
i Section of sash stile.
k and *l* Section of shutters.*
m Section of back lining of the boxing, tongued into the ground.
n And inside lining *c*.
o Section of architrave.
p Section of plank furring.
q Section of plastering.

A B I and H Mouldings at large for shutters. C and D Mouldings at large for doors.

* The hinge which hangs the shutter *k*, to the inside lining *c*, ought to have one half of its thickness let into the inside lining *c*, which, by mistake, is not represented on the plate.

PLATE 20.

DESCRIPTION OF STAIRS.

How to draw the scroll of a hand rail to any number of revolutions.

FIG. A.

DRAW a circle from the centre *y*, G 15 14 L K J I H, about three and a half inches in diameter, and divide the circumference into eight parts; at the points G 15 14 L K J and H through all those points, and from the centre *y*, draw lines 0, 4, 1, 5, 2, 6, 3, 7. Suppose that *y o* is the distance you intend the centre of the scroll to be from the beginning of the twist; from *o* draw *p* perpendicular to, *o* G on *o*, with the distance *o* G, make the quarter of a circle *p* G. Now suppose it were required to make two revolutions in this scroll; and, since every revolution contains eight parts, there will, of course, be sixteen in two revolutions; therefore divide the quarter circle *p* G into sixteen equal parts, and draw lines from each of those sixteen divisions, parallel with *o p*, cutting *o* G at 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15, at *y* place one foot of the compasses, and extend the other to 1 on G *o*; make a point with the foot, which falls on 1, at 1 on the outside of the rail; still keep one foot at *y*, and take the distances *y* 2, *y* 3, *y* 4, *y* 5, *y* 6, *y* 7, *y* 8, *y* 9, &c. and prick them down at 2, 3, 4, 5, 6, 7, 8, 9, &c. on the outside of the rail. To draw the curve, draw the line *a a* parallel to *o y*, which is the beginning of the twist; and about two inches from the line *o y*, take the distance *o y* in your compasses, and place one foot at 1, on the outside edge of the rail, and intersect the line *a a* at *a*, which is the centre for drawing the curve *a* 1. Take the distance 1 *y* in the compasses; place one foot at 2, and intersect the line 1 *a*, at *b*, which is the centre for drawing the curve 1 2. Take the distance

PLATE 19.

DESCRIPTION OF STAIRS.

FIG. 1,

SHOWS the manner of placing newels. They always ought to be placed so as to cause the extreme part of the nosing of the step to be flush with them, as they are represented by the dotted lines on the plate.

FIG. 2.

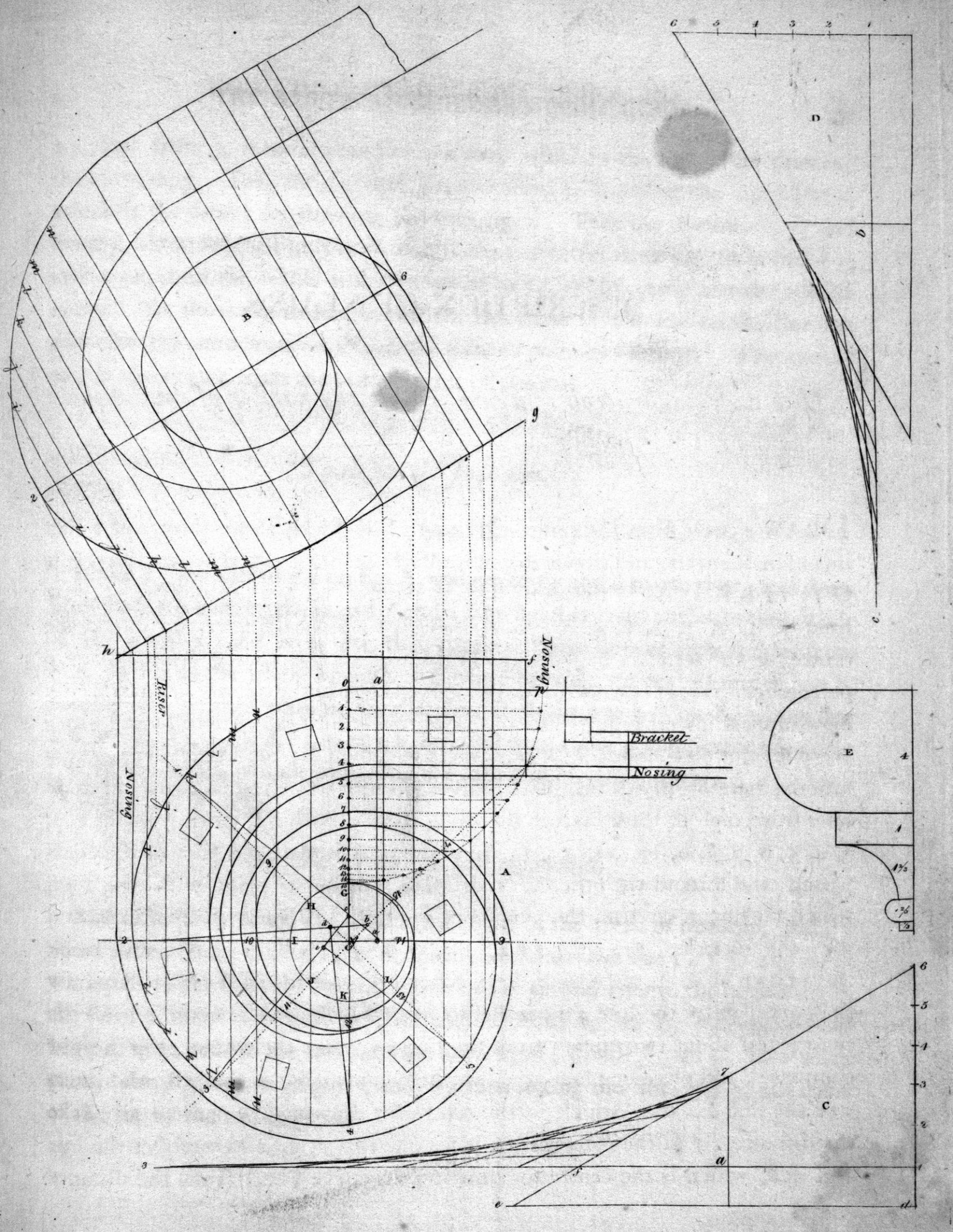
A is a newel for a plain staircase. D Side view of hand rail. B and B Sections of steps. C and C Section of risers.

FIG. 3,

Shows the manner of framing carriages to circular stairs. *a c d e b* are the ends of the plank riser. D is a side view of a plank riser. The shaded parts are the mortaises to receive the tenons of *k*, &c. *n n n n n n n n n* are sections of open plank partition.

FIG. 4,

Is an elevation of fig. 3, with the circular part stretched out. *a c d e* and *b* are the end views of the plank risers, and *f g h i k* side views of *f g h i k*. In fig. 3, the dotted lines show both mortaises and tenons to *a f c g d h e i b* and *k*. *l m* are the sections of a stringboard made of plank, of which *l m* in fig. 4 is a side view.



A Benjamin Del.

Wightman Sc.

2 *y*, and from 3, intersect the line 1 *a* at *c*, which is the centre for drawing the curve 2, 3. Take the distance 3 *y*, and from 4, intersect the line 2 *b* at *d*, which is the centre for drawing the curve 3, 4. Take the distance 4 *y*, and from 5, intersect the line 3 *c*, which is the centre for drawing the curve 4 5, and so on, until the whole is drawn round to 14, which completes the outside curve. To draw the inside, set off the thickness of the rail on the line *a a*, and take the same centres which the outside was drawn from. The curtail step is also drawn from the same centres of the rail.

To draw the face mould.

FIG. B.

Make *h f* parallel to 2 6 on fig. A, and make *f g* equal to one riser; and draw lines from *g h*, cutting the lines *h f* and 2 6 on fig. A at right angles, to the outside of the scroll *i j k l m n*, &c. then continue those lines at right angles from *h g*, as far as the whole breadth of the face mould; make the line 2 6, on B, parallel to *h g*; then transfer the distances from the line 2 6, on A, to the line 2 6, on B, *i i*, *j j*, *k k*, *l l*, *m m*, *n n*, &c. and from those points, trace the curve line of the scroll, which completes the face mould.

To draw the falling mould.

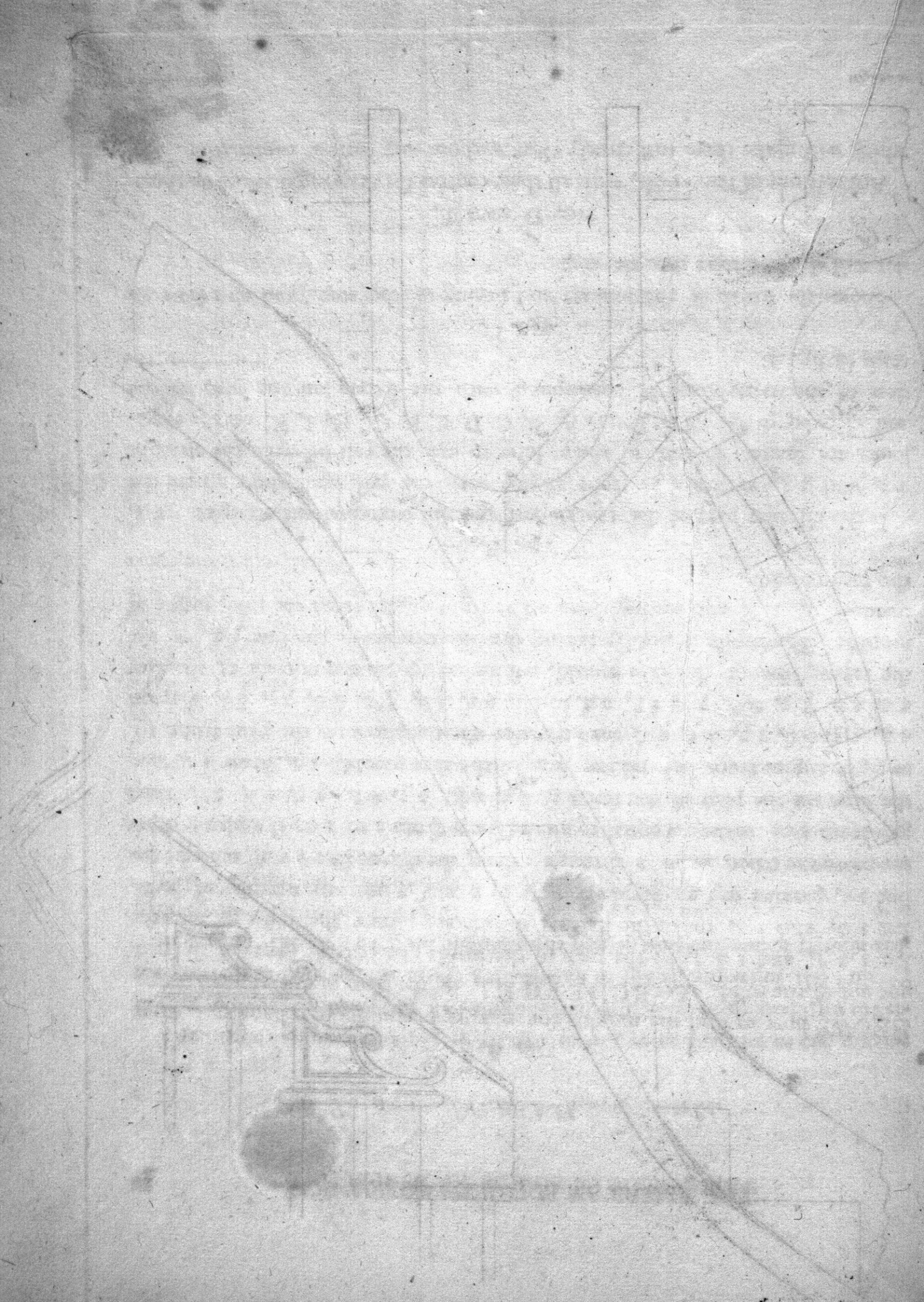
Make the pitch board C; make *e d* equal to the tread of one step, and *d* 6 equal to one riser; divide *d* 6 in six parts, and draw the line 1 *a f* 3, and make 1 *a* equal to the distance from the face of the second riser to the beginning of the twist; make *a* 3 equal to the distance from *a*, on A, where the twist begins, to 3, where the rail becomes horizontal; divide *f* 7 on C, into seven parts, also *f* 3 into seven parts, and, by intersecting the lines 3 *f* 7, the curve of the top of the rail is given.

To draw the inside falling mould.

The inside falling mould, D, is drawn in the same manner as the outside falling mould, C, excepting its being shorter, which is occasioned by a difference of length between the inside and outside of the twist part of the rail.

In practice the above mould should be drawn on and cut out of pasteboard, which will bend round the rail.

E is a design for nosing to steps, full size for practice.



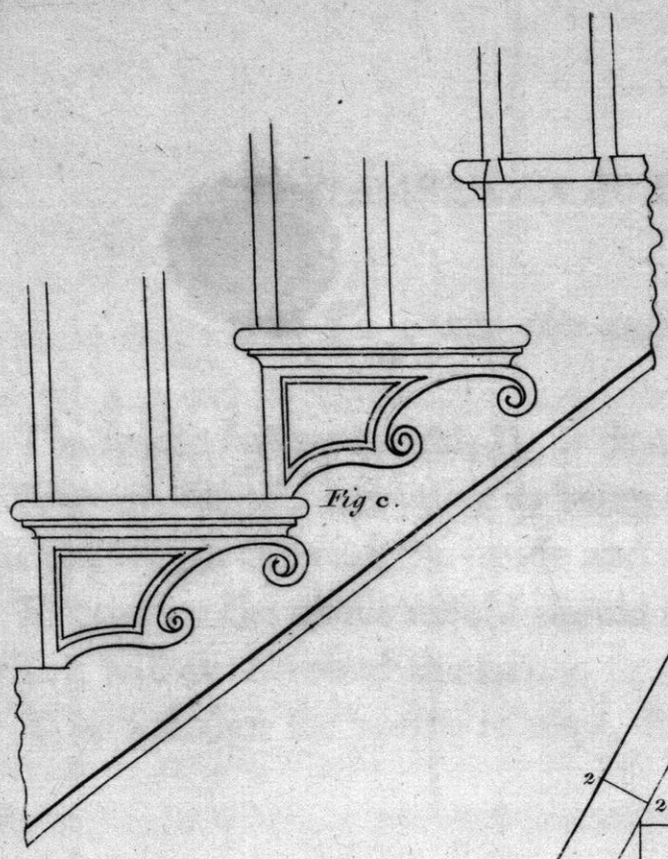


Fig C.

Fig B.

Fig A.

Fig D.

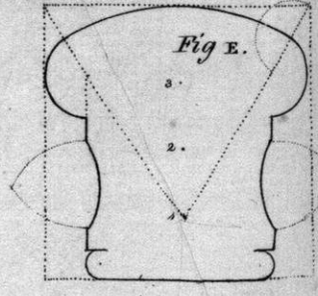


Fig E.

PLATE 21.

FIG. A,

SHOWS how to find the moulds for making buttjoints of a hand rail, when got out of the solid. Let B C D E F G H I, be the plan of the winding steps. Let 1 2 3, and 1 2 3, be the plan of the inside and outside edges of the rail. Let 1 2, and 1 2, make the half of the circle; draw the line *f g*, also the line 1 *e*, parallel to *f g*; divide from 1 to 2 on *f g* into any number of parts, the more the truer, from 2 through *e* draw the dotted line 2 *e d*, at right angles from 1 *e*; make *e d* equal to all the risers from 1 to 2 on the plan; draw the lines on the plan of the rail 1 *i*, *a a*, 4 4, 5 5, 6 6, 7 7, *b b*, 2 *d*, then at right angles from the raking line of the face mould, 1 2, draw 1 1, *a a*, 4 4, 5 5, 6 6, 7 7, *b b*, *d d*, then transfer the distances on the plan from 1 *i*, *a a*, 4 4, 5 5, 6 6, 7 7, *b b*, 2 *d*, to 1 *i*, *a a*, 4 4, 5 5, 6 6, 7 7, *b b*, *d d*, on the raking line of the face mould, which completes the outside of the face mould. The inside is got by taking the distances from the line *f g*, to the inside of the rail, and setting them off at right angles from the raking line of the face mould.

FIG. B.

Is the circular part of the stringboard and rail stretched out straight. 1 1, 2 2, and 3 3, are lines at right angles with the rail, and show where the joints are made. 1 and 3, show how to ease the rail between the straight and circular parts. The letters A, B, C, D, E, F, G, H, I, K, on the elevation of the stringboard B, correspond with the letters on the plan of the steps in fig. A.

FIG. C,

Shows the finish of the bracket and nosing of the step, and also how to dovetail the banisters into the step.

FIG. D AND E,

Are sections of hand rails, with all their centres for drawing marked on them, which will make them sufficiently clear without any further explanation.

PLATE 22.

FIG. 1,

Is a plan for a roof. 4, 5, 6 and 7, are the corners or angles of it. Suppose *a b* on A to be the height or pitch of the roof. To find the length of the hip rafter, draw the base line of the hip from the angle, 5 to 8, on the centre of the beam; then set up the height of the pitch to 9, and at right angles from 8, 5, and draw the line 9, 5, which is the length of the hip. To find the backing of hips, draw the line *e i h f* at right angles from the base line of the hip, place one foot of the compasses at *i*, extend the other to *h*, and turn it round to *g*, draw the lines *g e* and *g f*, which gives the backing of the hip. This method will give the backing of any hip, square, or bevel.

FIG. 2 and 3,

Are examples for principal rafters, &c. for roofs.

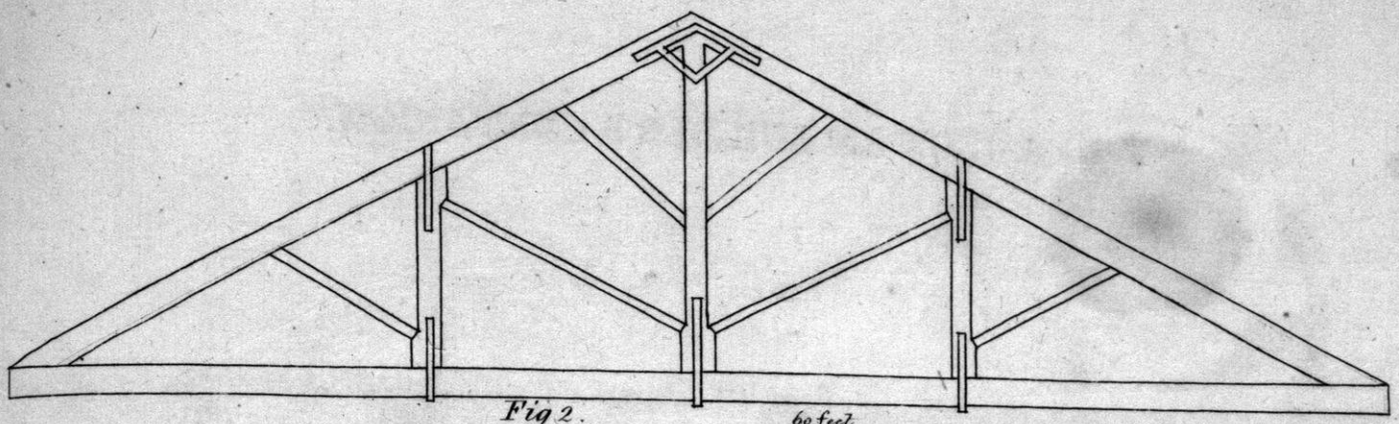
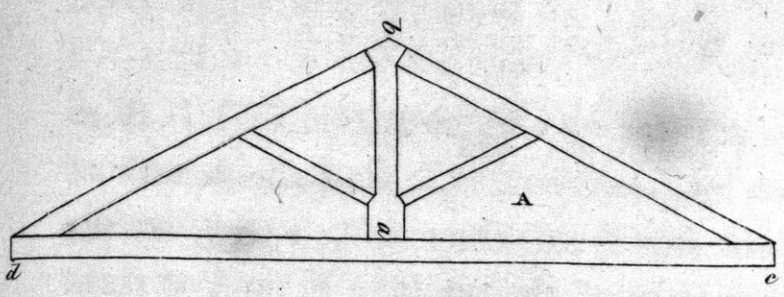
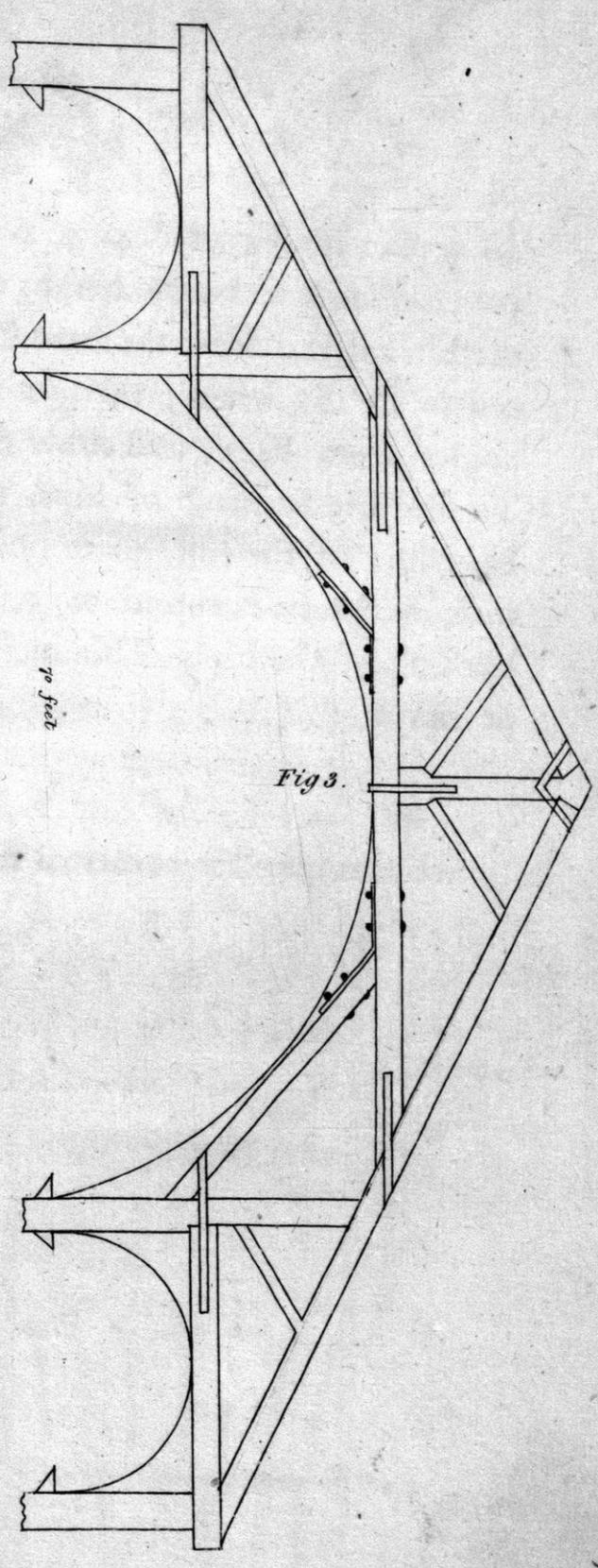


Fig 2. 60 feet





10 feet

Fig 3.

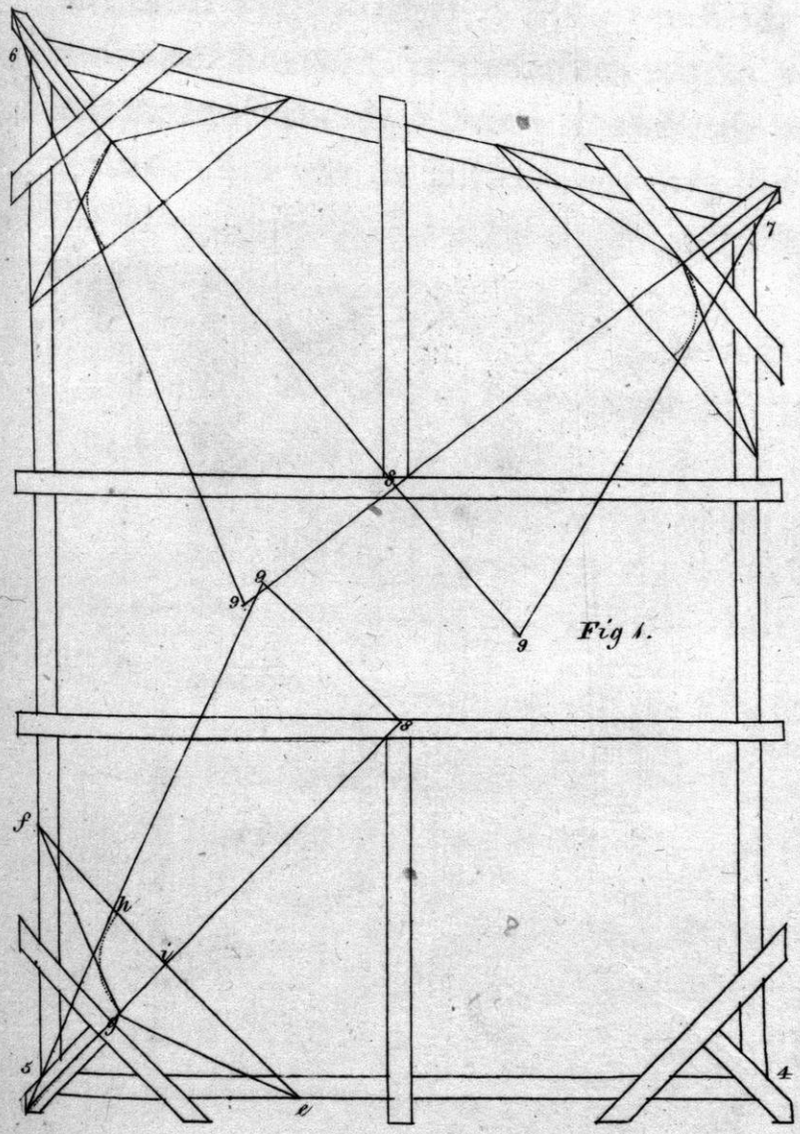
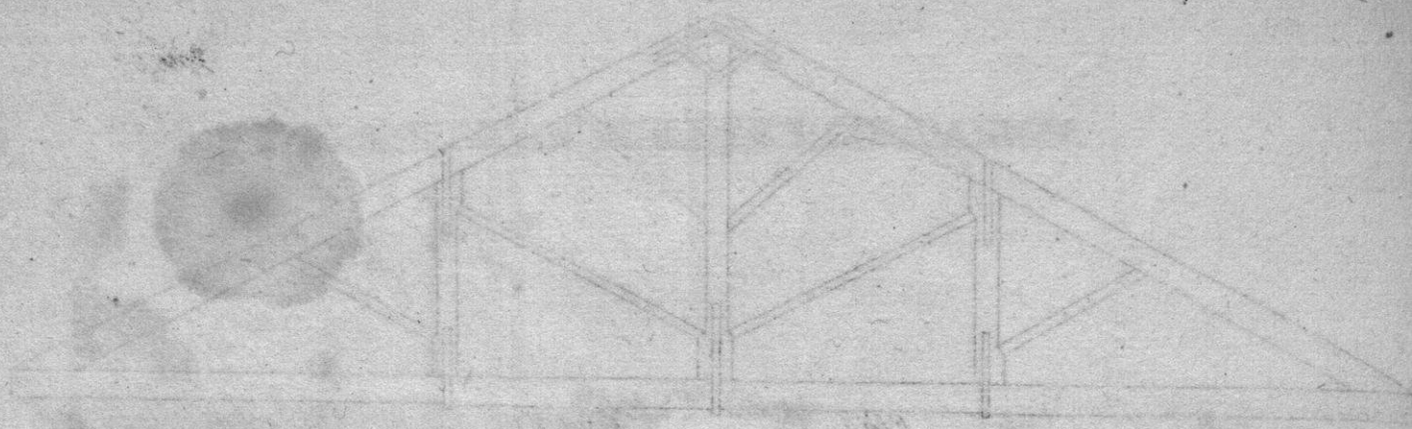
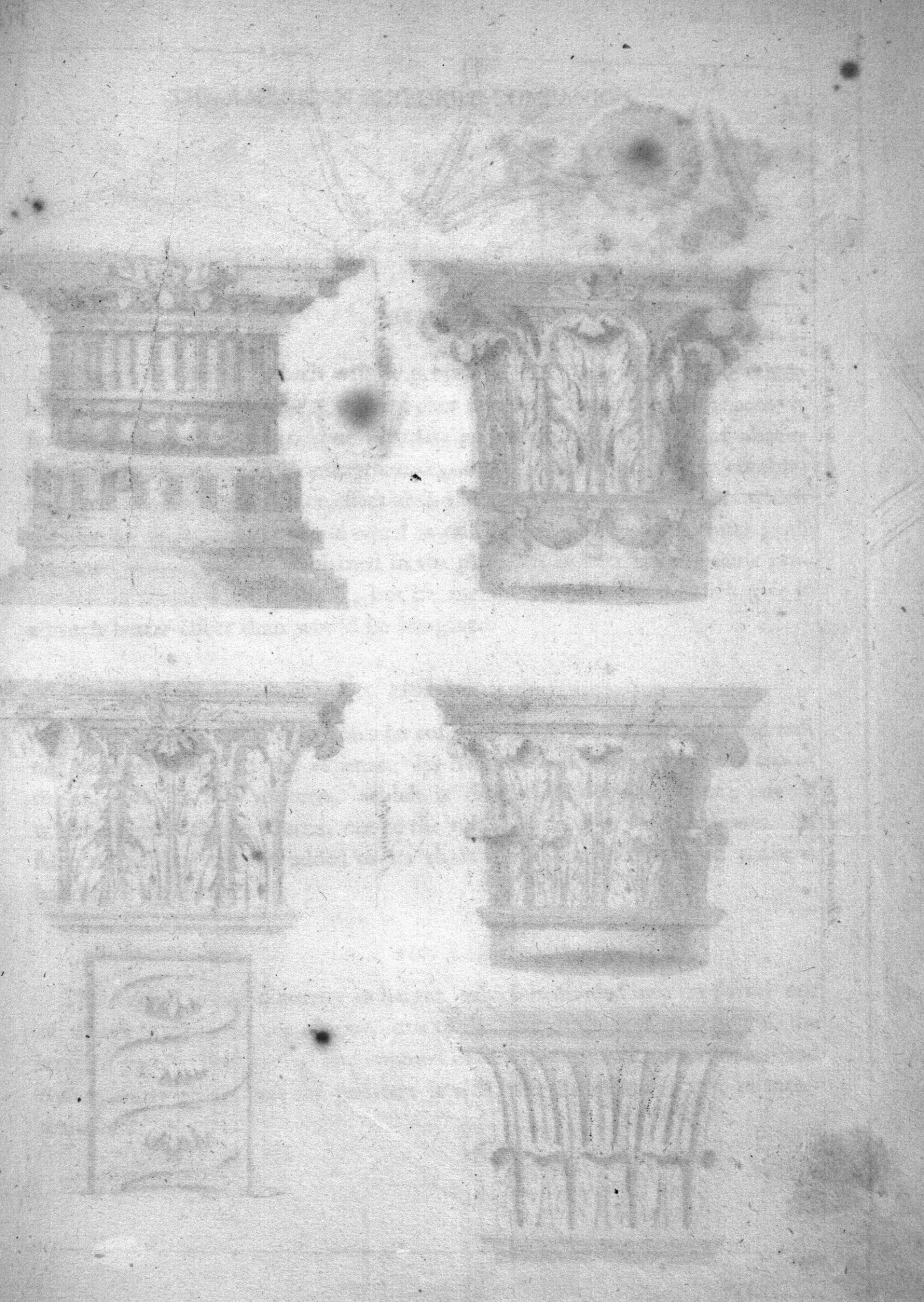


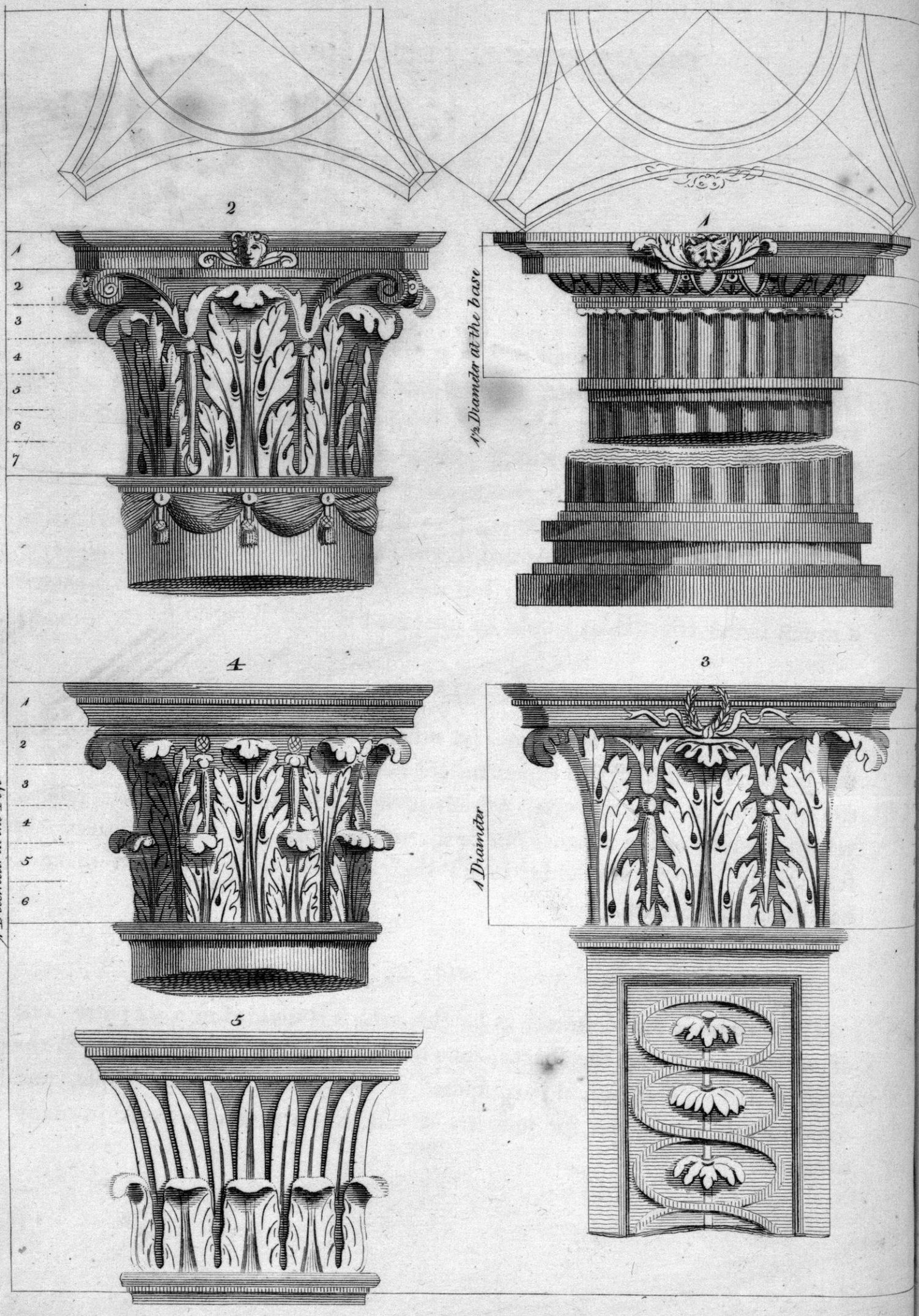
Fig 1.

A Benjamin Del.

Wightman Sc.







D. Raynerd Del.

Fox Sc.

PLATE 23.

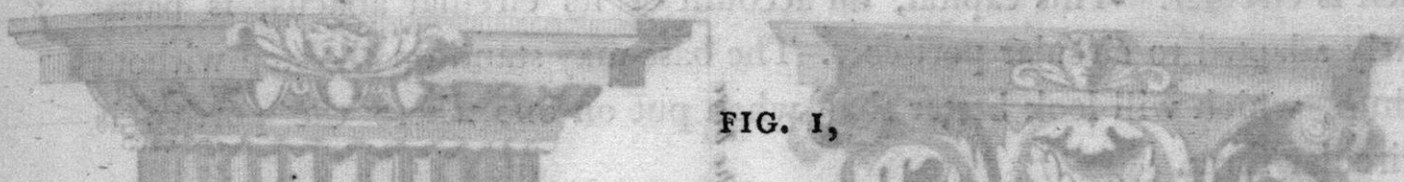


FIG. 1,

S a base and capital, which will be proper for the Doric order. The whole height of the capital is thirty minutes, or one half diameter ; its abacus is formed like the Corinthian, but with less projection. This kind of abacus gives it a very light and airy appearance, and if added to the Doric entablature, will have a much better effect than the original one. The radius which the abacus is drawn from, is equal to one diameter and ten minutes ; all the other dimensions are explained in the plate. The base has the same proportion in its parts as the Doric, but its members are all fillets which give it a much better effect than would be imagined.

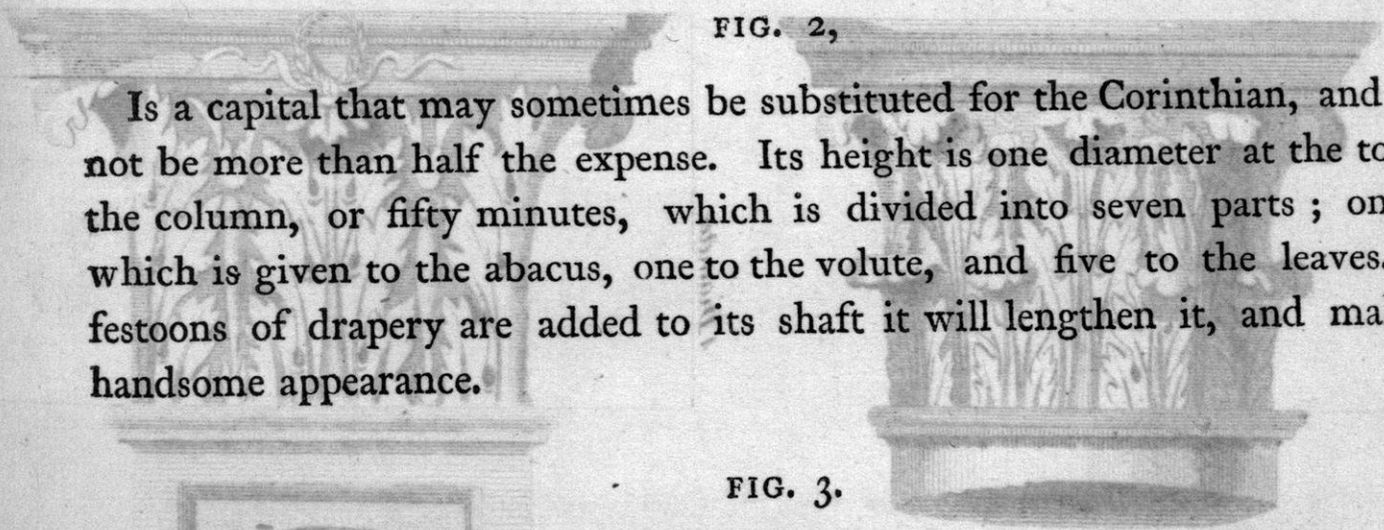


FIG. 2,

Is a capital that may sometimes be substituted for the Corinthian, and will not be more than half the expense. Its height is one diameter at the top of the column, or fifty minutes, which is divided into seven parts ; one of which is given to the abacus, one to the volute, and five to the leaves. If festoons of drapery are added to its shaft it will lengthen it, and make a handsome appearance.

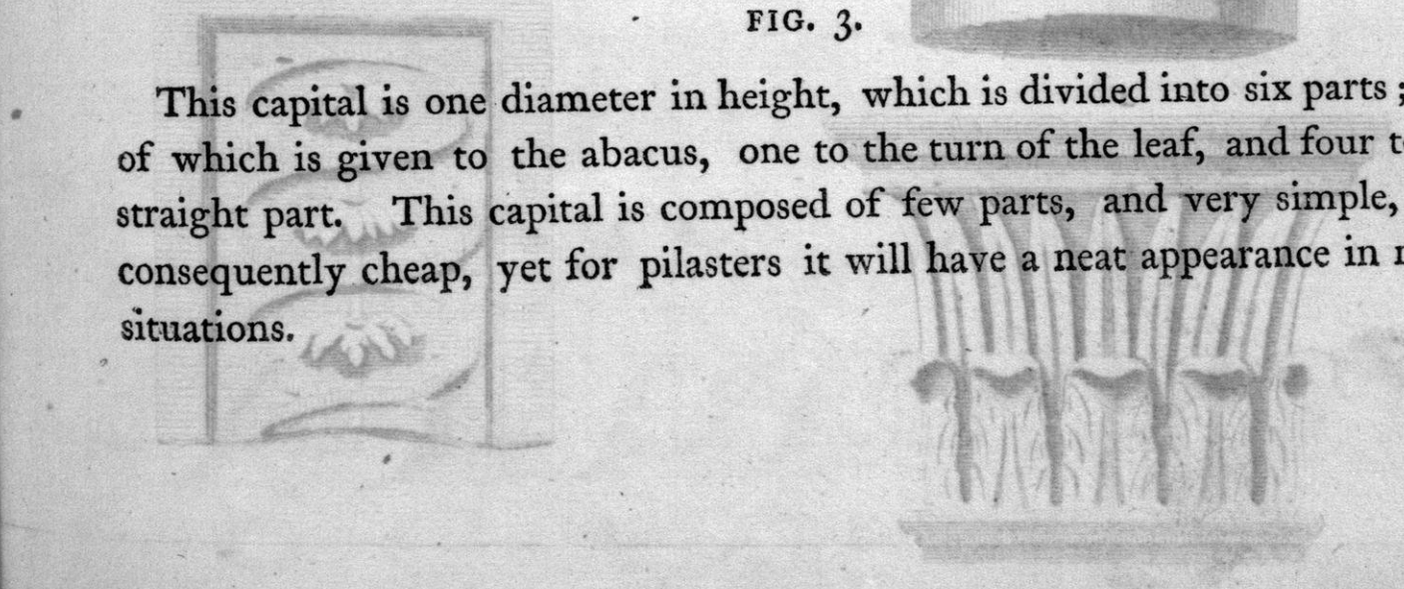


FIG. 3.

This capital is one diameter in height, which is divided into six parts ; one of which is given to the abacus, one to the turn of the leaf, and four to the straight part. This capital is composed of few parts, and very simple, and consequently cheap, yet for pilasters it will have a neat appearance in many situations.

FIG. 4.

This capital is one diameter in height; the abacus is one sixth of its height, which is circular. This capital, on account of its circular abacus, is particularly adapted to circular porticoes. The base may stand on the step without a plinth, which will look better than when put on one where the portico is of circular form.

FIG. 5.

This capital is not fit for every situation, but will answer for windows or shop fronts. It was used in the windows of the state house, in Boston, by Charles Bulfinch, Esq. where it is well adapted.

Mercurius Librarius

Mouldings at Large.

Raynerd Del.

Fox, Sc.

PLATE 24,

ARE four designs for ornamental mouldings. If intended to be finished in stucco, they must first be modelled in clay. All the parts should be made as open and free as possible, and proper leaves made to finish the miters, both external and internal. Care must be taken to put them up perfectly straight, and not to show any joinings.

In order to model them, or any other moulding, good, fine tempered clay should be provided, (pipe clay is best.) A templet must be made of wood, to fit the profile of the moulding. Then run on a board, a piece of clay moulding about a foot long. This moulding may then be modelled to any pattern, and a wax mould taken of it, which will do to cast a great number of feet. In modelling mouldings, they ought to be cut as deep as possible, to give them a bold appearance, and the parts not crowded too close together. After they are cast they must be under cut, to releave them from their ground, which will give them a rich and bold appearance.

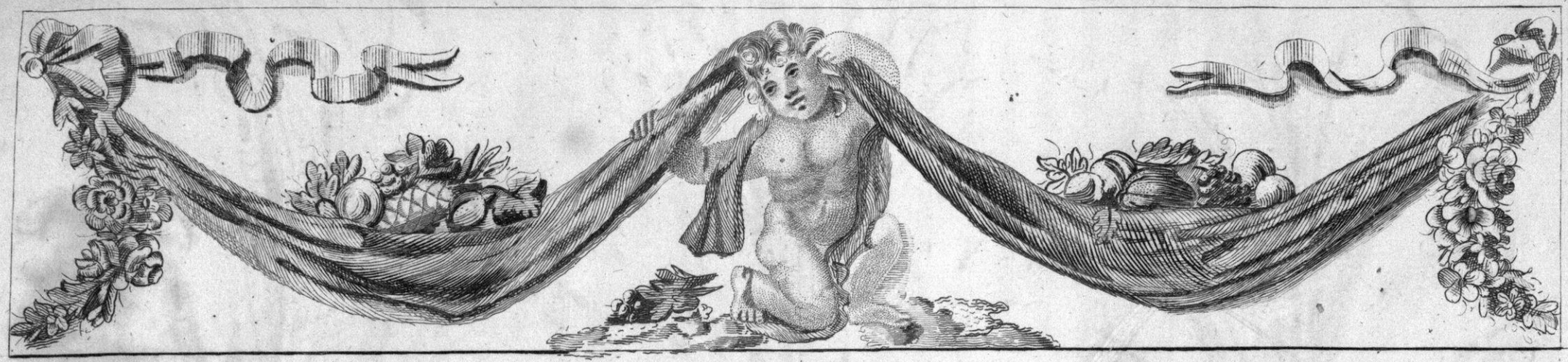
NOTE. They may be a little larger than plain mouldings that would be put in the same situation, and not so much quirked, as it will be difficult to get them out of the moulds.

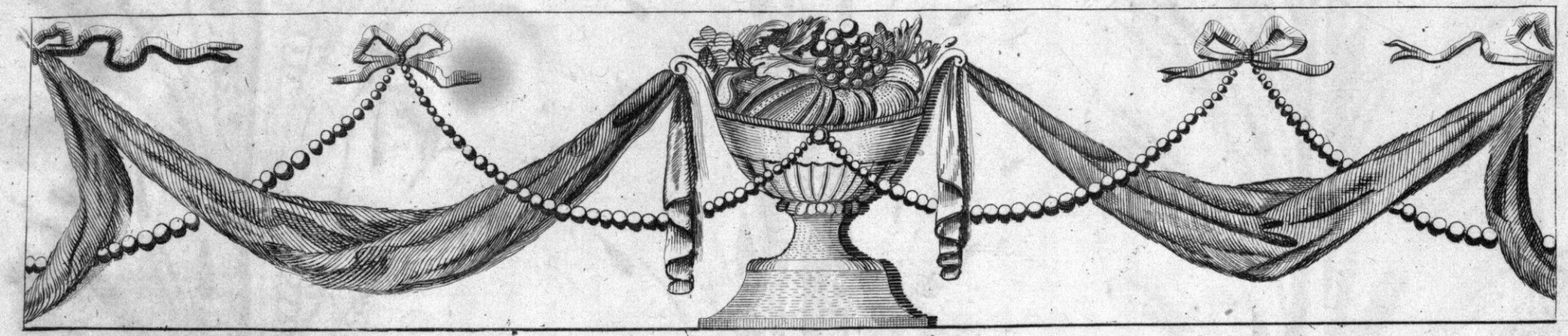
PLATE 25.

THREE DESIGNS FOR FRIEZES.

TO model friezes for stucco, the first thing to be done, is to prepare a ground of clay, of proper size, and about half an inch thick, which must be floated perfectly even on a stiff board. The drawing of the frieze may then be laid on it, and the outlines traced with a tool or pencil, which will leave indented outlines on the clay. A sufficient quantity of fine clay may then be laid on all the parts which are to be raised, with a small trowel or tool. The artist will then exercise his own skill in embossing it to a proper degree of boldness, according to the height of the room, and the good or bad effect it may have, depends a good deal on this first emboss. This may be performed with small spear shaped tools, made of iron, wood, or bone. The fingers must do a great part in rounding and softening its bold parts, when it is embossed, to have a proper effect. It may then be finished by smoothing it with the fingers and small tools, using a small quantity of oil. When the modelling is finished, and a mould taken off, it must be cast with plaster of paris, and neatly undercut and relieved in all the bold parts. The cornice and architrave should be finished before the frieze is put up, and a sinking made in the wall to receive it, the thickness of the cast, so that when finished, the ground of the frieze should be exactly over the line of the wall. The casts must be soaked before put up, and the joinings finished so as not to be seen. The same process will do for any ornament that has a flat ground.

Plate 25.

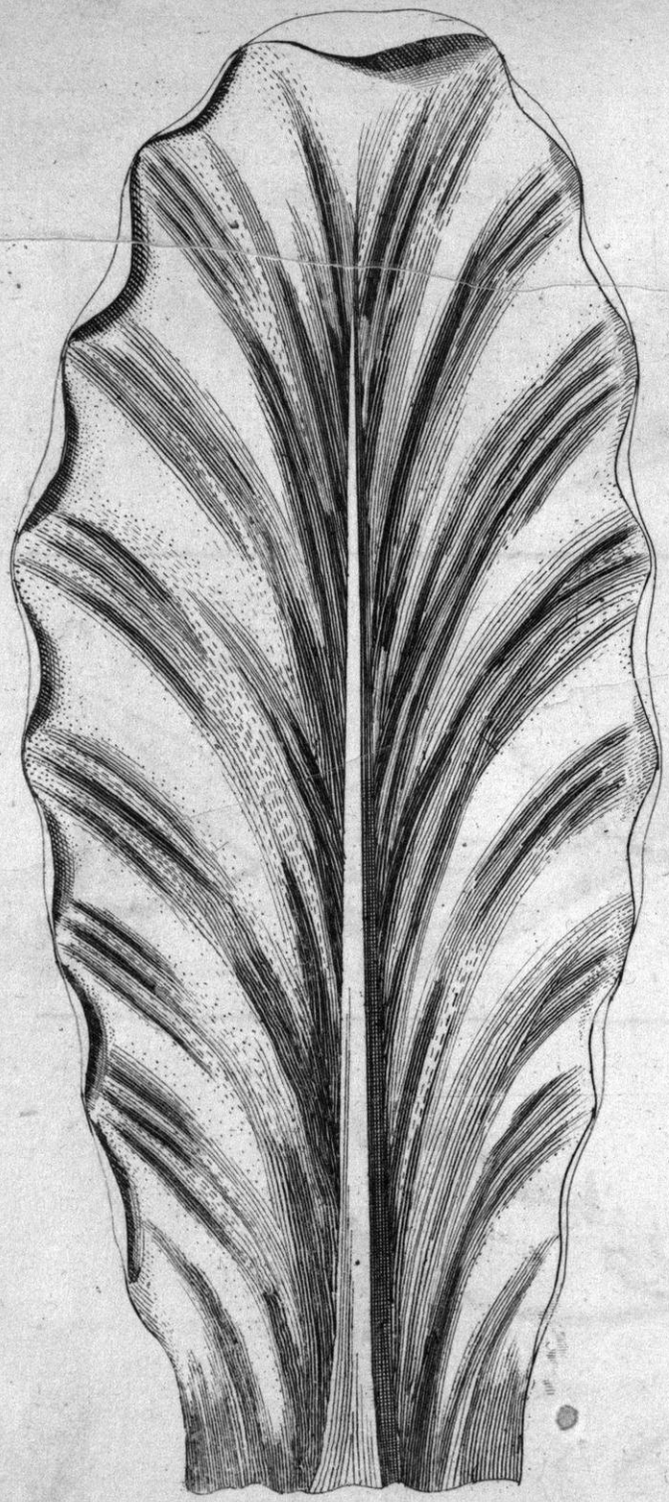




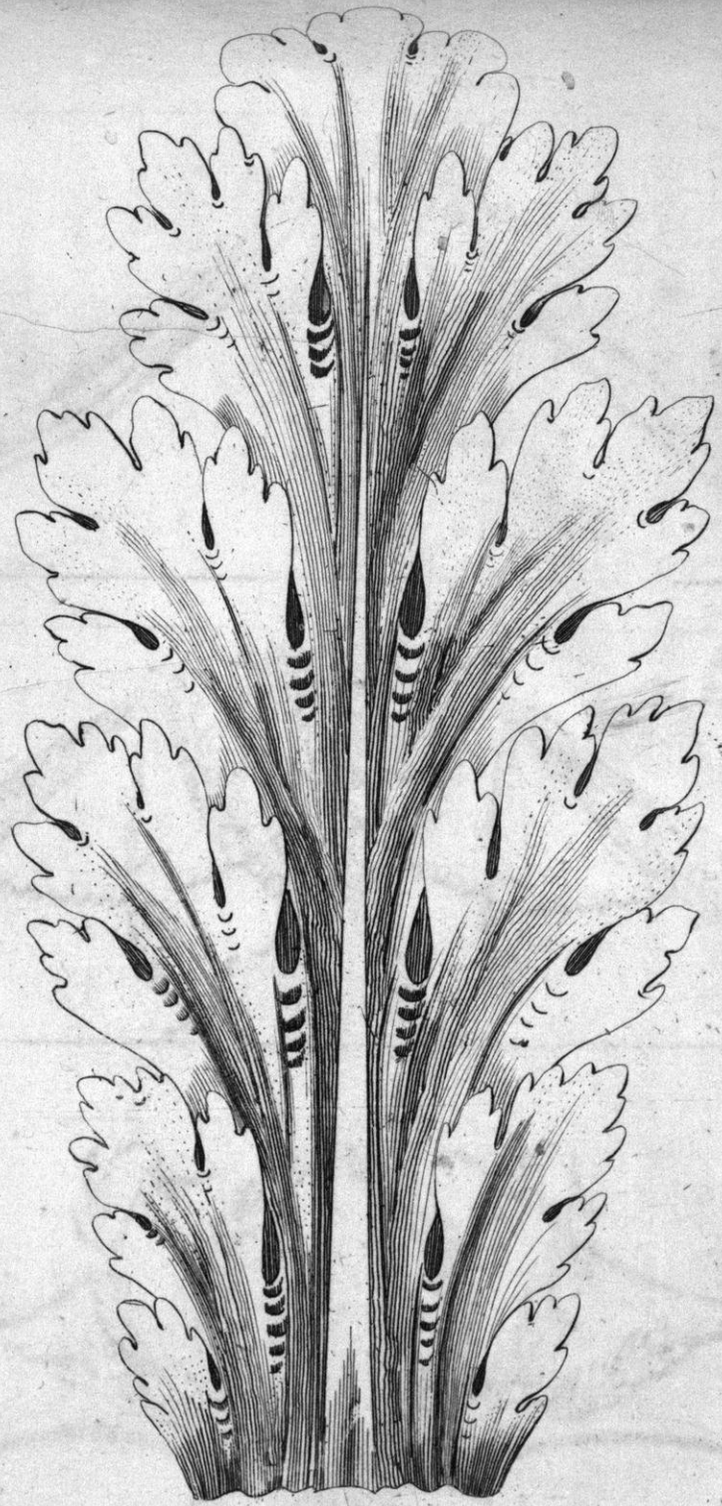
Wightman Sc.

Raymond Del.

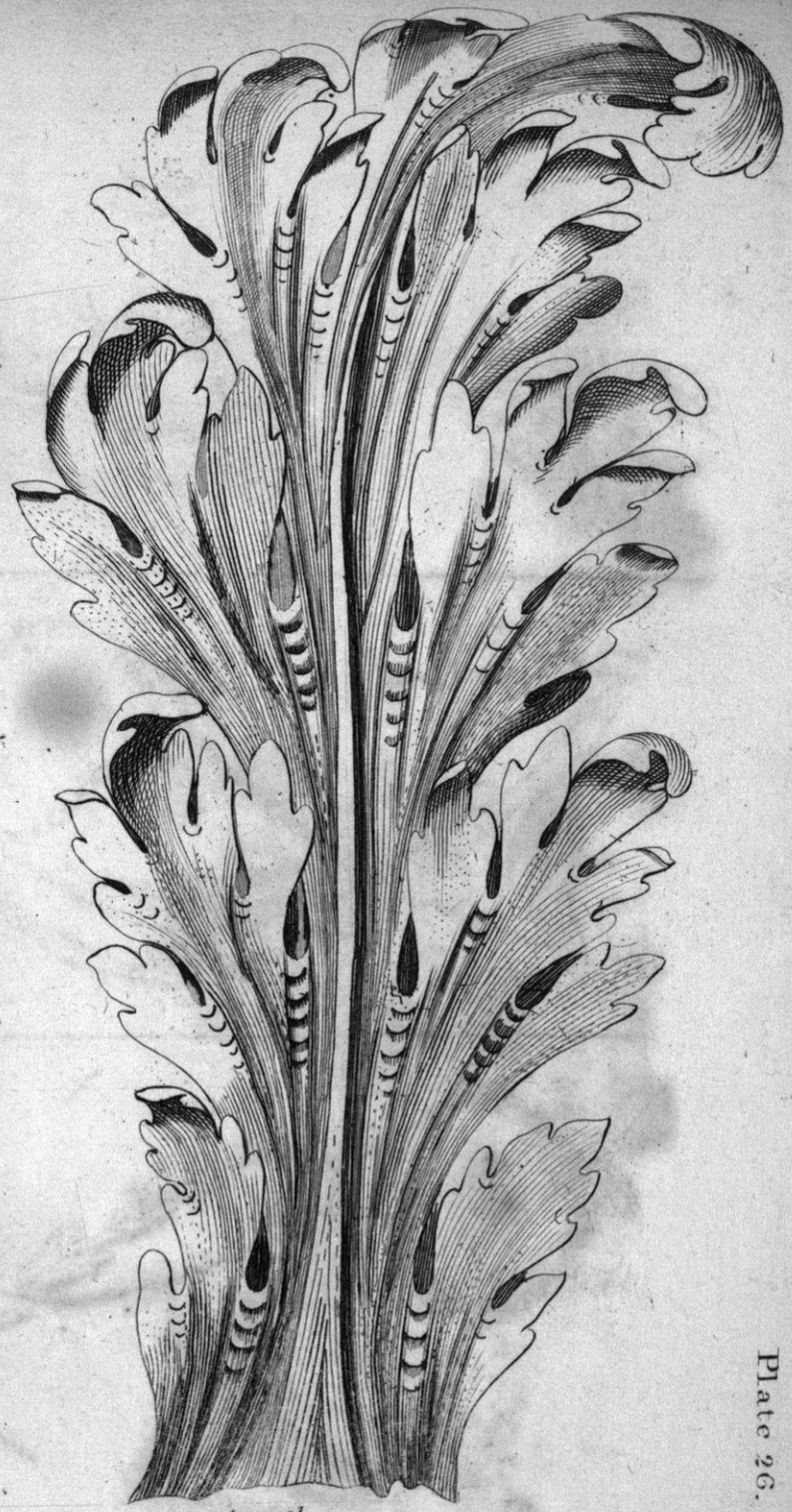
Raymond Del.



Water Leaf



Parsley Leaf



Acanthus

Wightman Sc.

Plate 26.

PLATE 26,

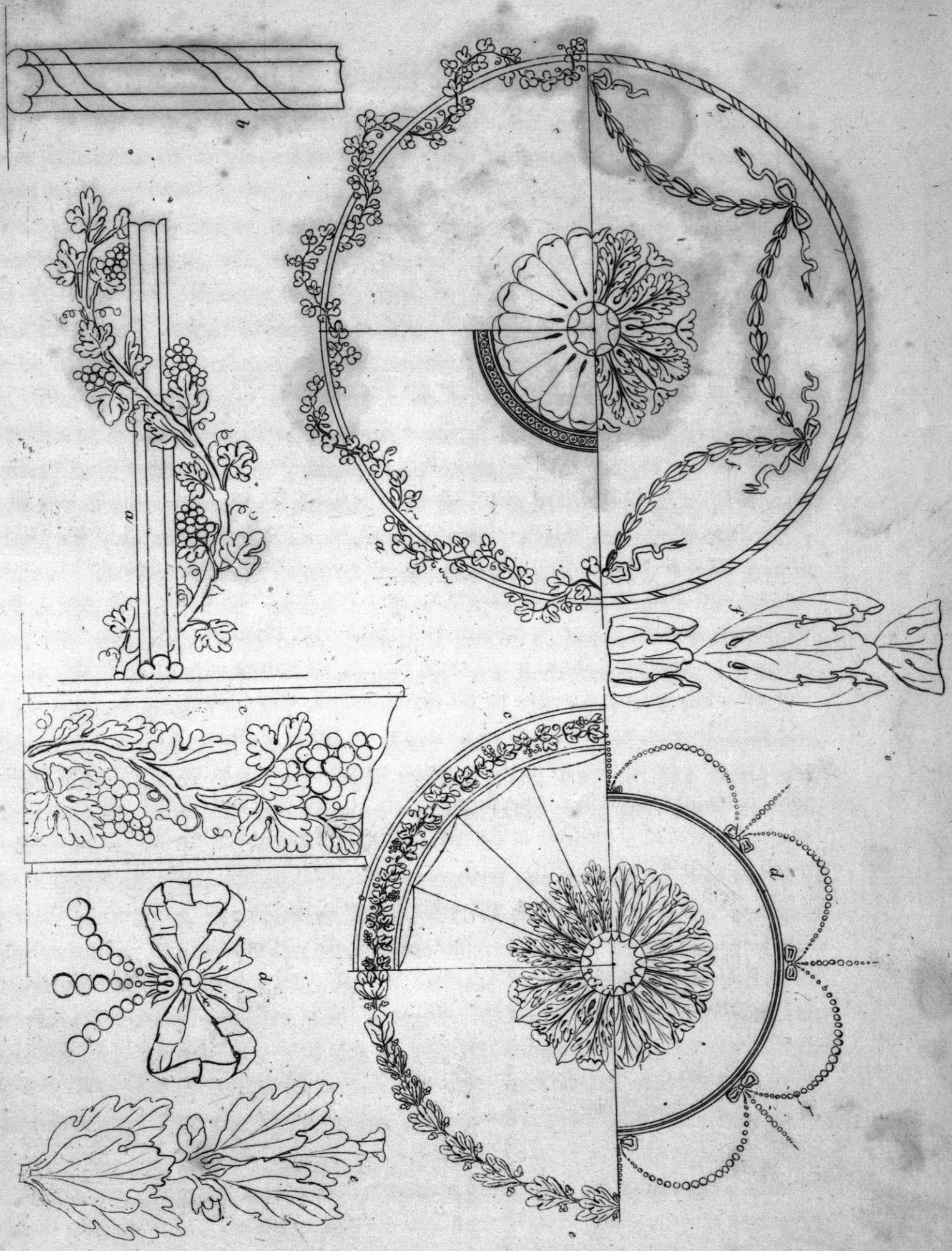
ARE leaves of centrepieces for ceilings. In modelling these, the same process may be taken that is laid down for friezes, except that they must be modelled and cast without a ground, and must be perfectly well trimmed, and made as open in their raffleings as possible. Many things of this kind may be copied from nature, and a great variety might be made that would be very ornamental.

PLATE 27,

ARE six designs for ornamental stucco ceilings, with some of their parts enlarged.

It was not our intention when we first began this work, to lay down any rules for ornamental stucco work, but merely to give a few examples by drawings; but as it has never before been attempted, to our knowledge, and our principal aim being to explain those parts of architecture which have been overlooked by others, and willing to give the student every information in our power, although it is the most difficult branch in architecture to learn, and still more so to instruct; yet we hope the following hints will be of some use to those who are young in the business, and be no injury to those who are well acquainted with the art of stucco working. When a ceiling or walls of a room are to be ornamented, the first thing to be done after the size, height, and form are known, is to draw a design; after which, all the parts are to be drawn at large. When this is done, and the plastering finished, which should be floated perfectly even, there are two ways of executing it in stucco work, the first is by what is called laying it on by hand, which is modelling it on the ceiling with stucco* with small iron or wooden tools. This kind, if executed in a masterly style, is to be preferred, but where workmen cannot be got to execute it, or its expense is too great, the parts may then be modelled in clay, and moulds taken from them, and the ornaments cast with plaster of paris. Though this is not the best method, it is much less expensive, and requires less skill to perform it; and if well managed will have a very good effect. In ornamenting ceilings, the figure should

* The stucco is made of lime-putty, mixed with pulverised marble, or raw plaster of paris, with sometimes a little white sand and a little white hair, to prevent it from cracking. The mixture is then put on a dry brick wall for twenty four hours, after which it is taken off and well beaten, and put on again. This is repeated for four or five days, when it will be fit for use. This preparation makes it tough, and prevents it from cracking.



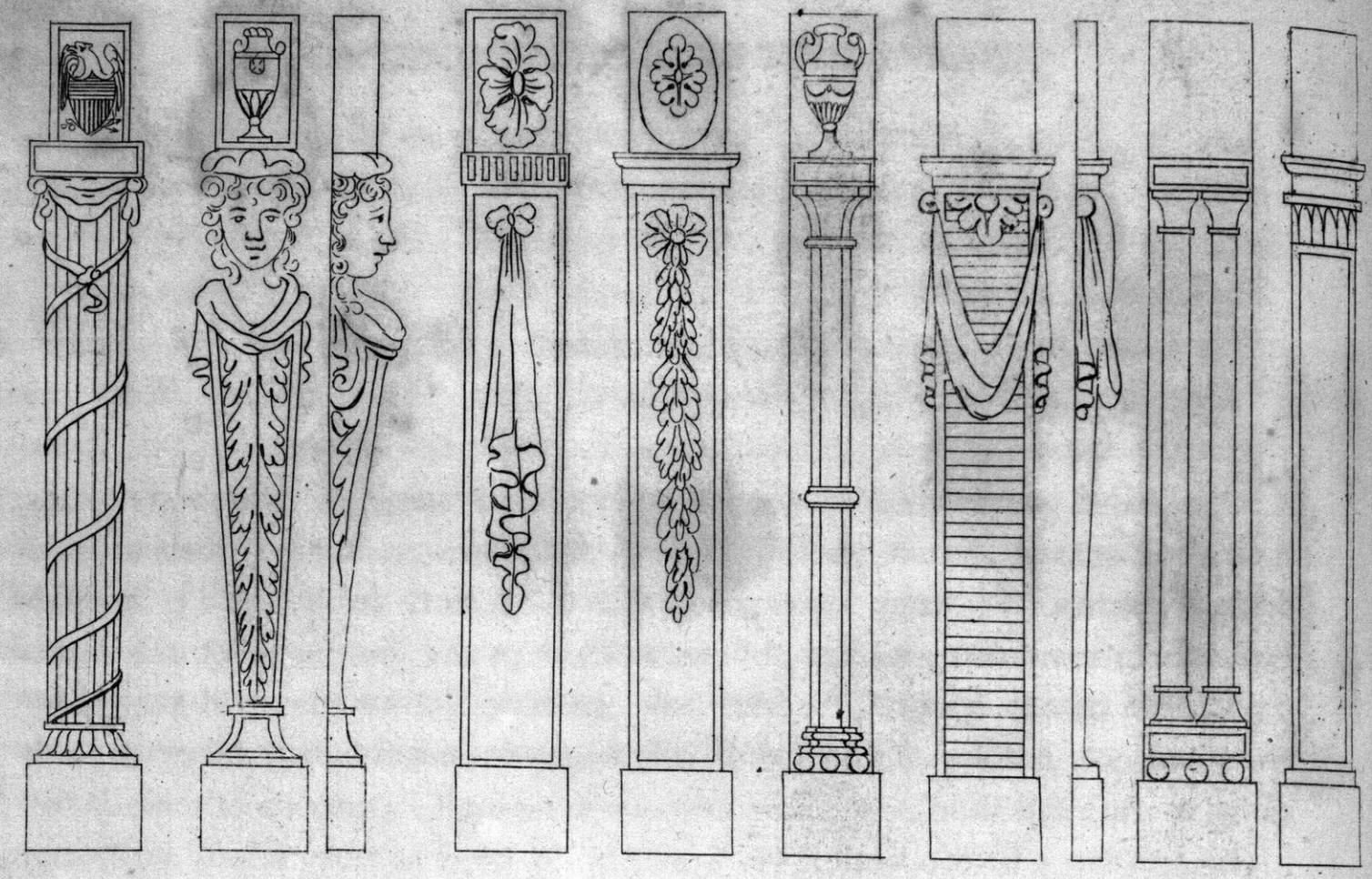
Rayner d. Del. *Wightman Sc.*

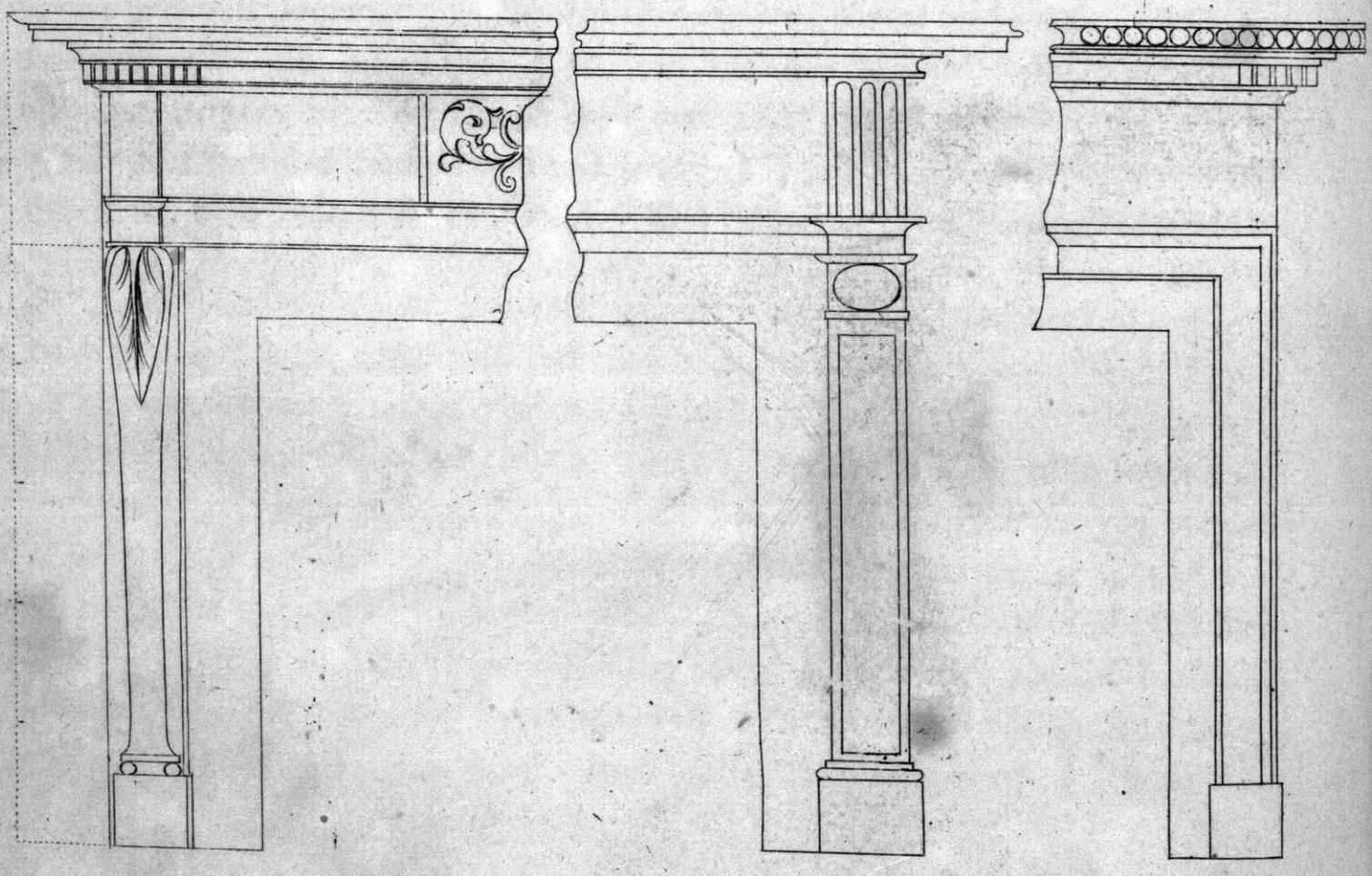
be of a proper boldness and strength of shadow to the height of the room, and be significant of its use. They ought to be such as will appear ornamental, or they had better be left out; and those parts which are cast with grounds be sunk level with the line of the ceiling, or they will have a heavy appearance. When a room is low, all the parts of the ornaments should be correctly finished, with very delicate strokes, and light in proportion to the height; yet to preserve a proper boldness of tint. When a room is very high, there may be bold and well placed strokes, without regard to a great deal of delicacy. The principal object is to show a sufficient quantity of shadow, to give it a rich and bold appearance, without having the parts too large and heavy. A ceiling may sometimes be panelled to advantage, but ought not to be laid out in too many geometrical figures. Regard ought to be paid to the use of a room, as it is as easy to introduce emblematical subjects as those void of meaning. An ornament, however well executed, is not fit to be put in every room. Those that would be exceedingly well adapted to a dancing room, for instance, would be ridiculous if put in a church or a courthouse; or even those modelled for a drawingroom or a bedroom, would not be fit for a diningroom or a hall.

In ornamenting a diningroom, there may be introduced grapevines, wheat, barley, or fruit of any kind; cups, vases, &c. or any thing that denotes eating or drinking; but care must be taken to group them in some graceful form.

In a drawingroom, foliage, wreaths, festoons, or baskets of flowers, with myrtles, jessamines, convolvalus, roses, &c. displayed with taste, and in a lively manner. Every subject that is introduced, ought to approach as near to nature as art will admit of. A hall, saloon, or staircase, ought to exhibit something of more solidity and strength. Therefore trophies of different kinds may be introduced, and not so highly ornamented as the rest of the house. We would not recommend the last mentioned apartments to be finished higher than the Doric order, if regard is paid to any. It is to be remembered, that objects are not to be dispersed about a room without order, but should be grouped into trophies with a great deal of judgment, and care

taken to give them as easy and natural an appearance as possible, and introduce nothing that will look stiff or mechanical. To imitate nature requires a great deal of art. A trophy of love may be composed of cupid's bow and quiver, hymen's torch, doves or a wreath of roses, myrtles or jessemins, &c. &c. A trophy of music; harps, violins, flutes, hautboys, music book, French horn, with laurel branch, &c. A trophy of war; drums, fifes, trumpets, swords, battle axes, fascine, colours, palm branches, &c. or any warlike implement. A trophy of peace; a caduceus, doves, olive branch, a sword, burning, &c. &c. A trophy of commerce; the anchor and rudder of a ship, bales, trunks, cornucopias, with other articles of commerce. A trophy of navigation; anchors, cables, rudders, mariners' compass, speaking trumpet, quadrant, pendant, &c. &c. A trophy of agriculture; wheat, corn, scythes, sickles, rakes, forks, flowers of any kind, &c. &c.





Raynerd Del.

Wightman Sc.

PLATE 28.

CONTAINS eleven designs for chimneypieces; some of which are plain, and some ornamental. Care should be taken, however, not to overload them with ornaments, as they are exposed and liable to be broken. The proportion of chimneypieces we are obliged to leave to the judgment of the workman; for, in our opinion, no exact rule can be laid down that will answer for every room. A room, however small, must have a fireplace large enough to be useful, and should the same proportion be used in a room of twenty feet high, and large in proportion, it would be so large as not to look well, and be too high in the opening for the smoke to ascend without spreading into the room. It will be found by Count Rumford's experiments, that the nearer the throat of the chimney is to the fire the better the draft. The smallest opening should never be less than two feet nine inches in height, and the largest ought not to be higher than three feet two inches, but two feet eleven inches will be found to be a useful height for common rooms, and the width may be about four feet.

PLATE 29.

FIG. 1,

Is a door intended for inside finishing, where the size of the room is such as to require more than architraves. The architrave may be one eighth of the opening; the frieze and cornice may be one eighth of the height of the opening (which ought to be too diameters) and may be proportioned by any of the orders. The truss is one twelfth of the height; the tablet one third more, the side pilasters may be the same width as the architrave.

FIG. 2,

Is a front door with only two columns or pilasters. This is intended for a situation that will not admit of more in width, and where there is sufficient height. The entablature may be proportioned by the Corinthian order, with fancy capitals of one diameter in height. The tablet may be one half of the whole width of the frieze in length, but not less than two of its diameters. Where there is sufficient room, and the expense not too great, we would always recommend more than two columns, as a single column on each side of a door has but a naked appearance.

Plate 29

12 parts

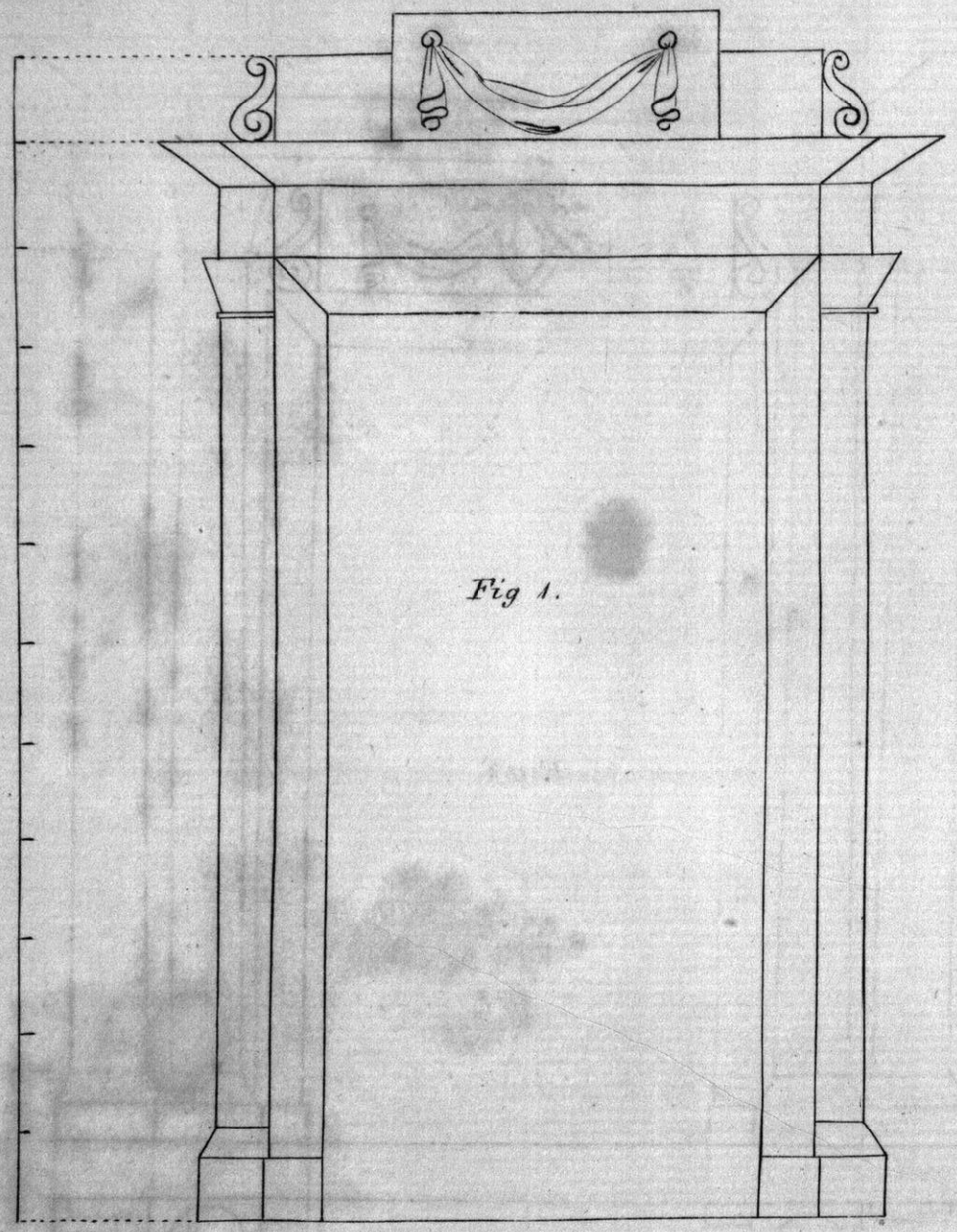


Fig 1.

14 parts

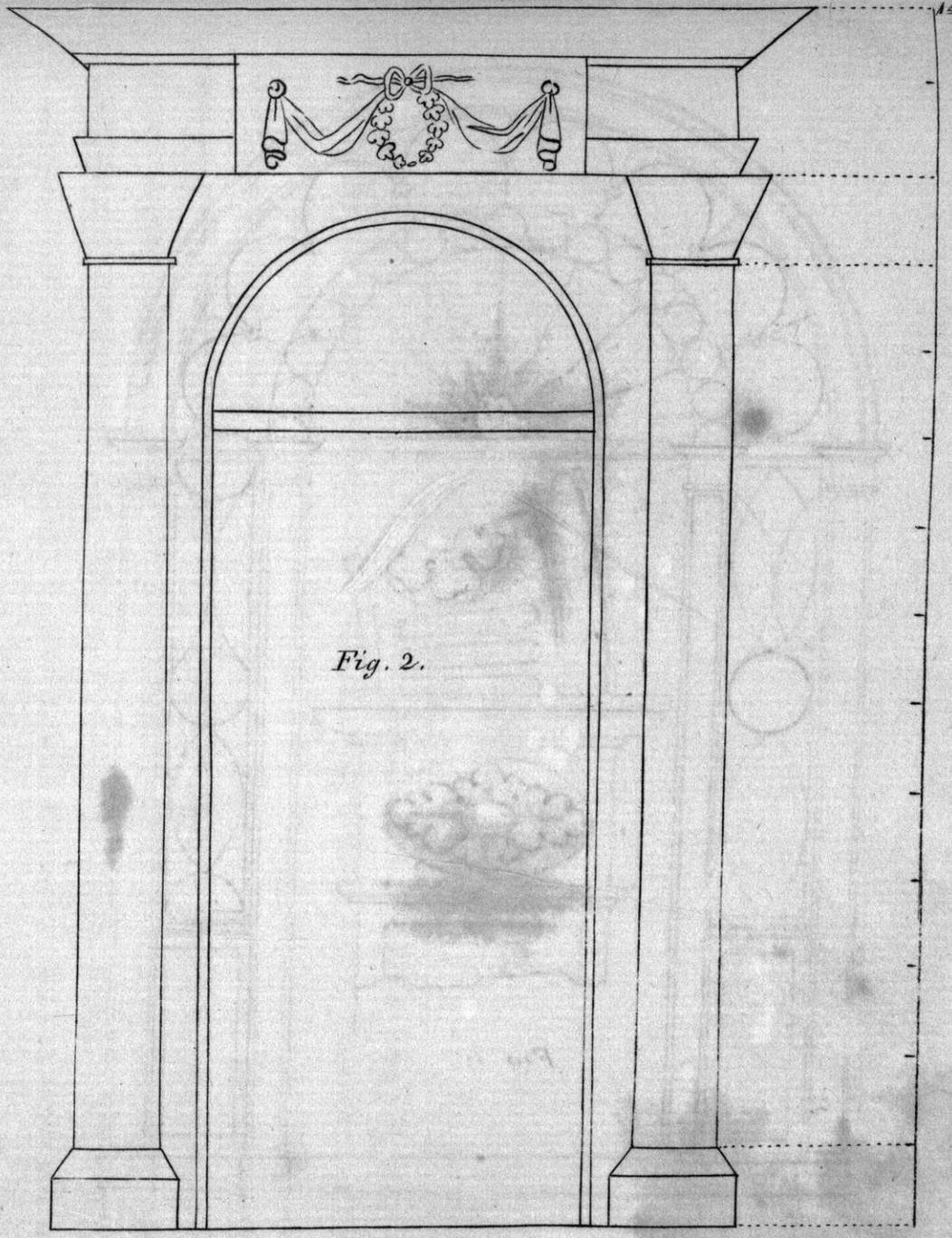


Fig. 2.

D Raynerd Del.

Wightman Sc.

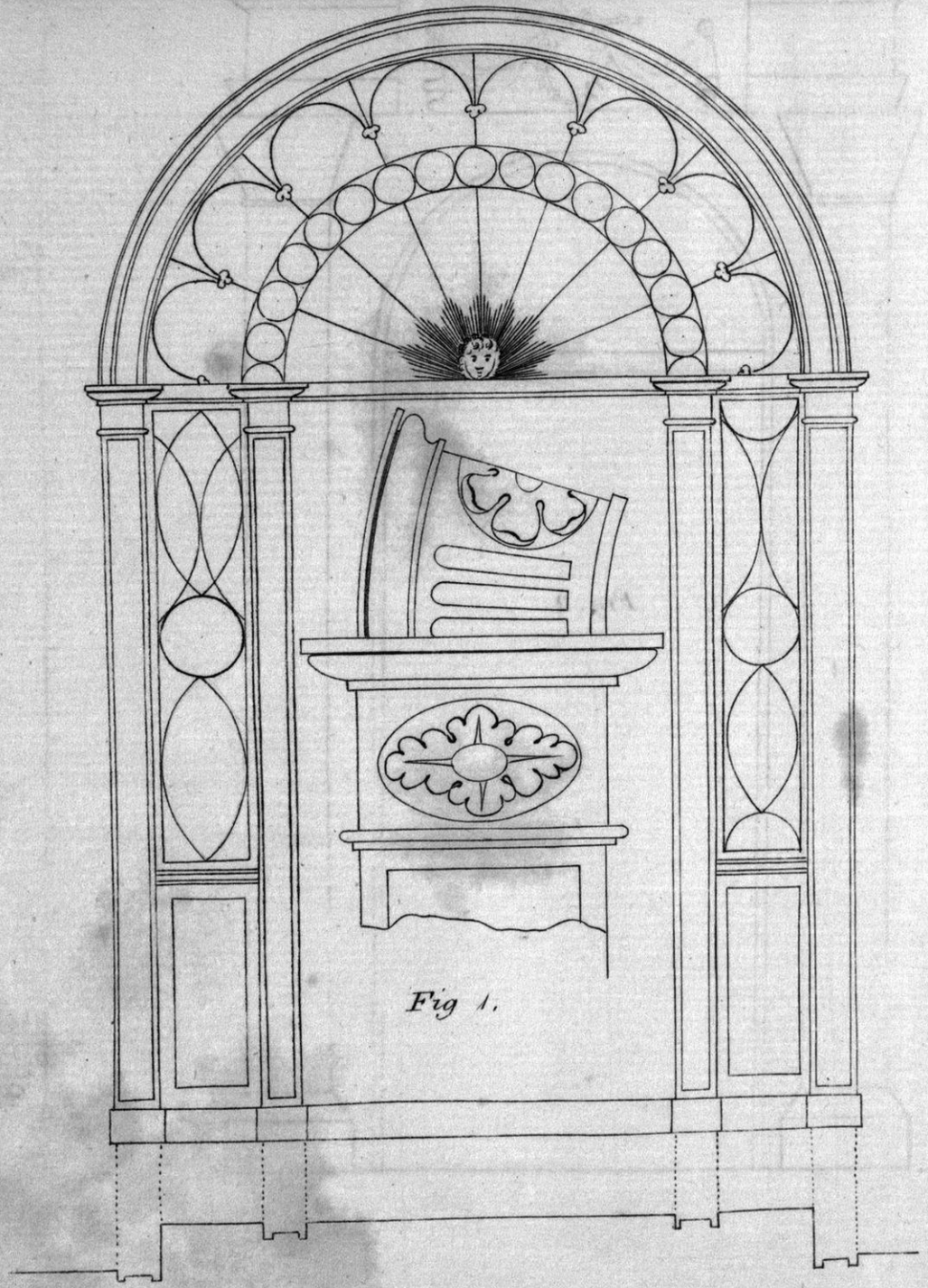


Fig 1.

D. Raynard Del.

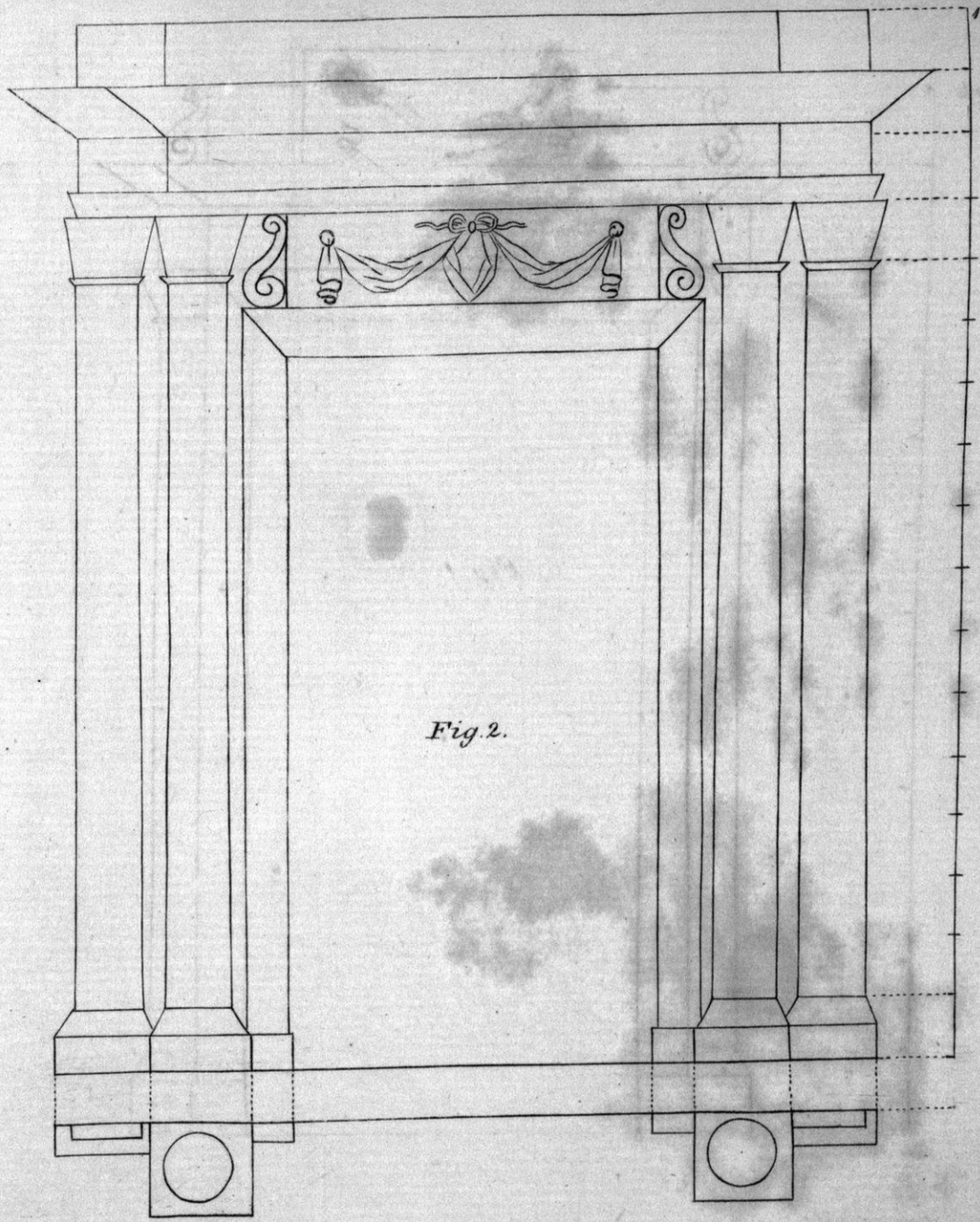


Fig. 2.

47 parts

Wightman Sc.

Plate 30

PLATE 30.

FIG. 1,

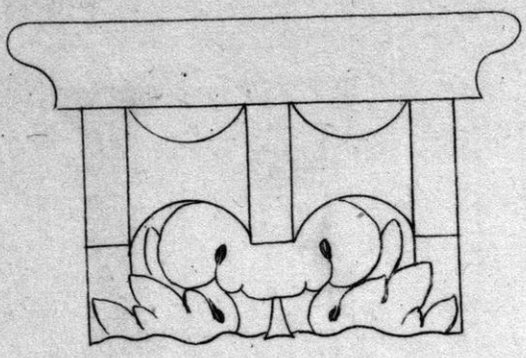
IS a Venetian door, calculated for a brick house. Where a great deal of light is wanted, the pilasters may be fifteen or fixteen diameters; the architrave the same size; the side lights may be two thirds the height of the opening. This kind of door is very fashionable at present.

FIG. 2,

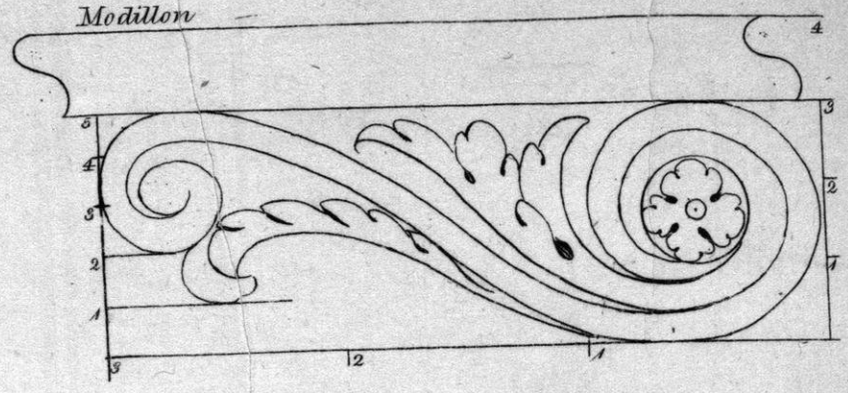
Is a front door, calculated for a low story, that will admit of no light over the door. The whole height is seventeen diameters of the column. The blocking, course, and tablet, help to make up the deficiency of the fanlight. It will be seen, that the columns and pilasters of this door are very slender, which ought always to be the case when placed very near together.

PLATE 31.

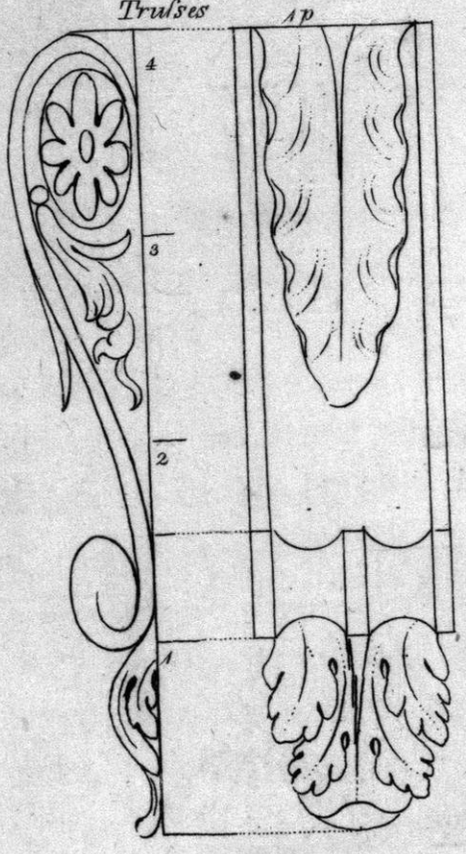
CONTAINS two designs for trusses; four for key stones; with a profile plan, and front of a modillion. It would be absurd to confine the student to any particular dimensions for trusses, as their situation must, in a great measure, determine their size and dimensions. We frequently see them, and with propriety too, of every size and dimension. We would, however, recommend them to be made with less projection than is commonly practised. Key stones are less used now than they were formerly. The ancients used them in almost every door or window. This might be going to excess, but they are very useful, as well as handsome, in some situations; serving to wedge and strengthen the arch, as well as to give its centre a bold and conspicuous appearance. If ornamented, they ought to be bold and striking, and emblematical of the building. Masks or heads are the most proper ornaments for them, if well executed.

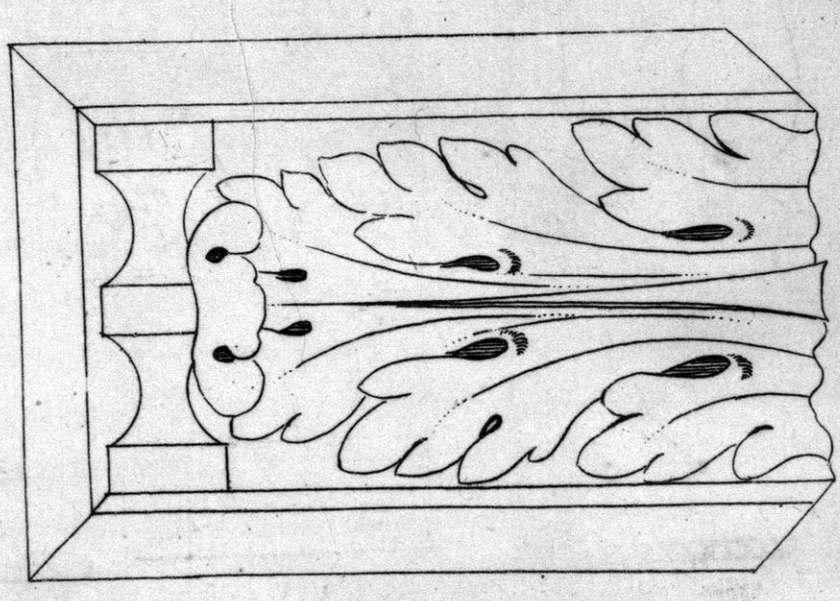


Modillon

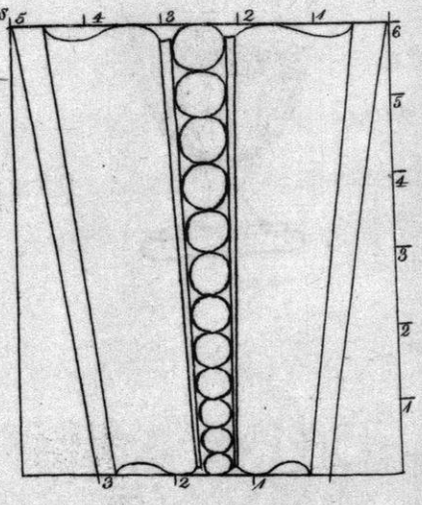


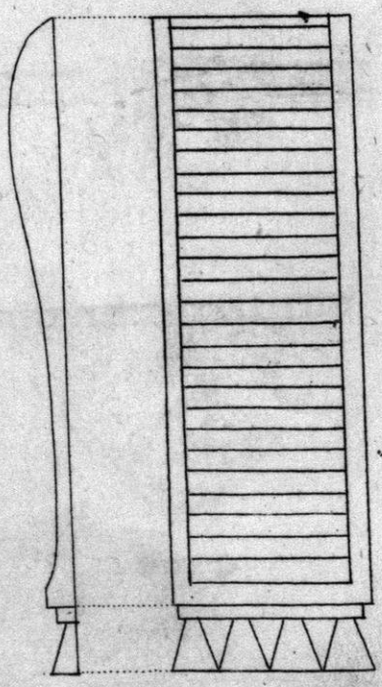
Truſses

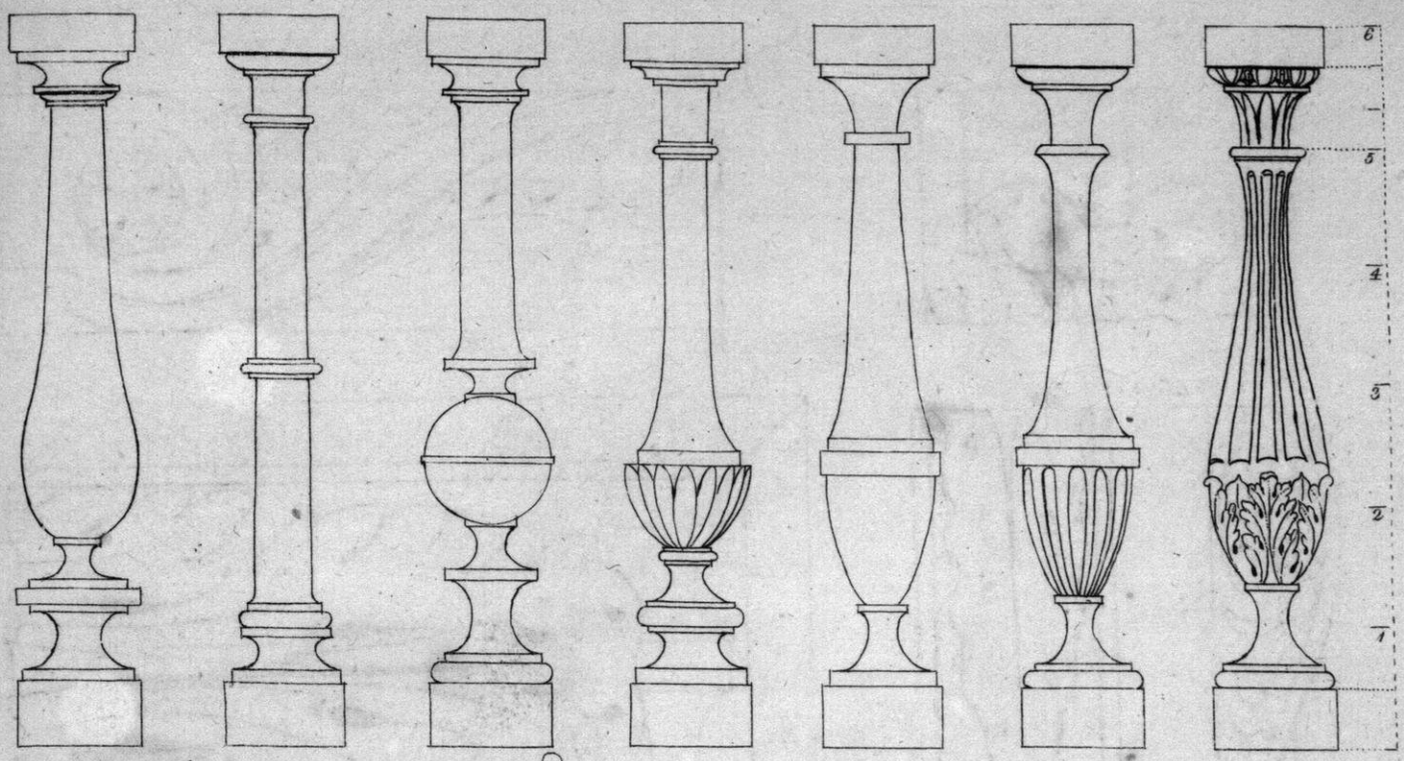




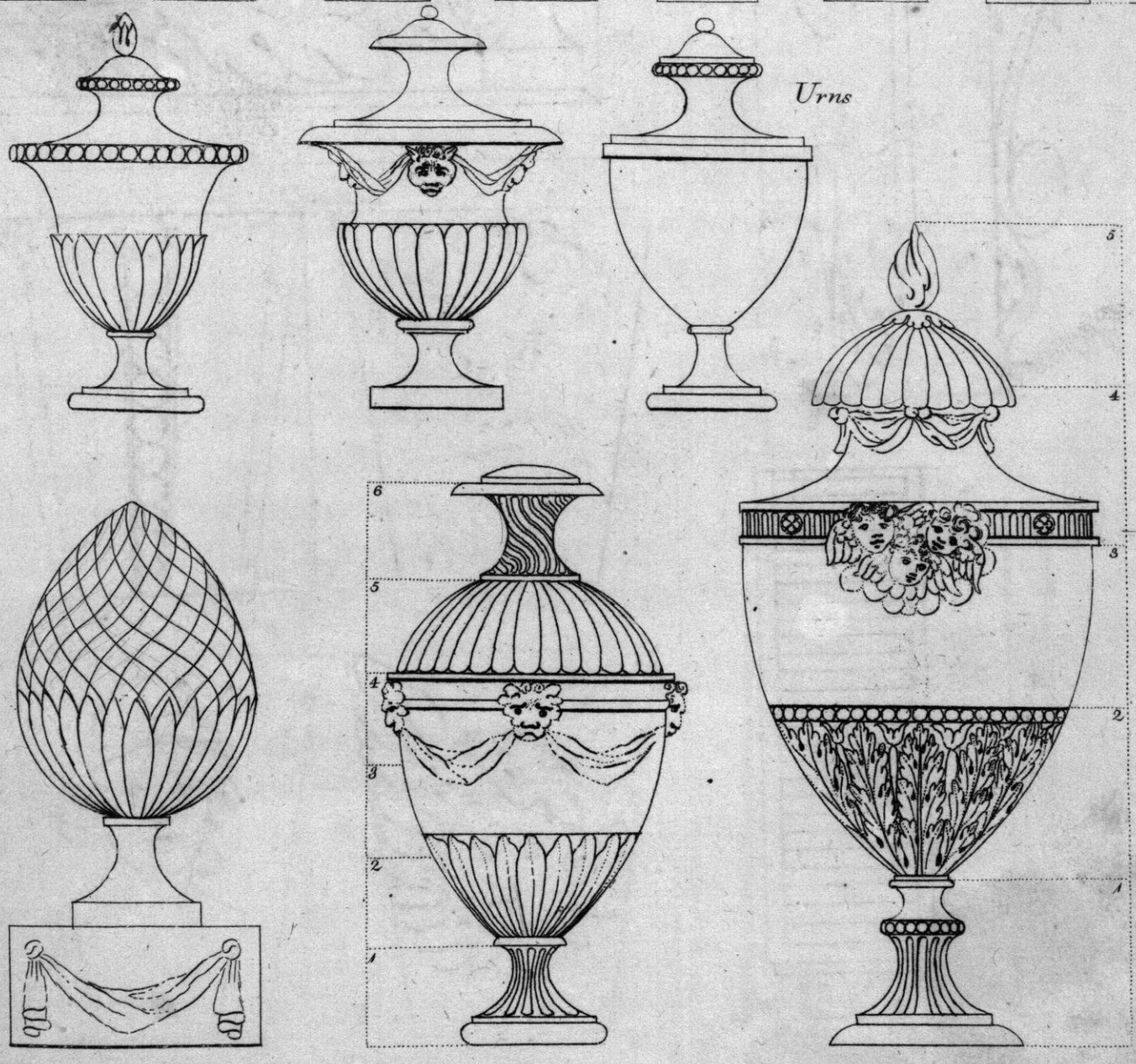
Key Stones







Urns



D. Raymond Del.

Wightman Sc.

PLATE 32.

Seven Designs for Banisters, and five Designs for Urns.

TO proportion banisters, the height must be first found, then divide it into six parts, one of which will be the diameter; the plinth is one half the diameter, the abacus one third. In whatever form they are made, let them be slender at top, and stout at bottom.

Banisters, when used for balustrades, may be considered as a pedestal to an order, and the proportion may be the same. When a balustrade is placed over an order, its height must be the same as the entablature it stands on; there is no situation that requires them to be lower, but it is often necessary to make them higher. The plinth of the balustrade must be placed exactly on the line of the wall; if on the top of a house, or if on an entablature, it must be perpendicular over the frieze. We frequently see balustrades project out as far as the nose of the cornice, but this is a very bad and unnatural practice, for should another order be put on such a balustrade, it would certainly break down the cornice.

Urns admit of a great variety of forms, and when well executed, will be very ornamental in their proper places, but they ought not to be used in every situation. The ancients used them to deposit the ashes and bones of the dead, and for sacred uses only; and while the mind is impressed with these ideas, it cannot be pleasing to see them in every situation. Their use ought to be principally confined to monuments, wall pieces, churches, mausoleums, mourning pieces, &c. &c.

PLATE 33.

Plan and Elevation for a small Townhouse.

No. 1.

Kitchen and cellar floor, twenty seven by twenty five feet, from out to out.

a Cellar, nine by twenty two feet.
b Kitchen, sixteen by fifteen feet.
c Kitchen closet, six feet square.

No. 2.

Parlour floor.

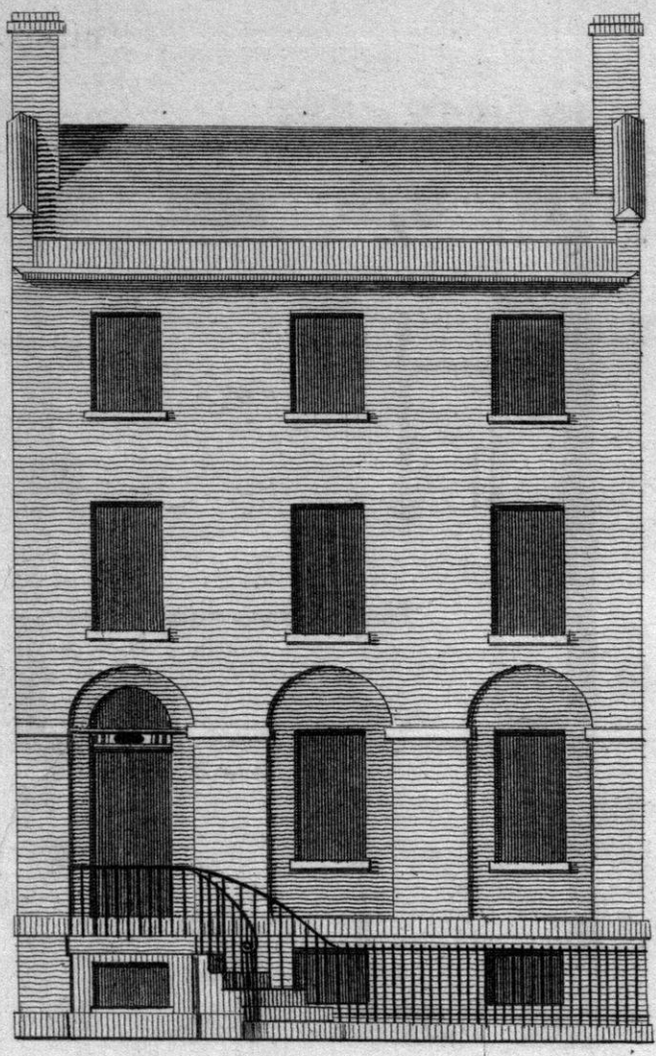
d Parlour, sixteen feet square.
e Breakfast room, eight feet six inches by sixteen feet.
g China closet, six feet square.
f Front entry, eight feet six inches by six feet.

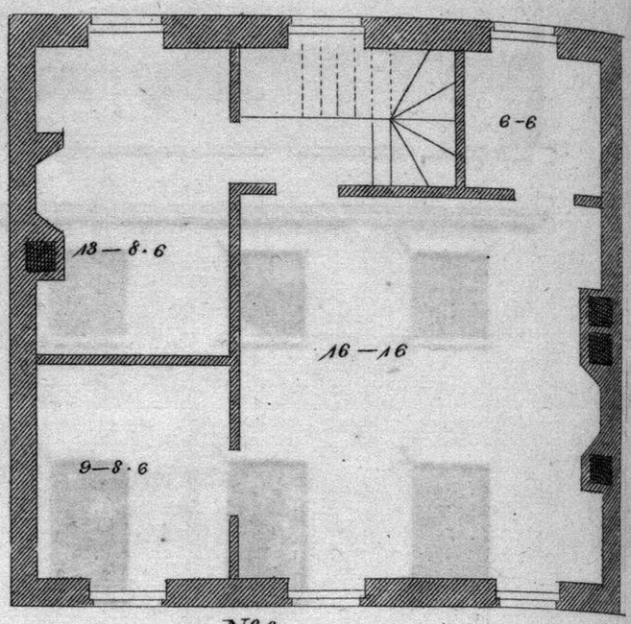
No. 3.

Chamber floor, with the dimensions figured on the plate.

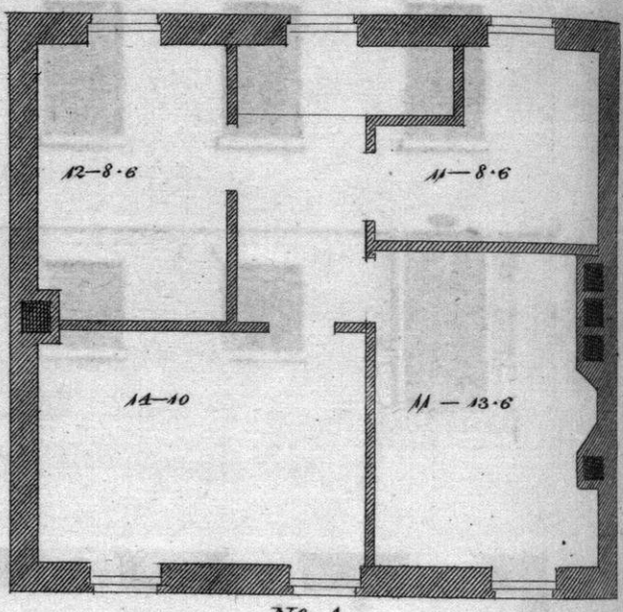
No. 4.

Upper chamber floor, with all the dimensions figured on the plate.

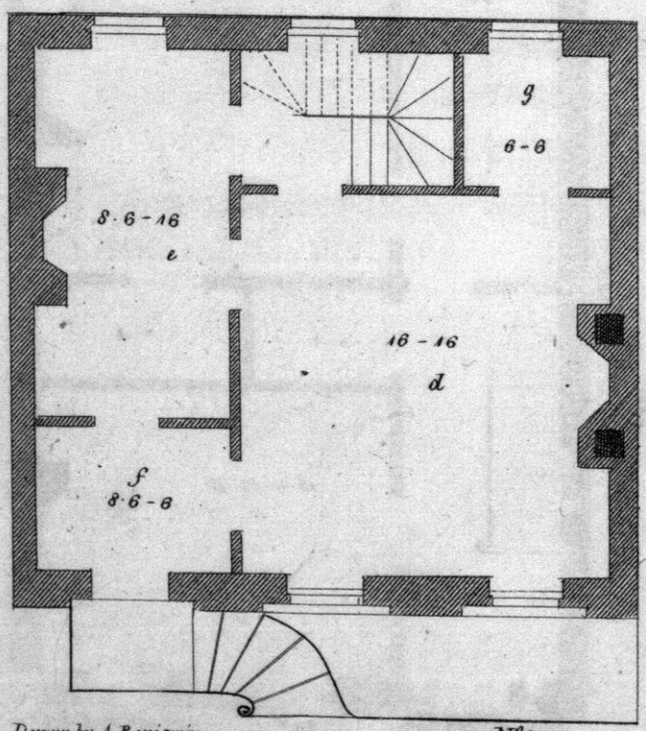




№3

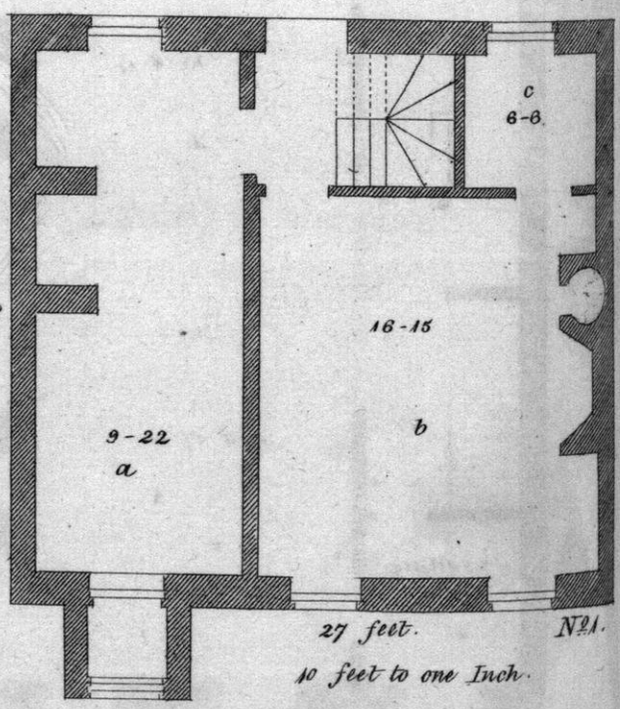


№ 4.



Drawn by A. Benjamin.

№2.

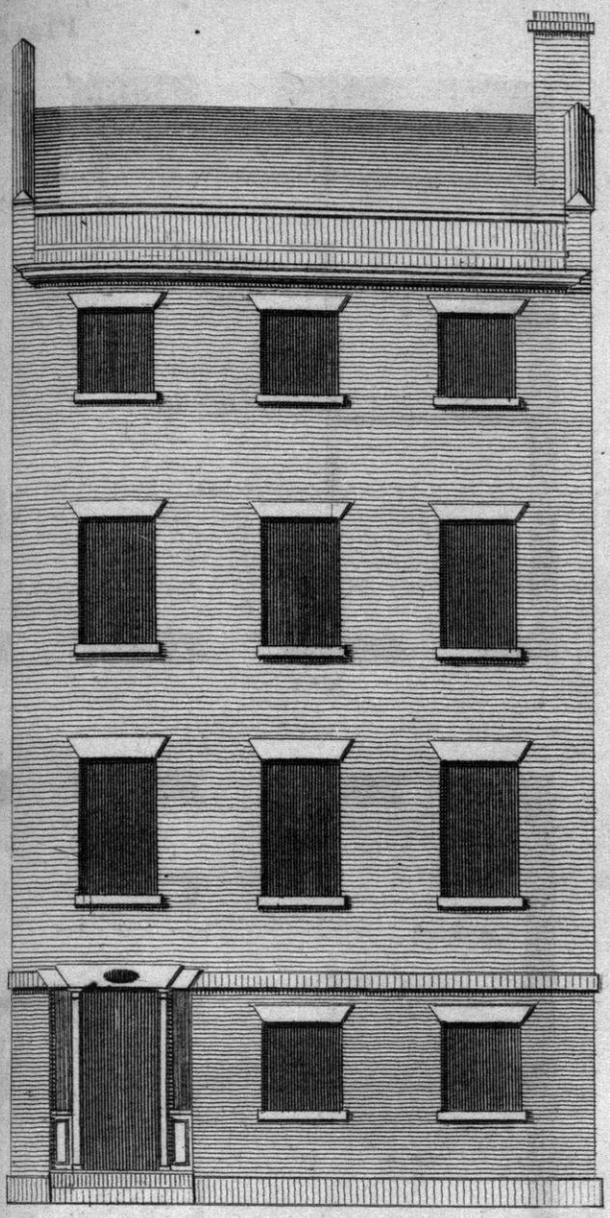


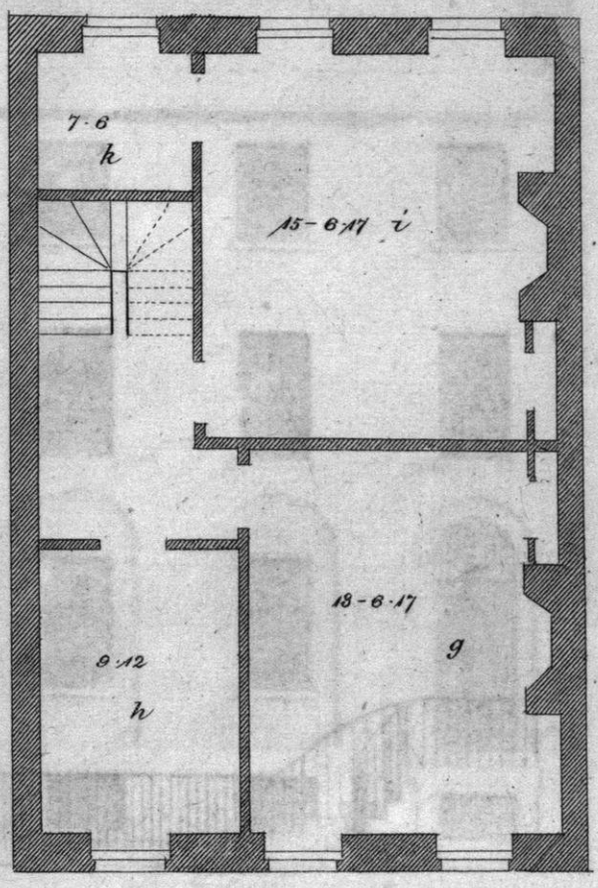
27 feet.

№1.

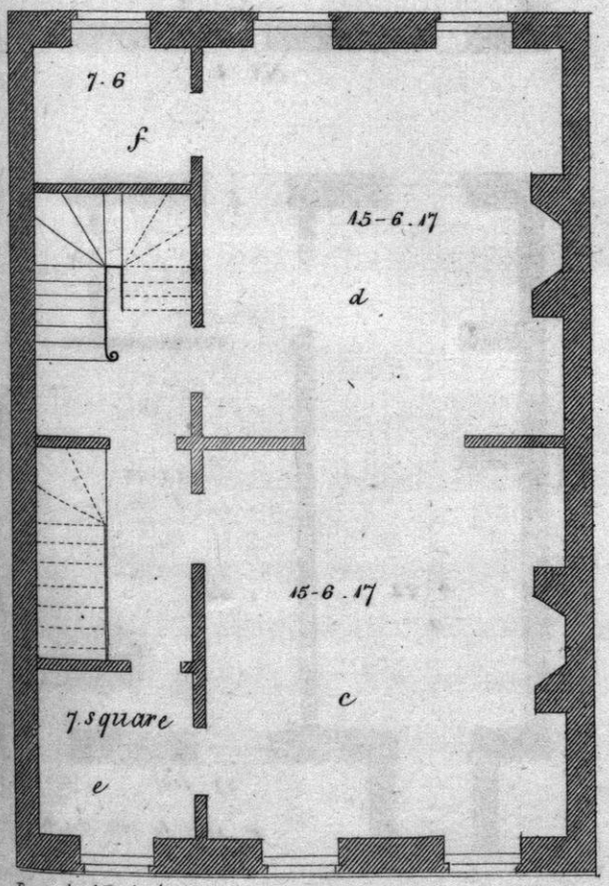
10 feet to one Inch.

Engd by Gilbert Fox.



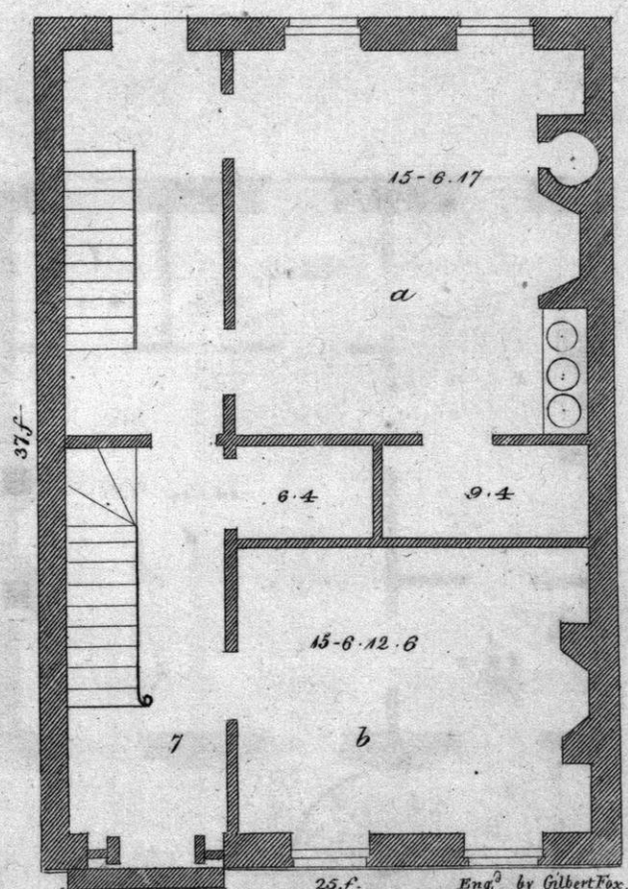


No 3.



Drawn by A. Benjamin.

No 2



No 1

25 f.

Engd by Gilbert Fox.

PLATE 34.

Plan and Elevation for a Townhouse.

No. 1.

Basement story floor, twenty five by thirty seven feet.

a Kitchen, fifteen feet six inches by seventeen feet, in the clear.

b Breakfast or counting room, fifteen feet six inches by twelve feet six inches.

No. 2.

Parlour floor.

c and *d*, Parlour and dining room, fifteen feet six inches by seventeen feet.

f China closet, seven feet by six feet.

e Library, seven feet square.

No. 3.

Chamber floor.

g Spare chamber, thirteen feet six inches by seventeen feet.

i Lady's or gentleman's bedchamber, fifteen feet six inches by seventeen feet.

k Dressing room, seven feet by six feet.

h Small bedchamber, nine feet by twelve feet.

Glass in basement story, eleven by seventeen inches, six lights each window. Principal floor, eleven by sixteen inches, twelve lights each window. Chamber floor, eleven by fifteen inches, twelve lights each window. Upper chamber floor, eleven by fifteen inches, nine lights each window.

PLATE 35.

Plan and Elevation for a Townhouse.

No. 1.

Basement story floor, fifty four by thirty five feet.

a Hall, or principal entrance,
b Kitchen, twenty feet square.
c Office, eleven by twenty feet.
d Library, ten by twenty feet.
e Storeroom, ten by eleven feet.

No. 2.

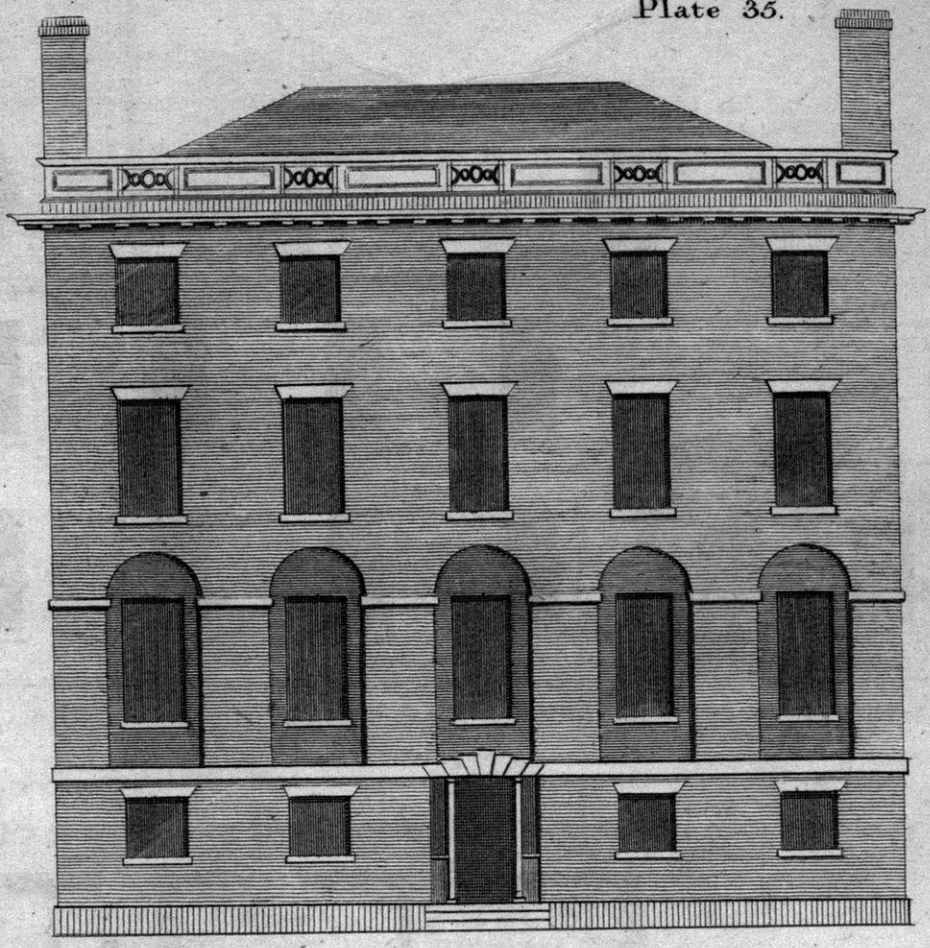
Parlour floor.

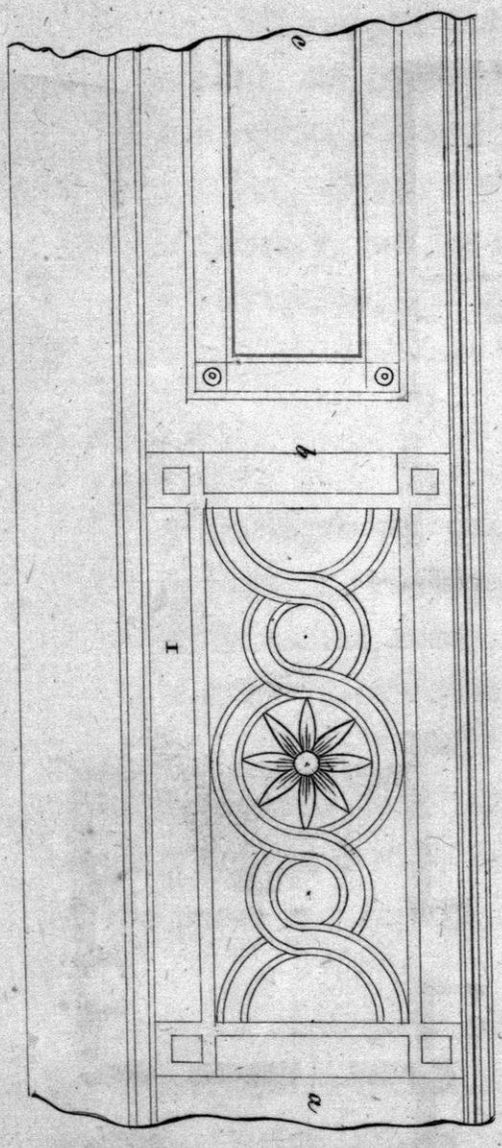
f Diningroom, twenty by thirty feet, in the clear.
g Parlour, twenty feet square.
h Breakfast room, eleven by eighteen feet.
i Pantry, or china closet, ten by eleven feet.

A, Represents that part of the railing which is placed exactly over each window; from *a* to *b*, is the width of the window; from *b* to *c*, is a part of the panel and railing, which is placed over the peers, between windows.

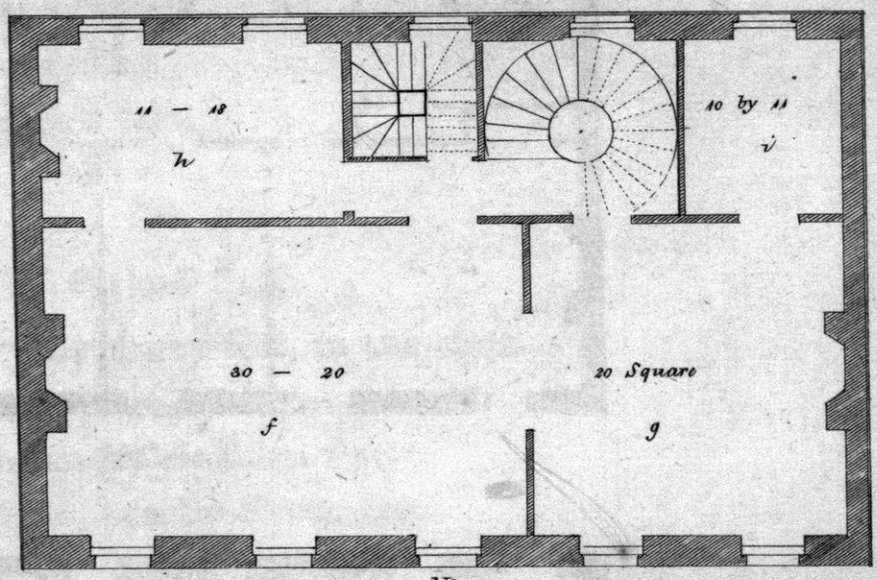
Glass, in basement story, six lights in a window, of twelve and a half by twenty three inches. Principal floor, twelve and a half by twenty one inches; twelve lights to each window. Chamber story, twelve and a half by twenty inches; twelve lights each window. Upper chamber floor, twelve and a half by nineteen inches; nine lights each window.

Plate 35.

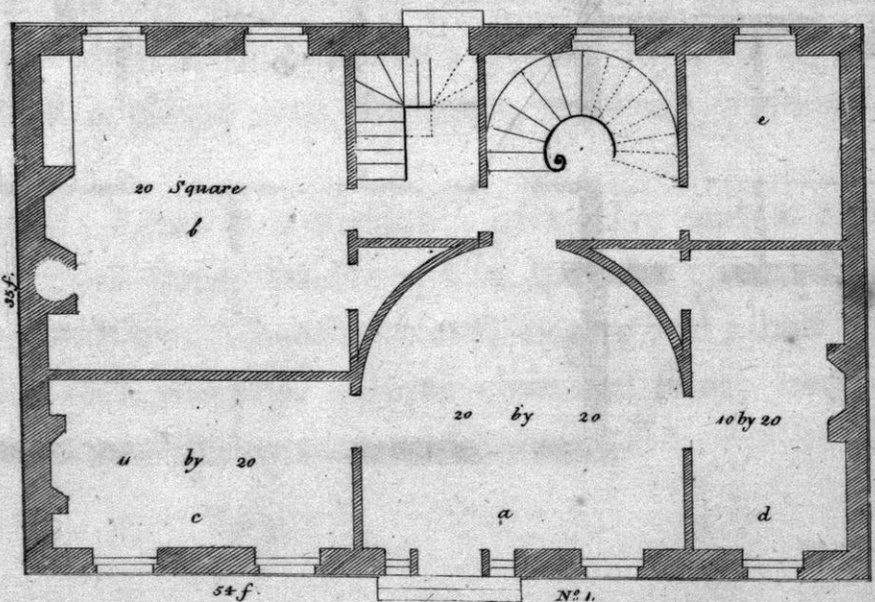




Scale 15 feet to one Inch



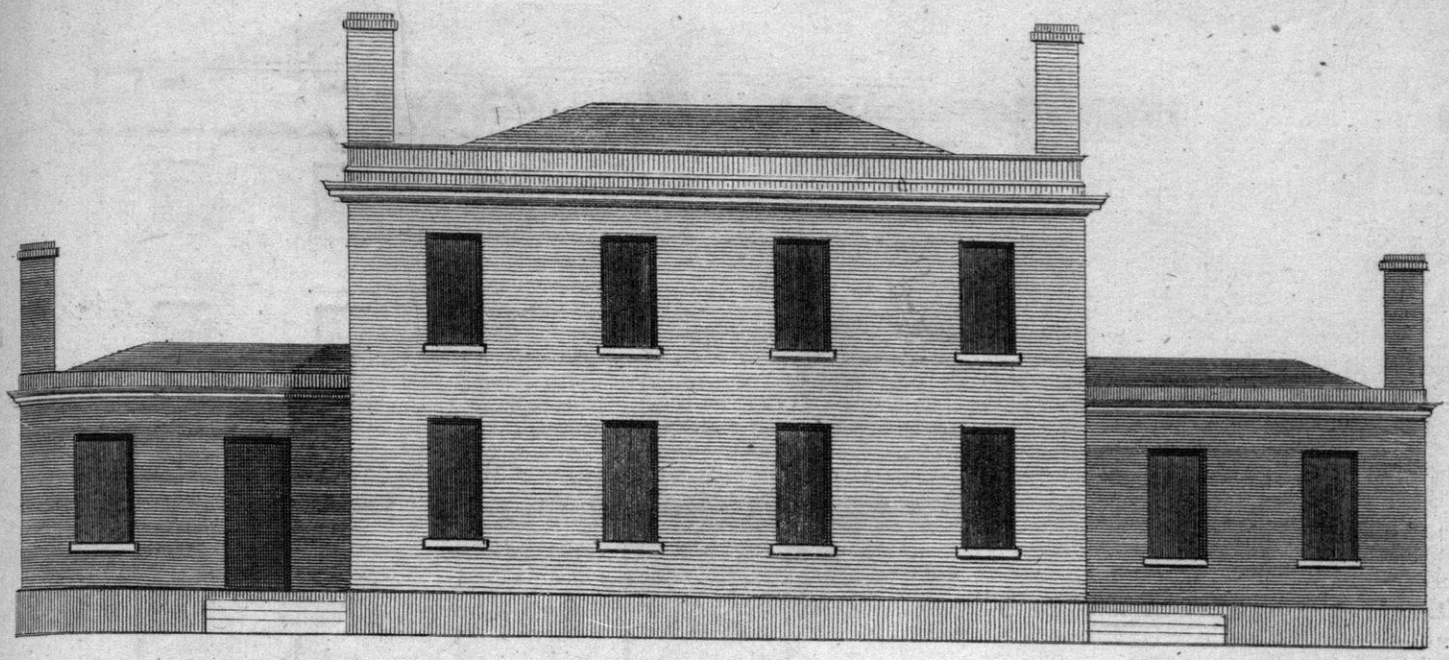
No 2.

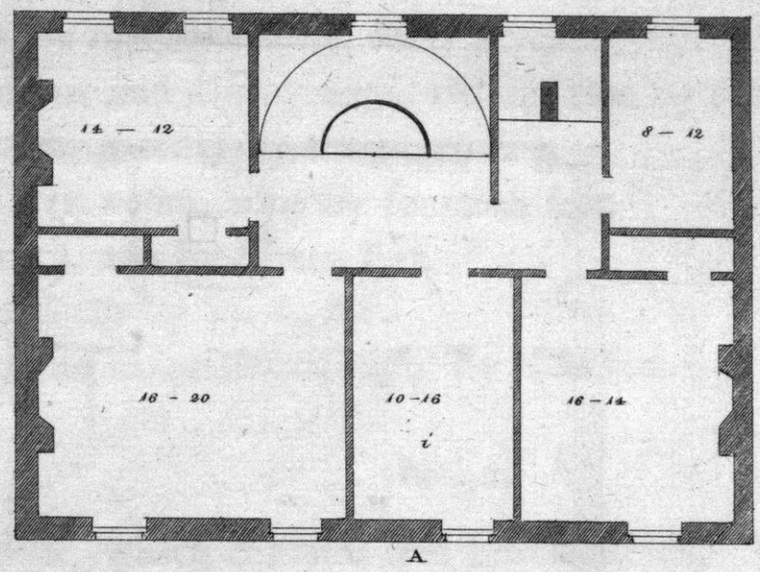


No 1.

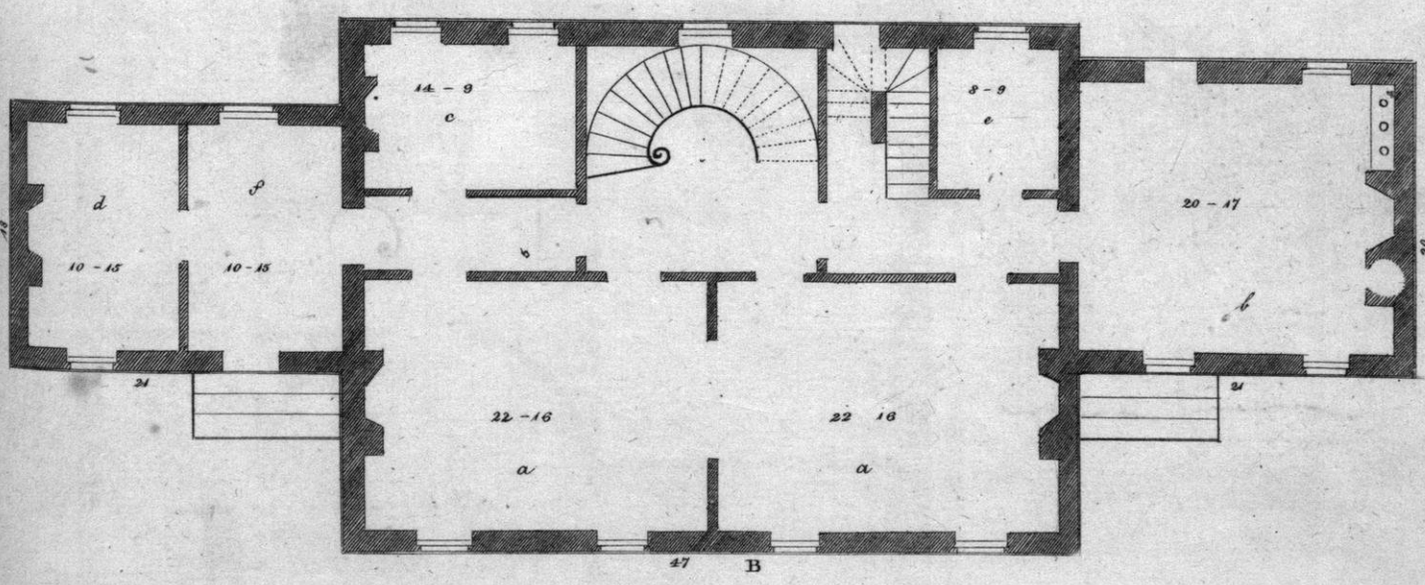
A. Benjamin Del.

Fox Sc.





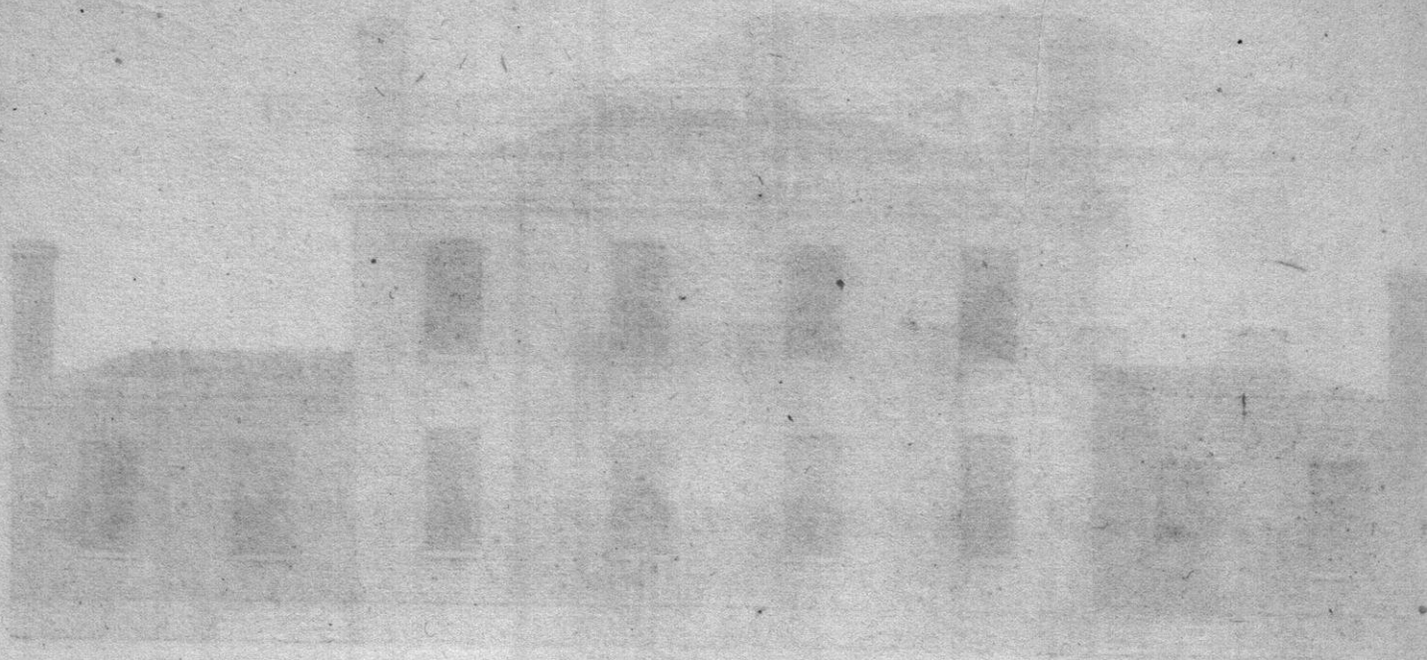
A

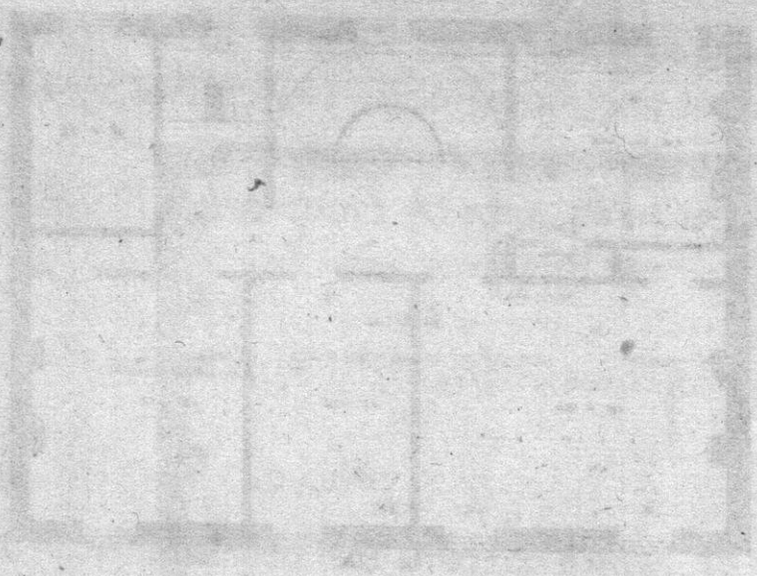


47 B

A.Benjamin Del

Fox Sc.





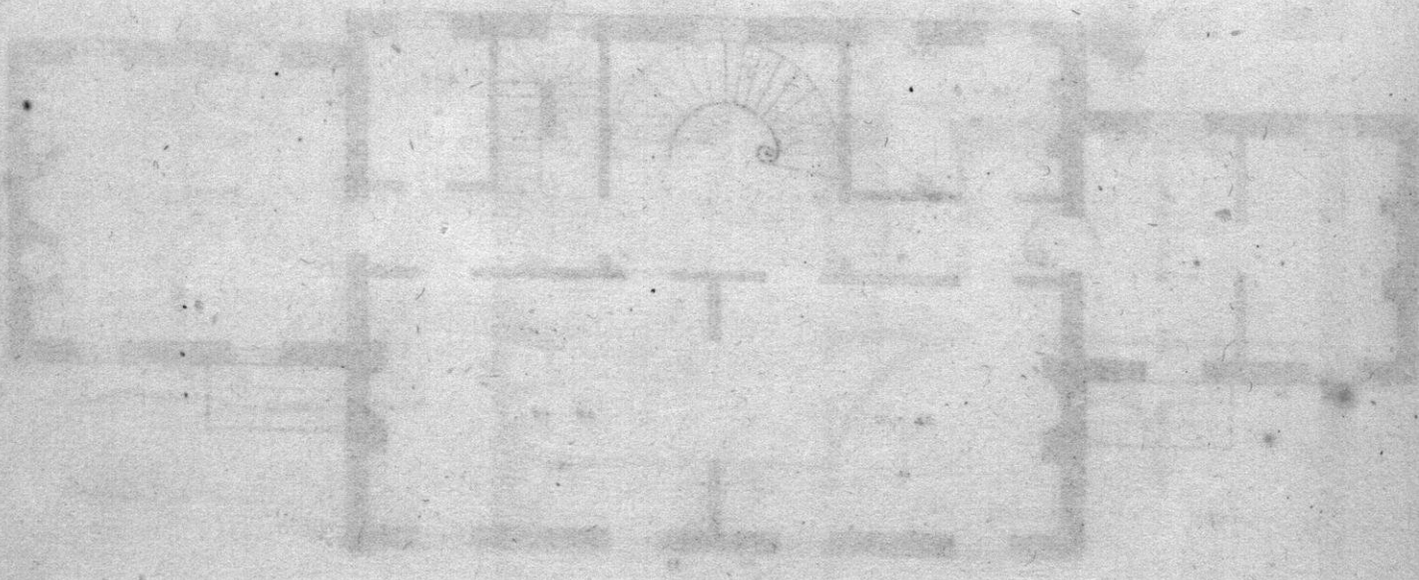


PLATE 36.

Plan and Elevation for a House which is intended for a country situation.

No. 1,

Is the principal floor, forty seven by thirty three feet.

a a Parlour and diningroom, twenty two by sixteen feet, each.
b Kitchen, twenty by seventeen feet.
c Breakfast room, nine by fourteen feet.
d Library, ten by fifteen feet.
f Entry, ten by fifteen feet.
e Pantry or china closet, eight by nine feet.

No. 2.

Chamber floor, which contains five bedchambers. The dimensions as on the plate.

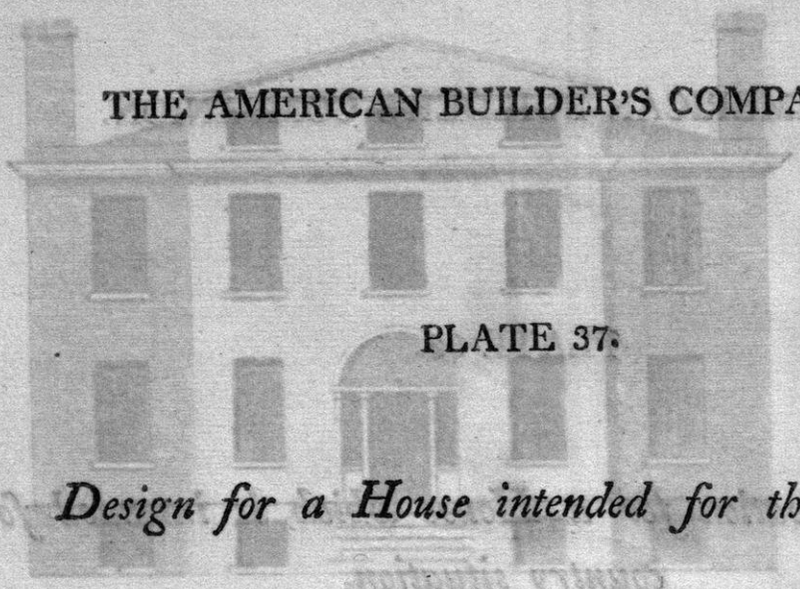


PLATE 37.

Design for a House intended for the country.

A, Basement story, forty seven by thirty feet, from out to out.

c Kitchen, seventeen by twenty one feet.
d Storeroom, ten by six feet.
m Kitchen closet, four by sixteen feet.

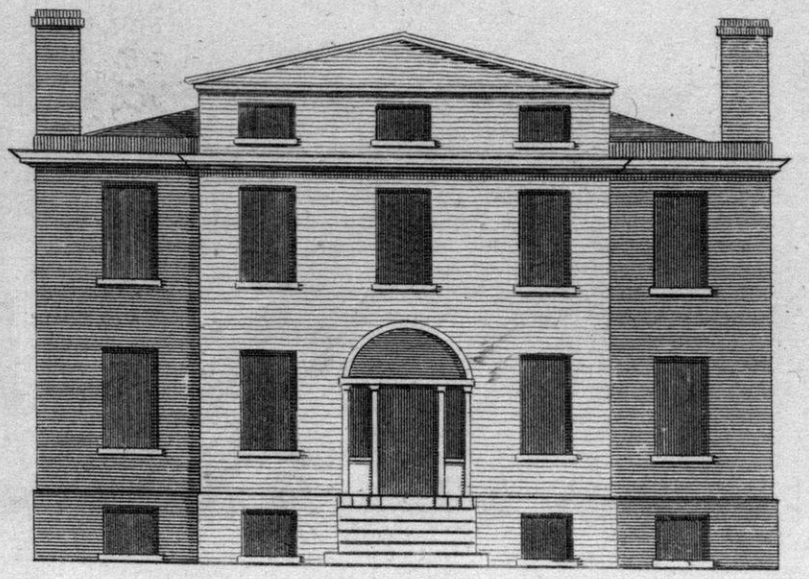
P, Entry and back stairs.

f Cellar, seventeen feet square.
e Cellar, twenty two by ten feet.
n n n Foundation of steps.

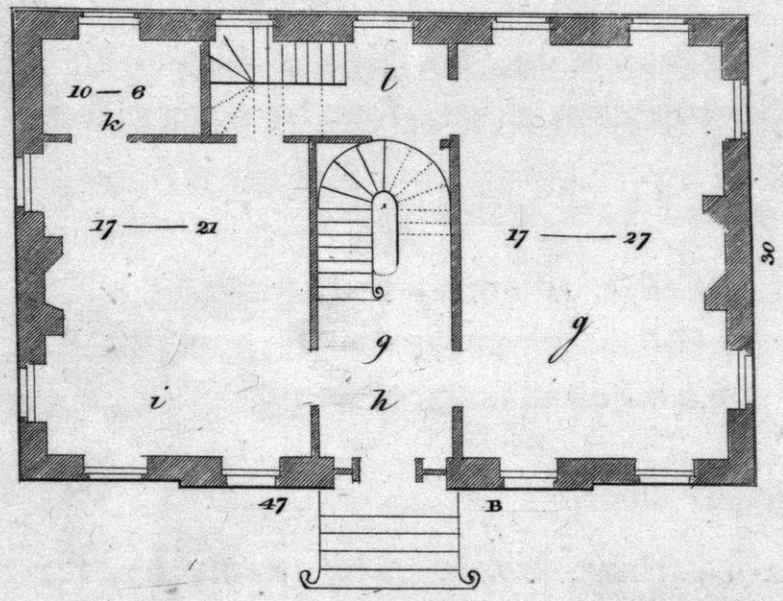
B, Principal floor.

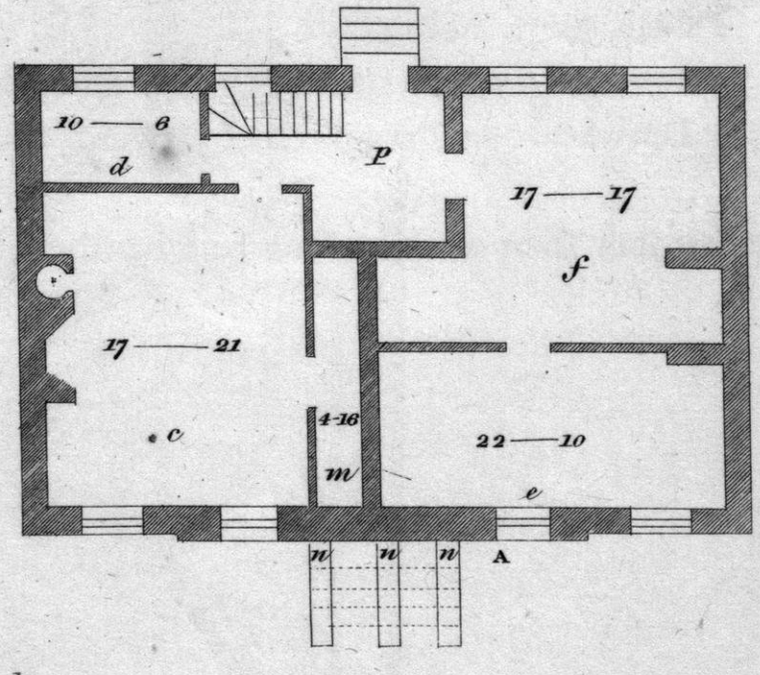
i Parlour, seventeen by twenty one feet.
k China closet, ten by six feet.
l Back stairs and entry.
h Front entry and stairway, nine feet wide.
g Drawingroom, seventeen by twenty seven feet.

On the chamber floor may be four bedchambers, and on the attic floor three.



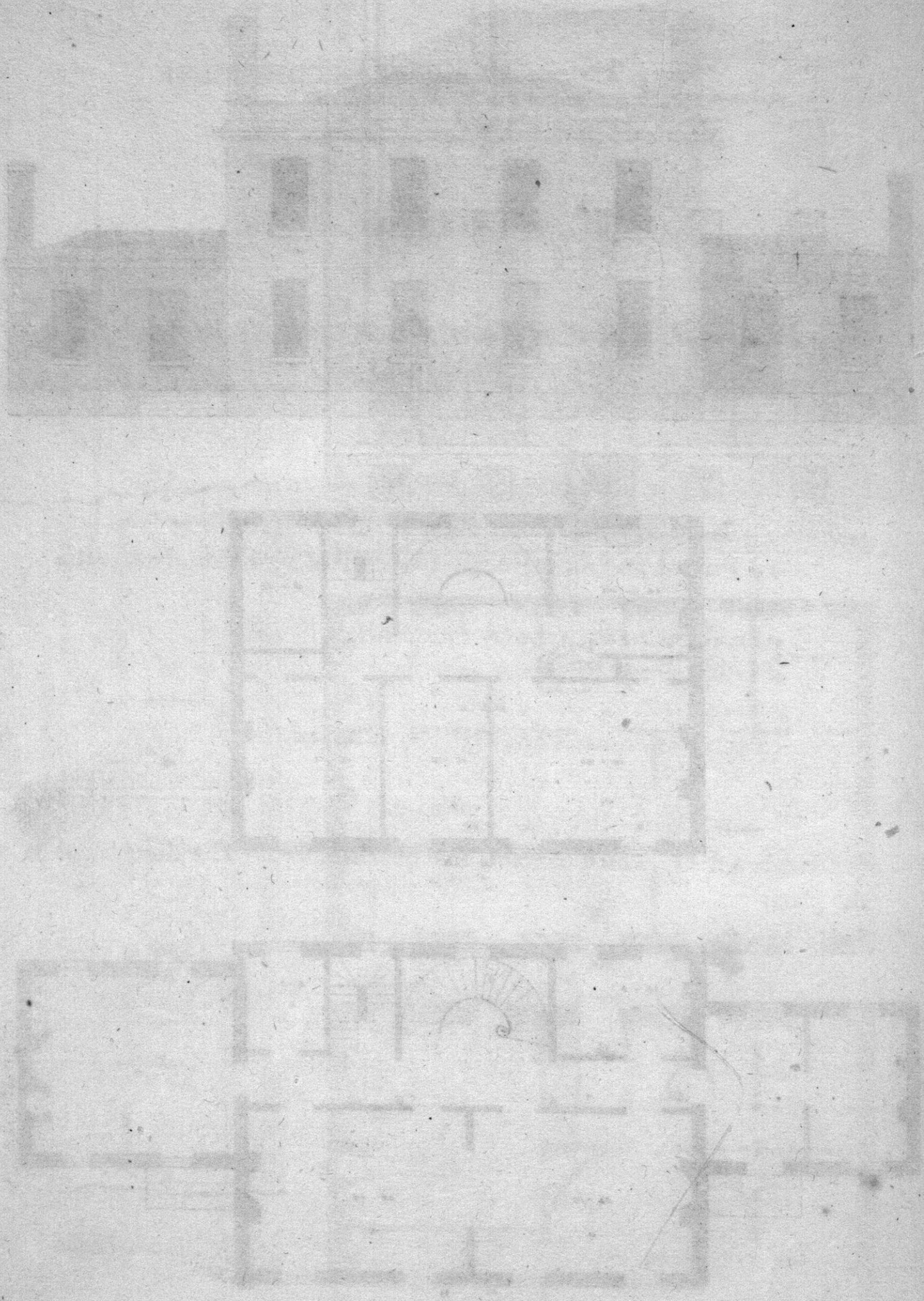
Scale 15 Feet to one Inch

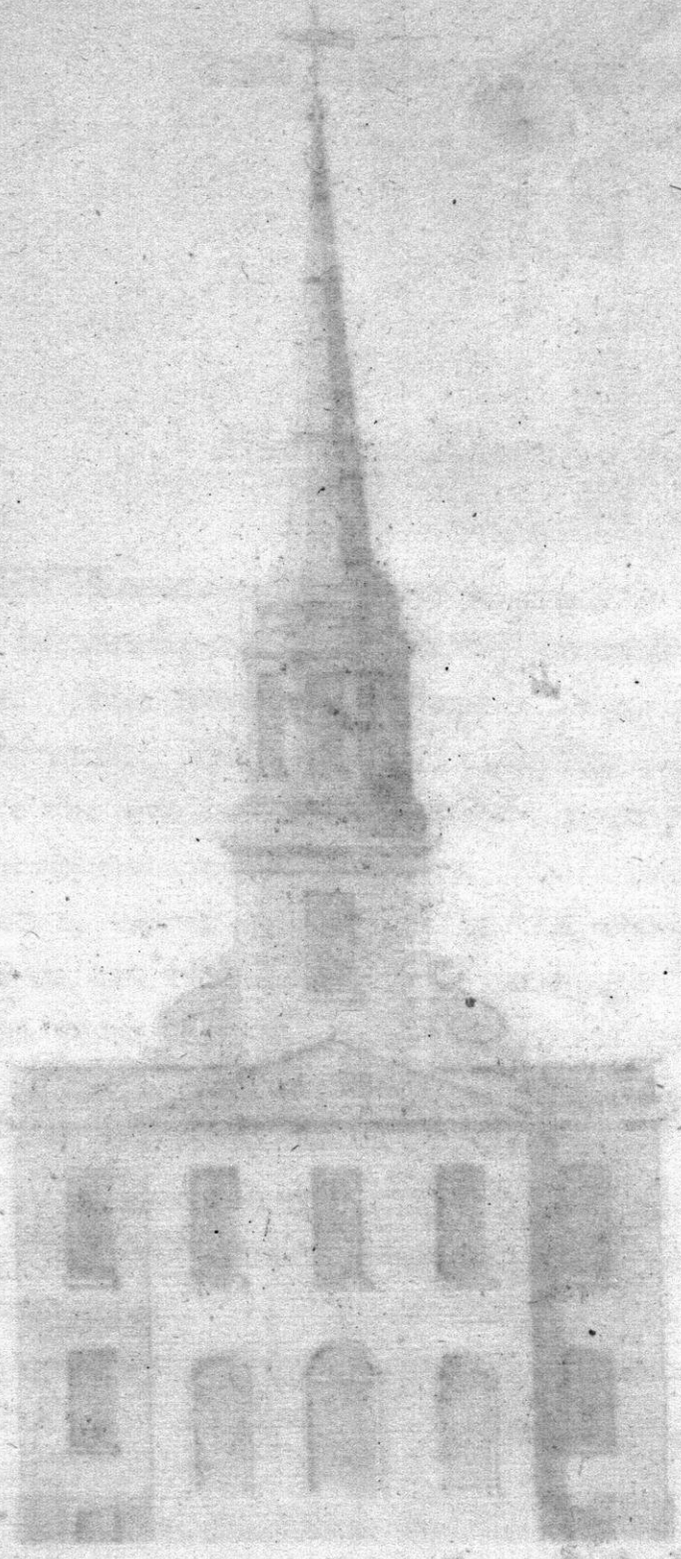


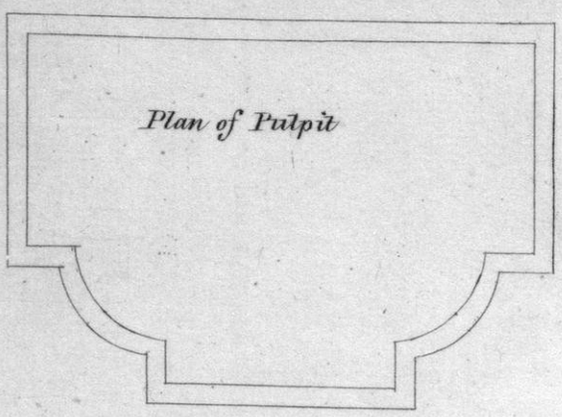


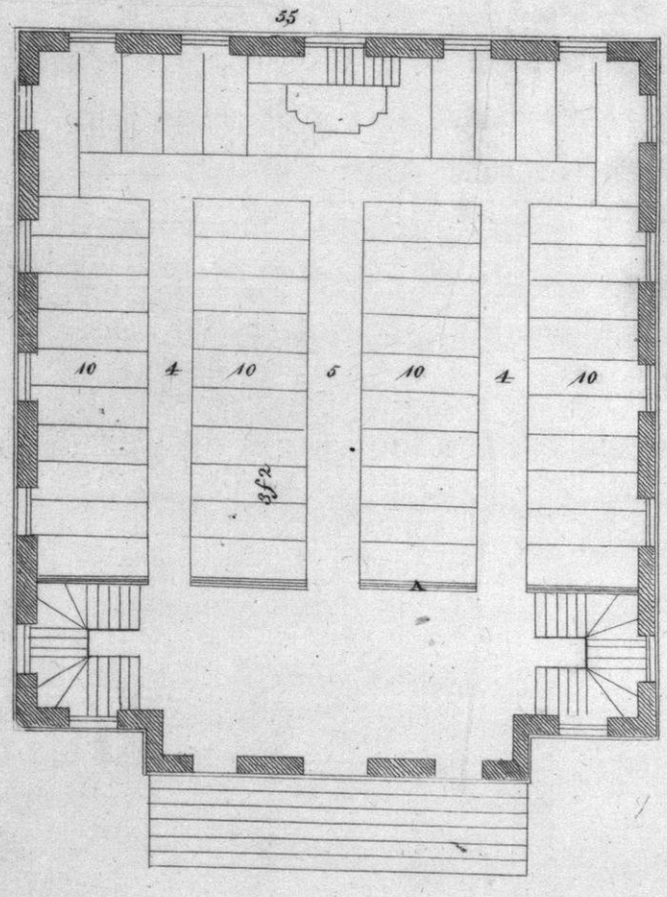
A. Benjamin Del.

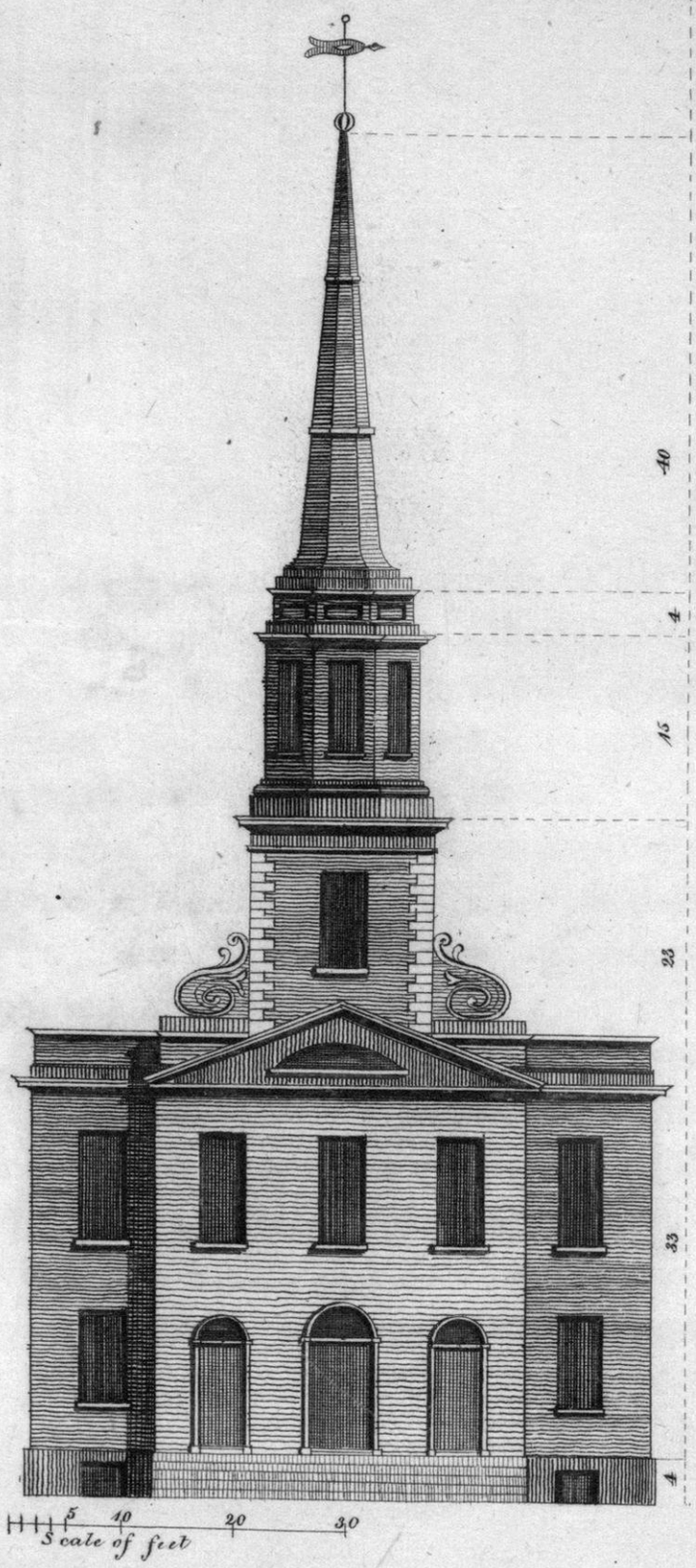
G. Fox Sc.











A. Benjamin Del.

Wightman Sc.

PLATE 38.

Plan and Elevation for a Meetinghouse,

WHICH contains fifty pews on the first floor, and will accommodate about four hundred people, which will be sufficiently large for most country parishes. The front of the front gallery, is intended to come exactly over the partition A. The wall, including the eve cornice, is thirty three feet high. Make the eve cornice about one twenty eighth part of thirty three feet; make the cornice to the tower, about one twenty fifth part of the height, which is eleven inches; make the cornice to the next story, which is an octagon, one twentieth part of the height, which is nine inches. The cornice B, on plate thirteen, would be proper for the eve cornice; and D, on plate twelve, for the cornice to the tower. D, on plate thirteen, for the cornice to the next story.

The windows in the first story, are to contain twenty four panes of glass, of ten by fifteen inches; second story, twenty eight panes of glass, ten by fifteen inches. This house may be built of wood, and on account of its simple plainness, for a less sum of money, than houses of this sort usually are built.

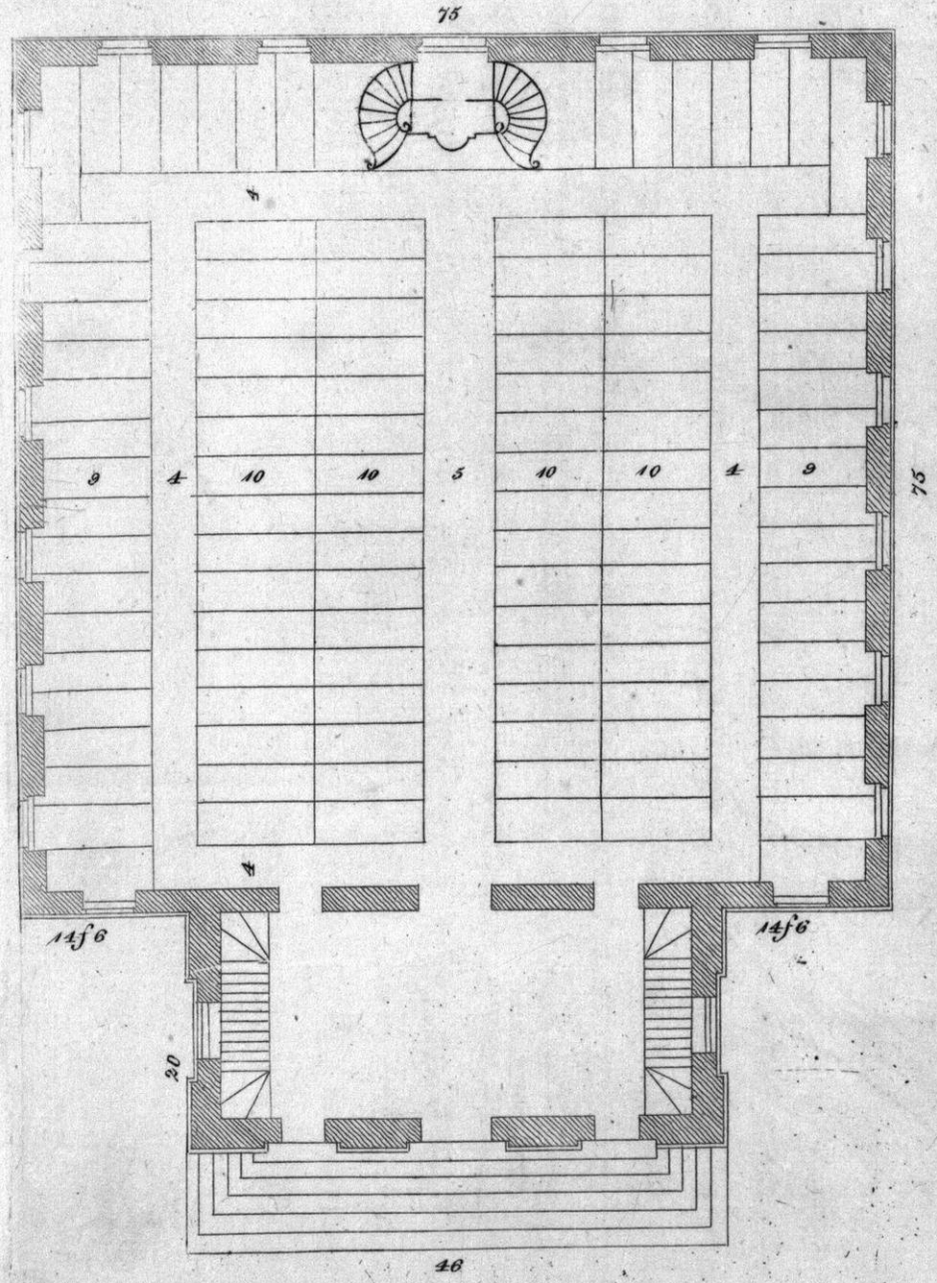
PLATE 39.

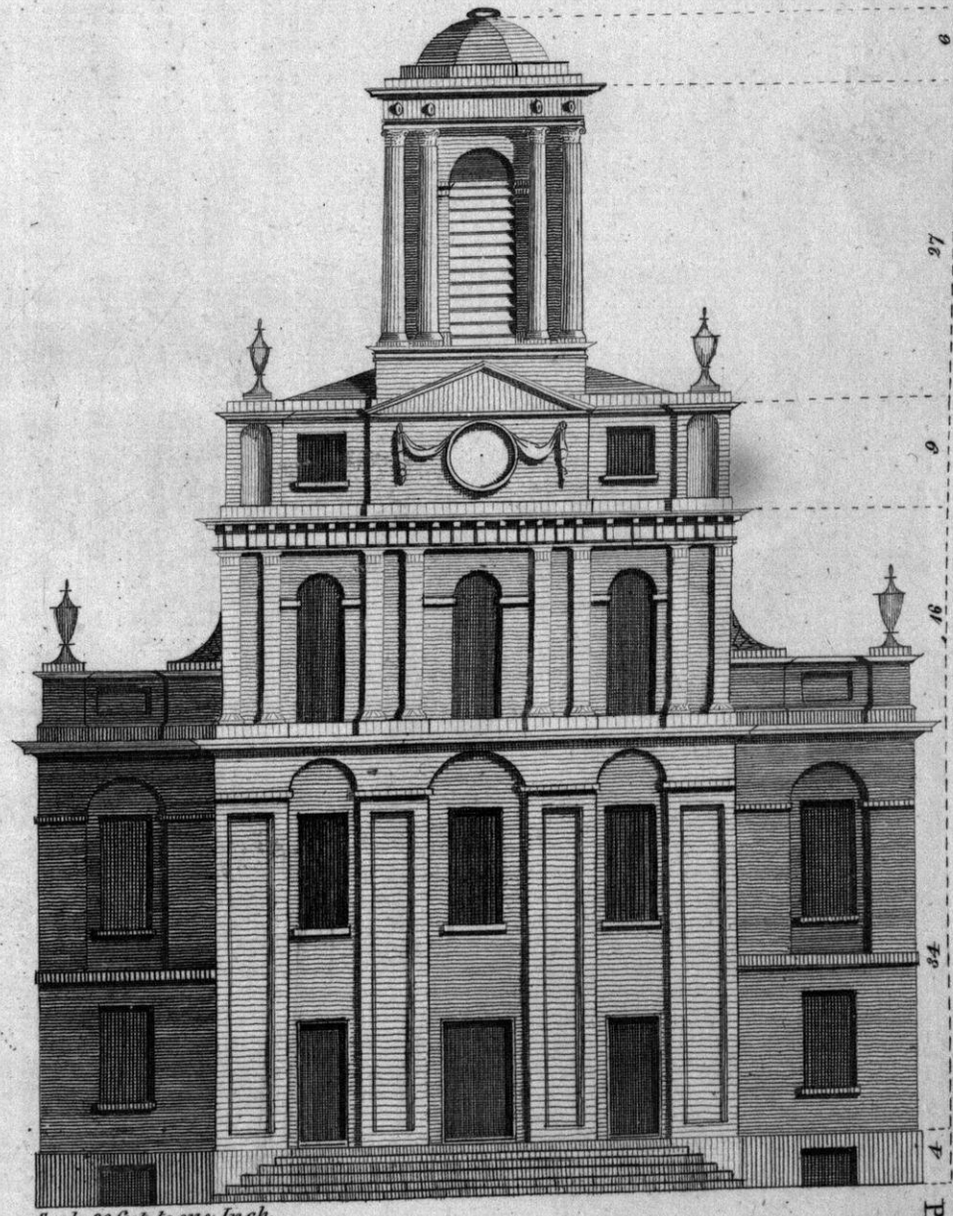
Plan and Elevation for a Meetinghouse.

THIS plan was copied from the original drawing, which was made for the congregational meetinghouse, now building at west Boston. The size of the house is seventy five feet square; porch, twenty by forty six feet; to contain one hundred and twelve pews on the lower floor. The gallery is supported by columns of the Composite order, as laid down in this book.

The ceiling has a dome in the centre, of forty two feet in diameter, which rises six feet; the level parts of the ceiling, are ornamented with sunk panels.

The eve cornice is taken from B, on plate twelve, and is one twenty eighth part of the height. The third story of the porch is proportioned exactly after the Doric order, as laid down in this book. The cornice to the attic story is about one seventeenth part of the height, and is taken from D, on plate thirteen. The cupola has the proportions of the Ionic order. The windows in the first story, contain twenty four panes of glass, of eleven by fifteen inches. Windows of the second story, contain twenty eight panes of glass, of eleven by sixteen inches. Windows in the third story of the porch, contain twenty eight panes of glass, eleven by fifteen inches, with circular heads. Attic story, six panes, eleven by eighteen inches.



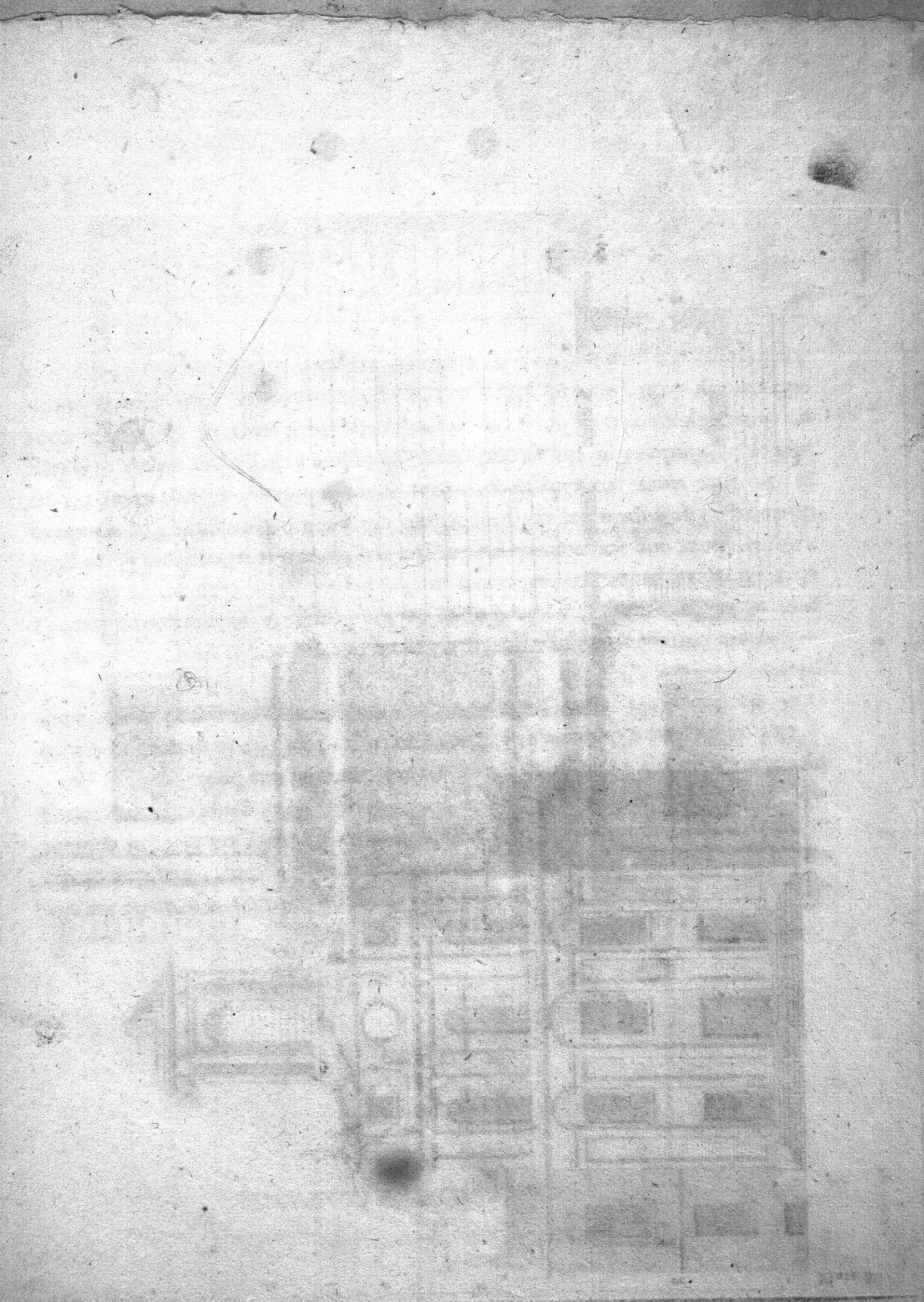


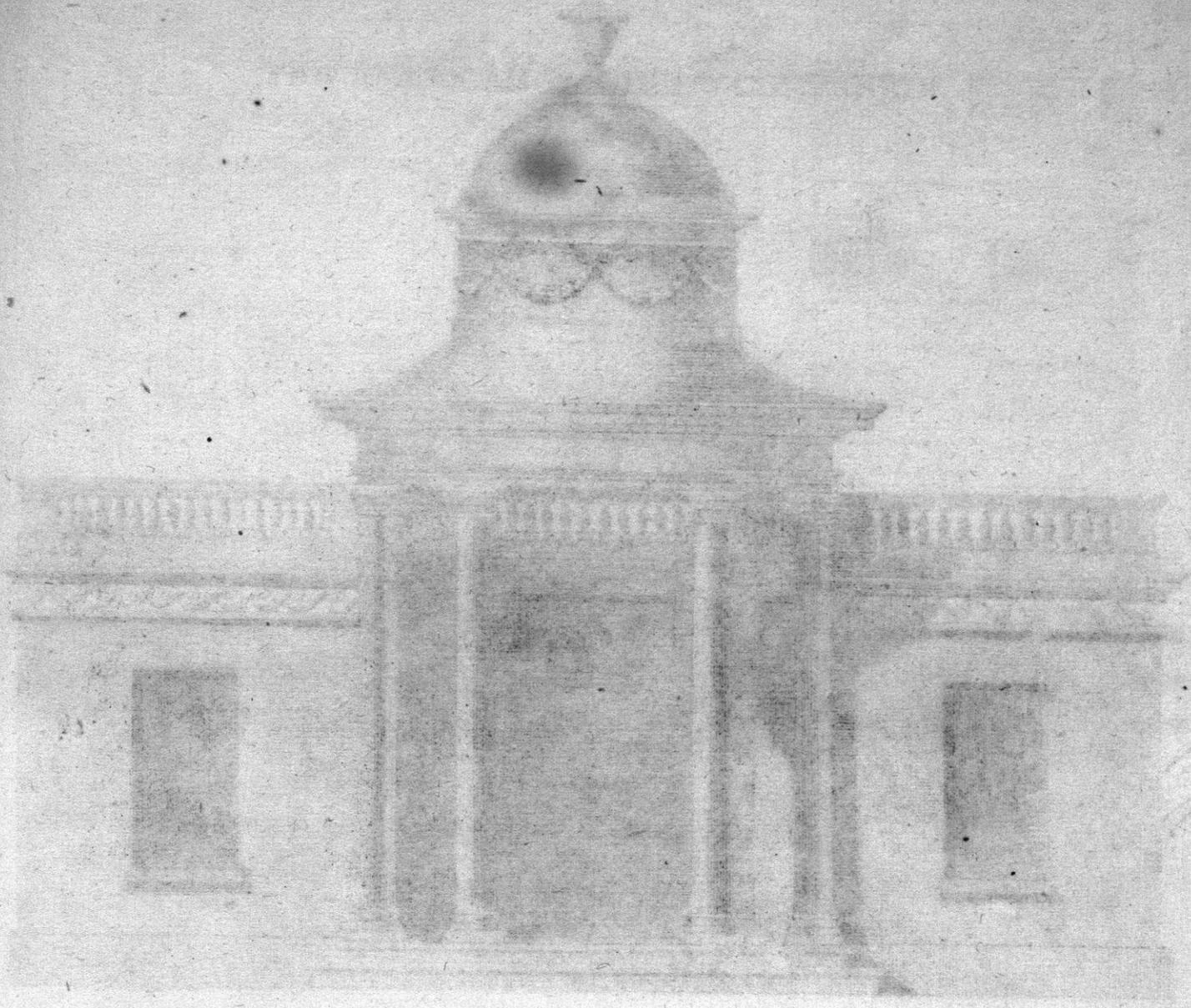
Scale 20 feet to one Inch

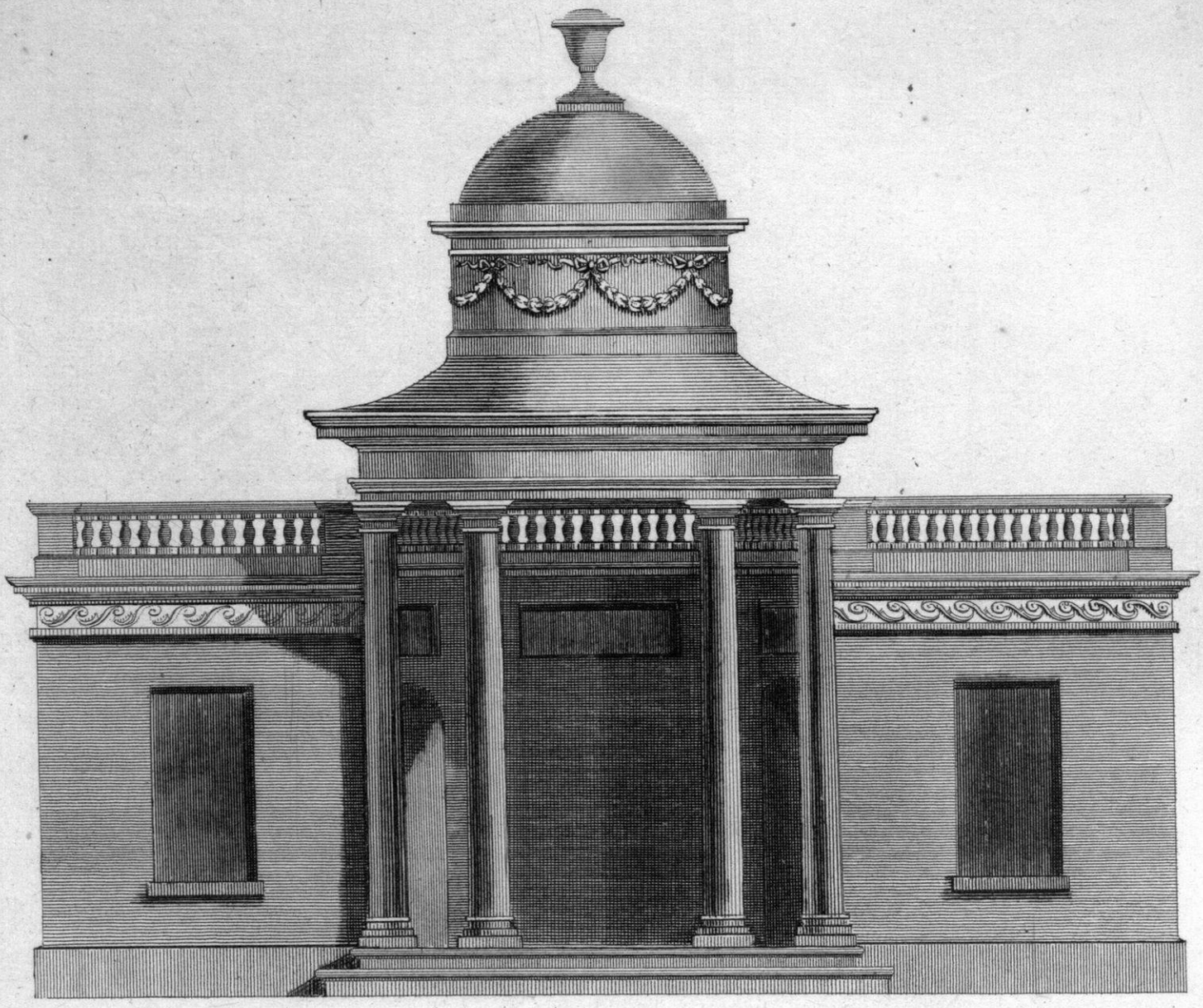
A Benjamin Del.

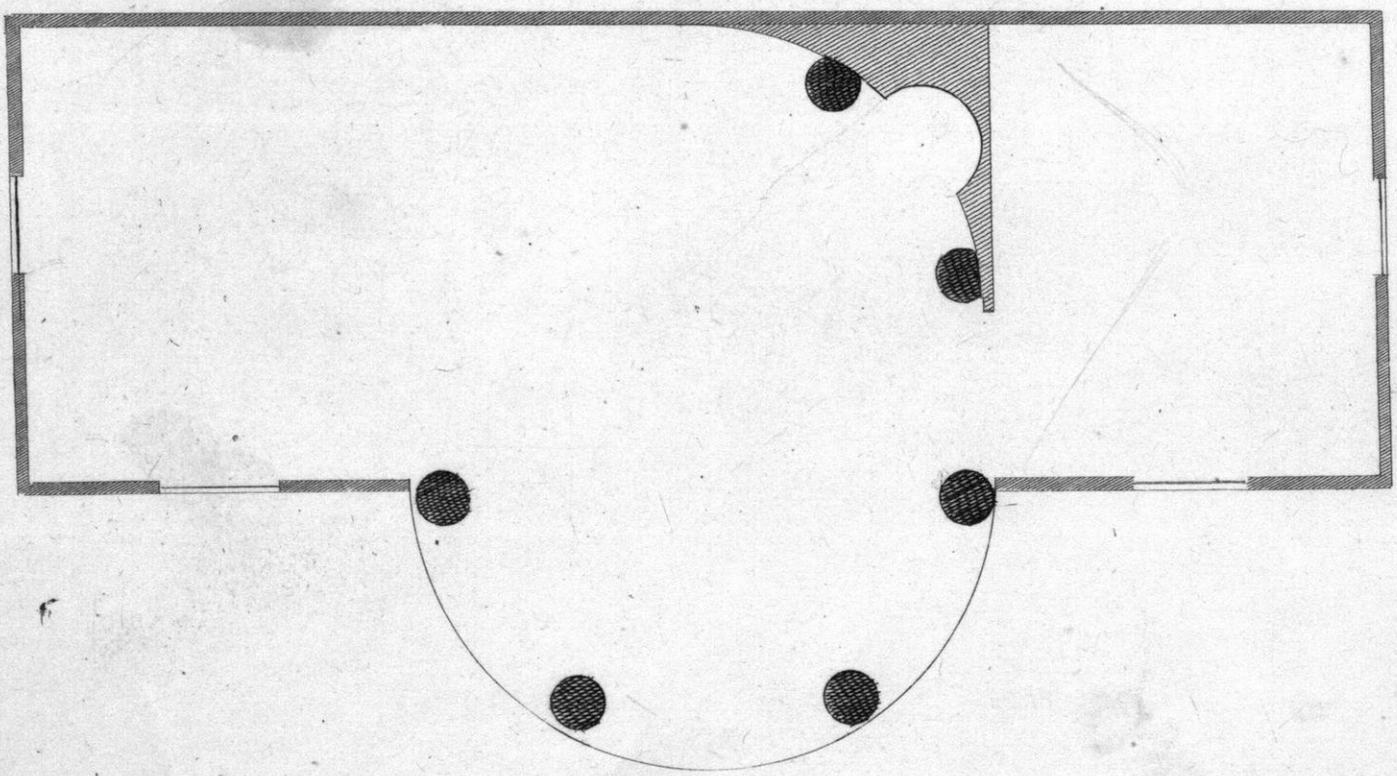
Wightman Sc.

Plate 39









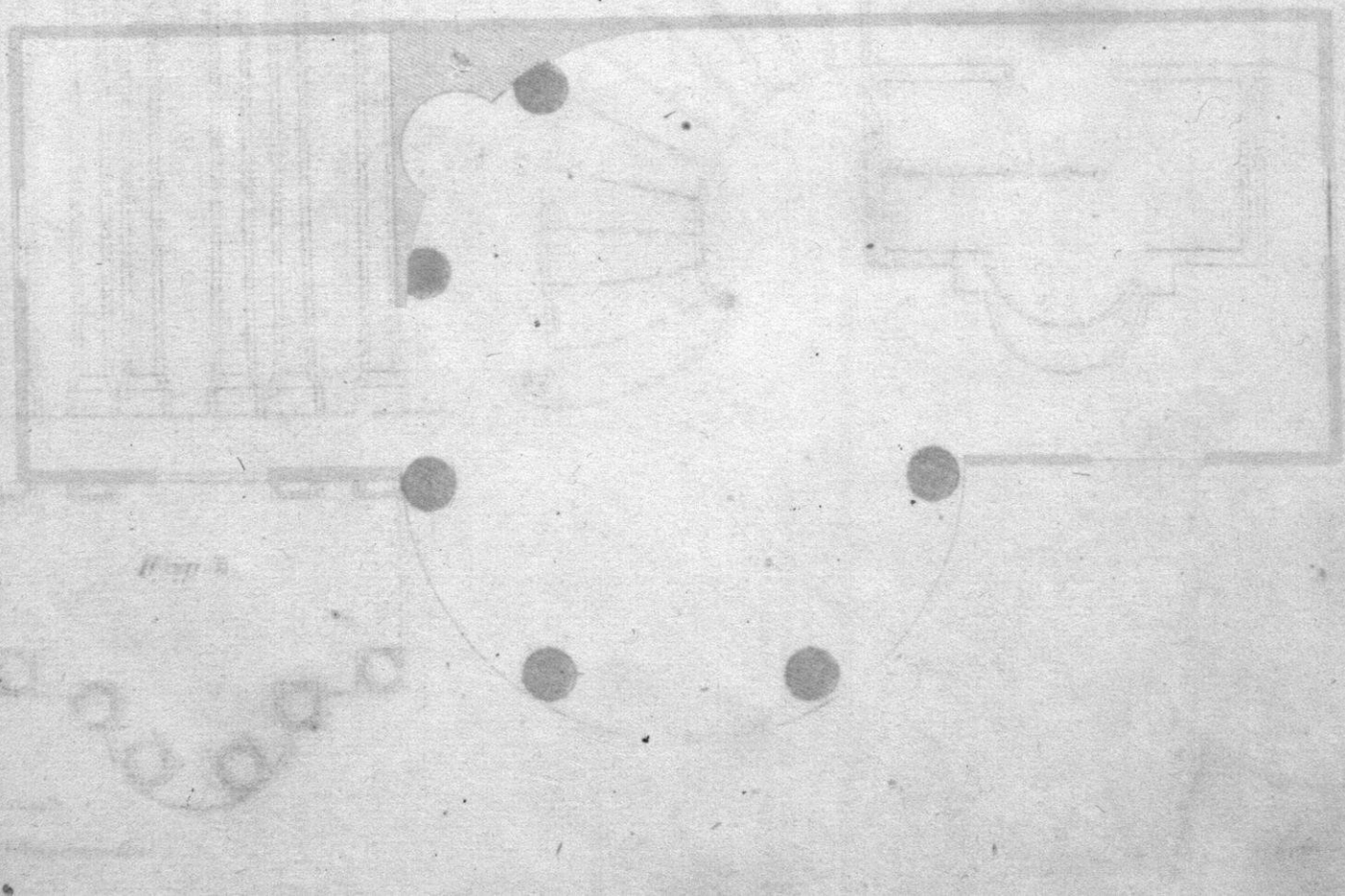
Raynard Del.

Fox Sc.

PLATE 40.

A Design for a Summerhouse.

THIS design is intended for a summer retreat, and may be built in a garden or on some elevated situation. If built on a small scale, it may be all in one room; if on a large one, it may be divided, with niches for statues, as seen in the plan.



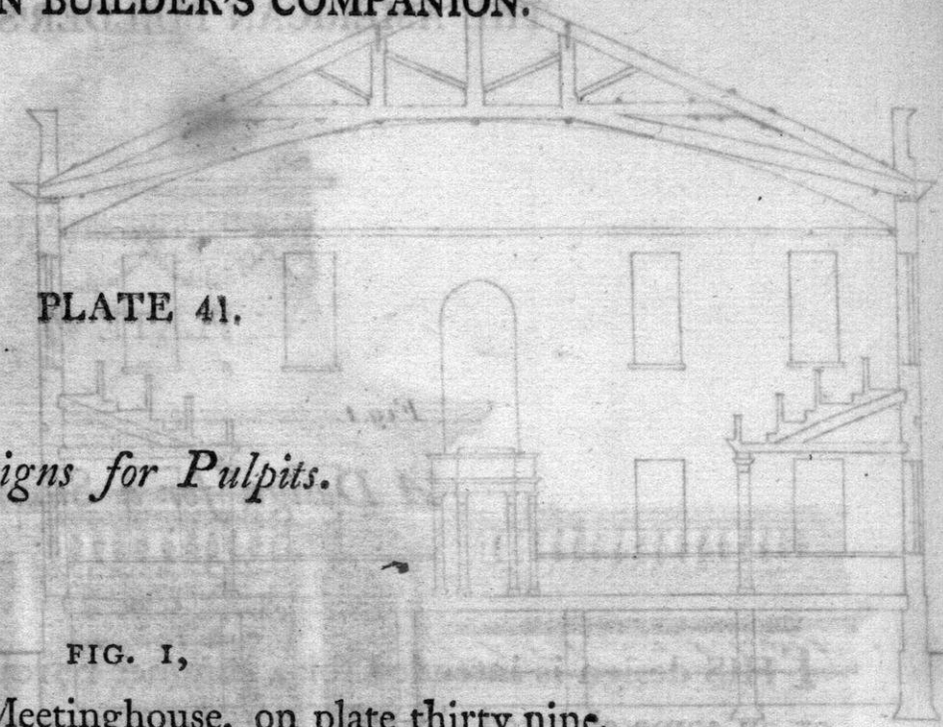


PLATE 41.

Designs for Pulpits.

FIG. 1,

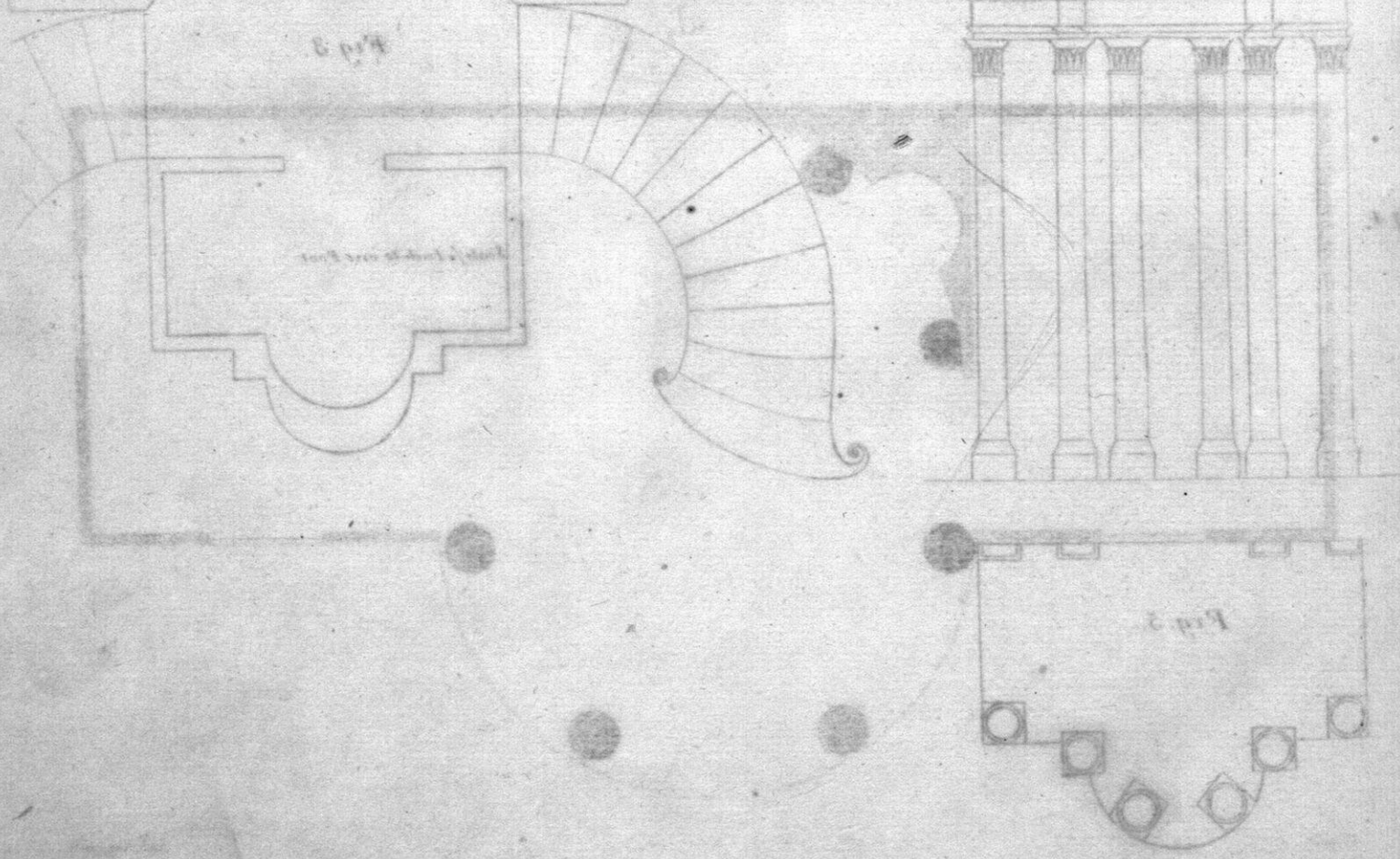
Is a section of the Meetinghouse, on plate thirty nine.

FIG. 2, 3, AND 5,

Are plans for pulpits.

FIG. 4,

Is an elevation of fig. five.



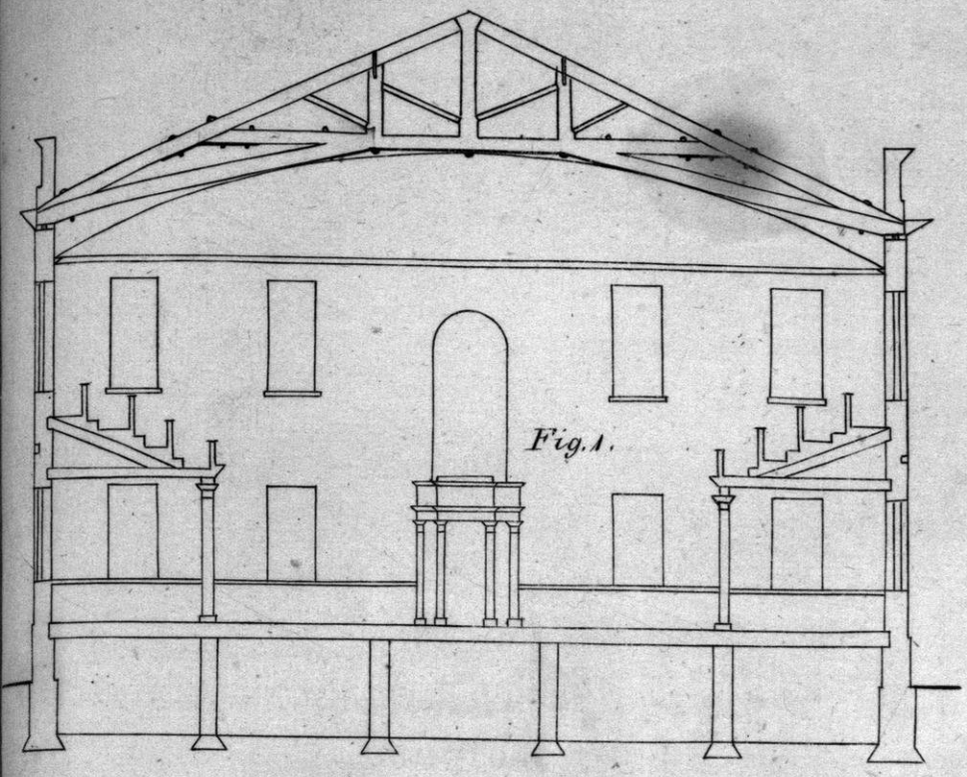


Fig. 1.

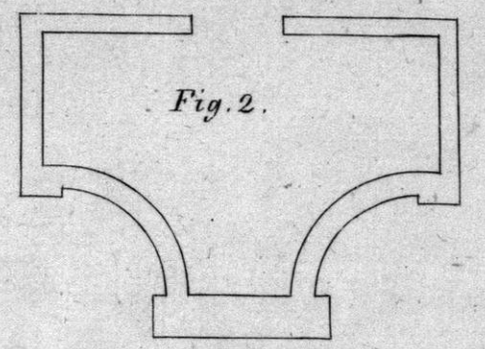


Fig. 2.

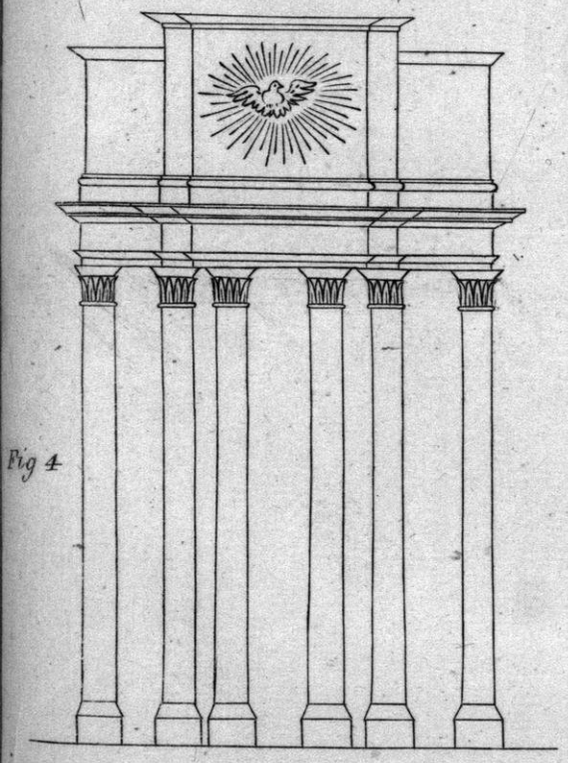


Fig 4

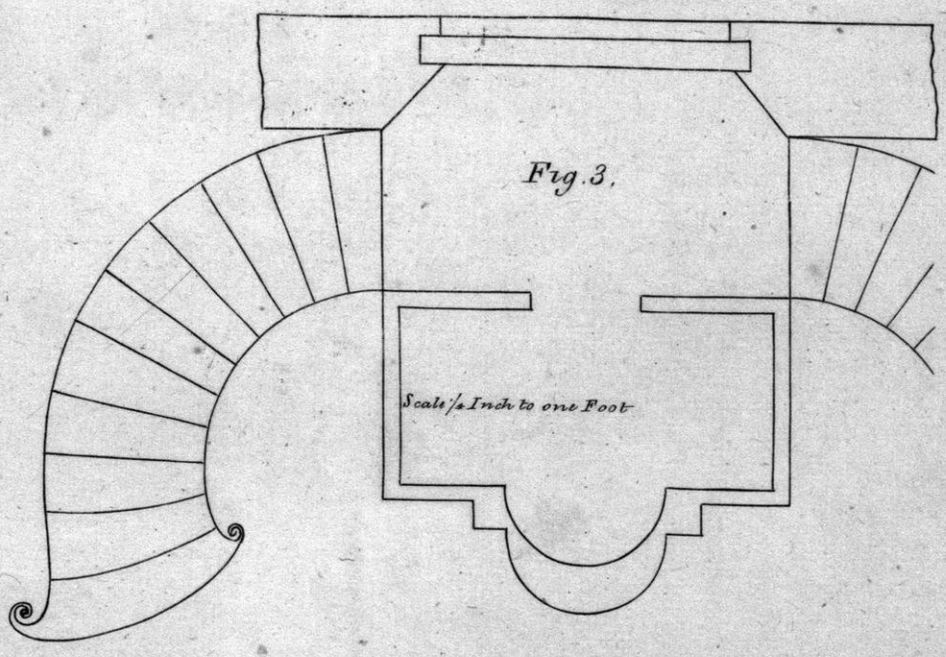


Fig. 3.

Scale 1/8 Inch to one Foot

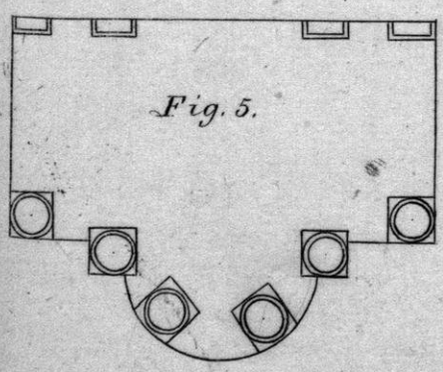
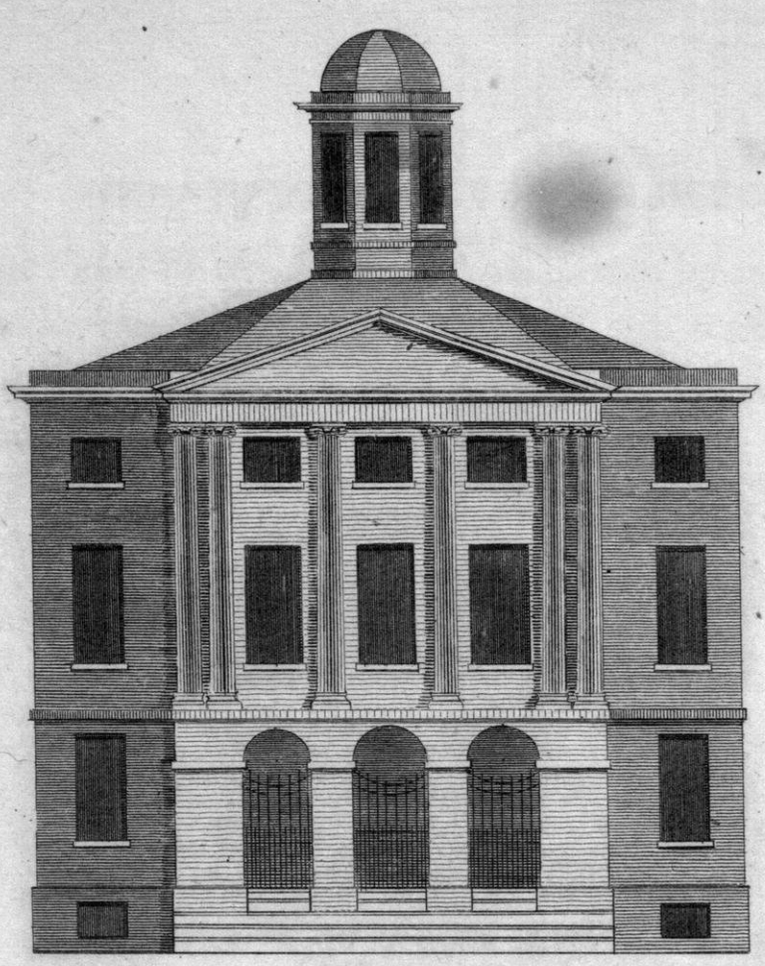
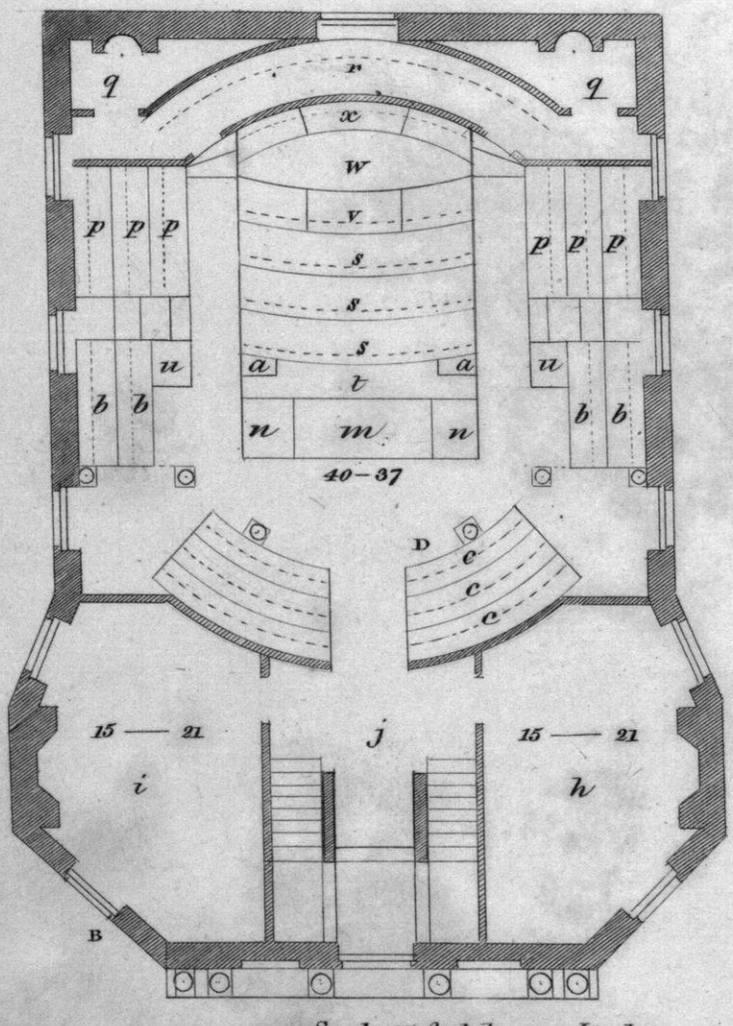


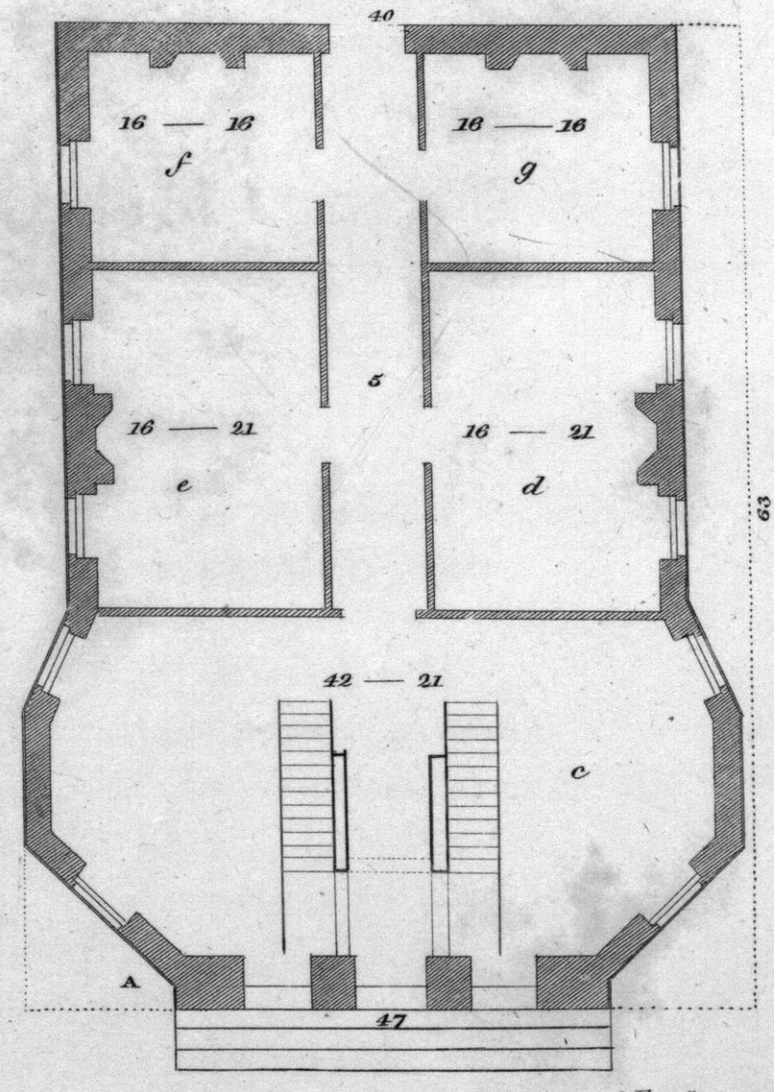
Fig. 5.

A Benjamin Del

Wightman Sc.







Scale 15 feet to one Inch

A. Benjamin Del

G. Fox Sc.

PLATE 42.

Plan and Elevation for a Courthouse.

A, Plan of first floor.

d Clerk's office, sixteen by twenty one feet.
e Room for grand jury, sixteen by twenty one feet.
g Register of deeds office, sixteen feet square.
f Probate court, sixteen feet square.
c Hall and stairway, forty two by twenty one feet.

B, Plan of the second floor.

D, Court room, forty by thirty seven feet.

r Judges' seat.
q q Small lobbies.
x Clerk's seat.
W Table.
v Attorney general's seat.
s s s Attorneys' seats.
p p p p p p Jury seats.
w w Sheriff boxes.
t Passage between attorneys' seats and bar.
n n Constables' boxes.
m Bar.
a a Stand for witnesses.
j Stairway.
h and *i* Juryrooms, fifteen by twenty one feet each.
b b b b Seats for witnesses.

Over *h* and *i* may be two lobbies, about fifteen by seventeen feet each; and over the circular seats *c c c*, a gallery, which will contain about one hundred people. It is intended to have a dome in the ceiling over the courtroom, of thirty feet diameter, and to rise above the horizontal ceiling five feet.

Plate 43.

Plate

Drawn by D. Raynerd

Engd by Gilbert Ffox.

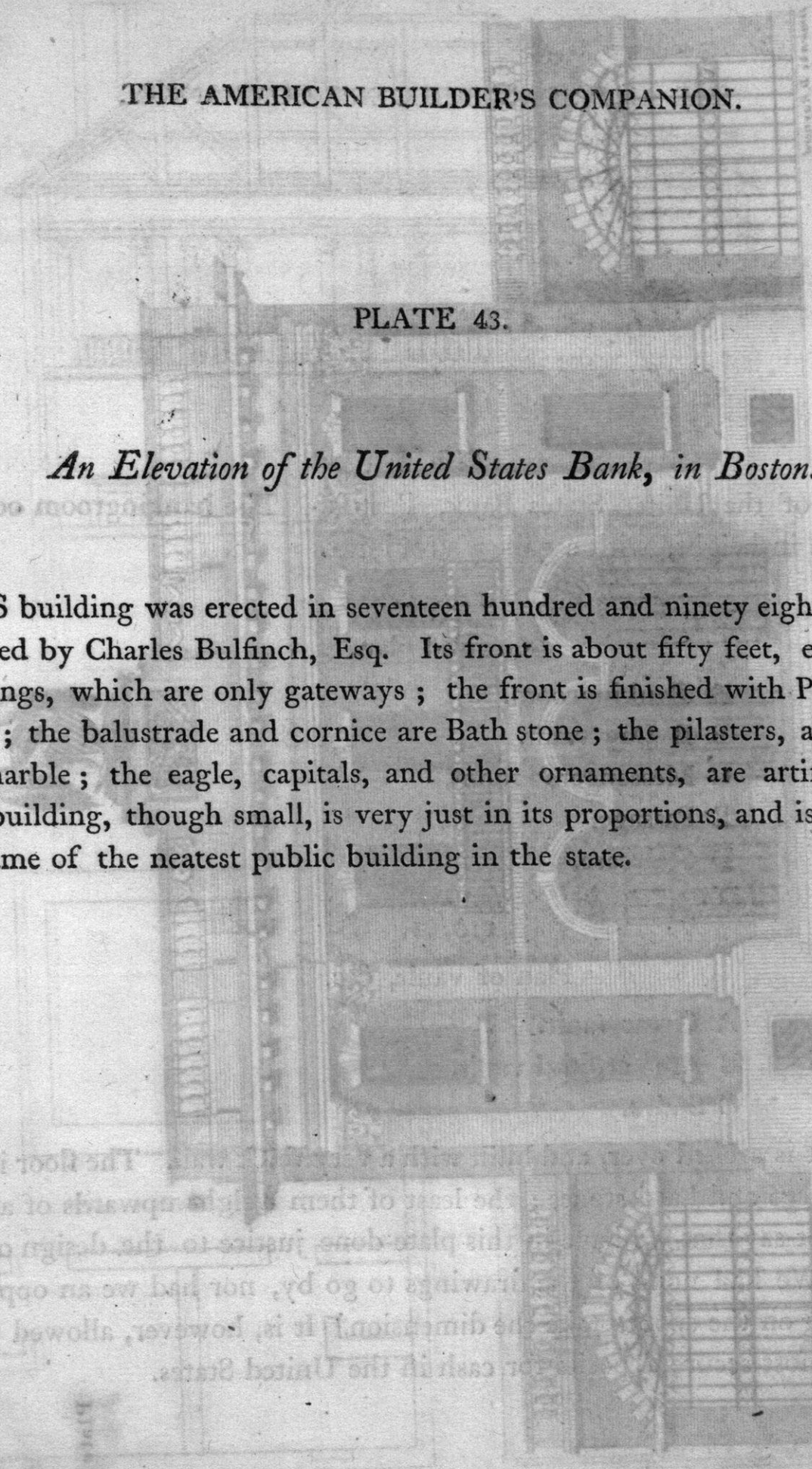


PLATE 43.

An Elevation of the United States Bank, in Boston.

THIS building was erected in seventeen hundred and ninety eight, and was designed by Charles Bulfinch, Esq. Its front is about fifty feet, exclusive of the wings, which are only gateways ; the front is finished with Philadelphia bricks ; the balustrade and cornice are Bath stone ; the pilasters, arches, &c. are marble ; the eagle, capitals, and other ornaments, are artificial stone. This building, though small, is very just in its proportions, and is entitled to the name of the neatest public building in the state.

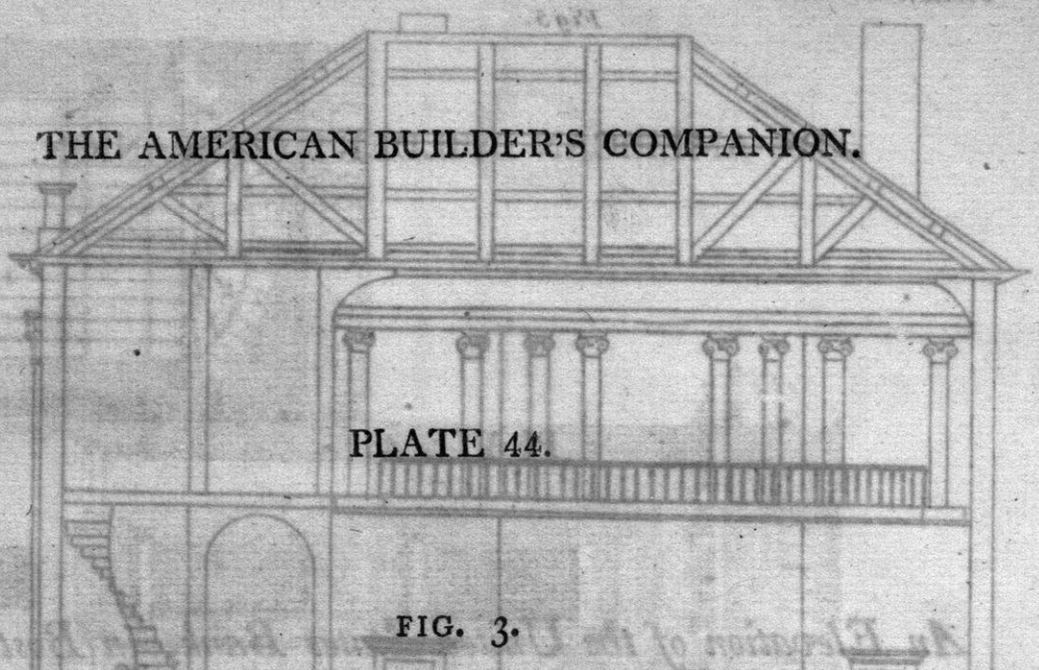


PLATE 44.

FIG. 3.

Section of the United States Bank, Boston. The bankingroom occupies two stories in height, with a gallery around it.

FIG. 2.

Ground plan.

A Bankingroom.
B B Day vault.
C Messengers' room.
E Passage.
D Staircase.

FIG. 1.

Plan of vault, &c.

A Great vault.
B Area around vault.
C Stairs.

The vault is arched over, and built with a very thick wall. The floor is laid with very large and hard stones; the least of them weighs upwards of a ton.

We cannot say that we have in this plate done justice to the design of the building. We had none of the drawings to go by, nor had we an opportunity of being on the spot to take the dimension. It is, however, allowed to be one of the most secure deposits for cash in the United States.

Section

Fig 3.

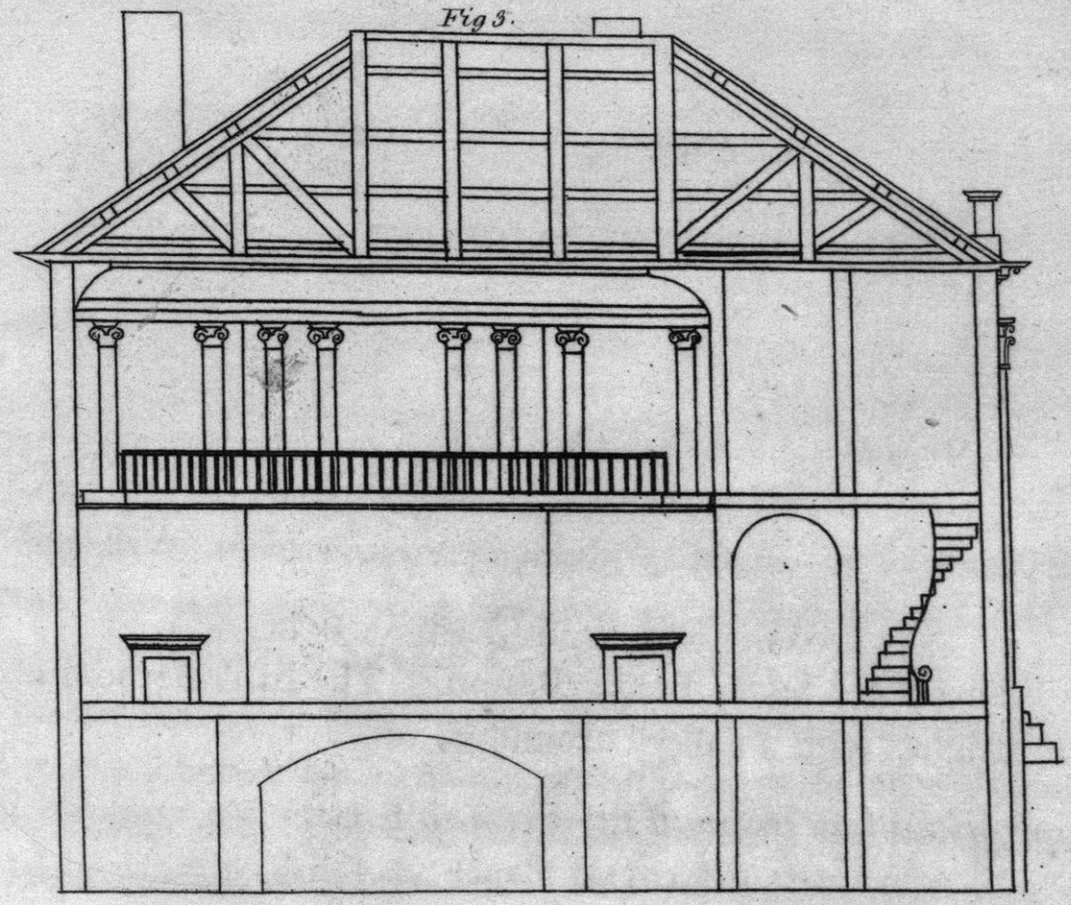
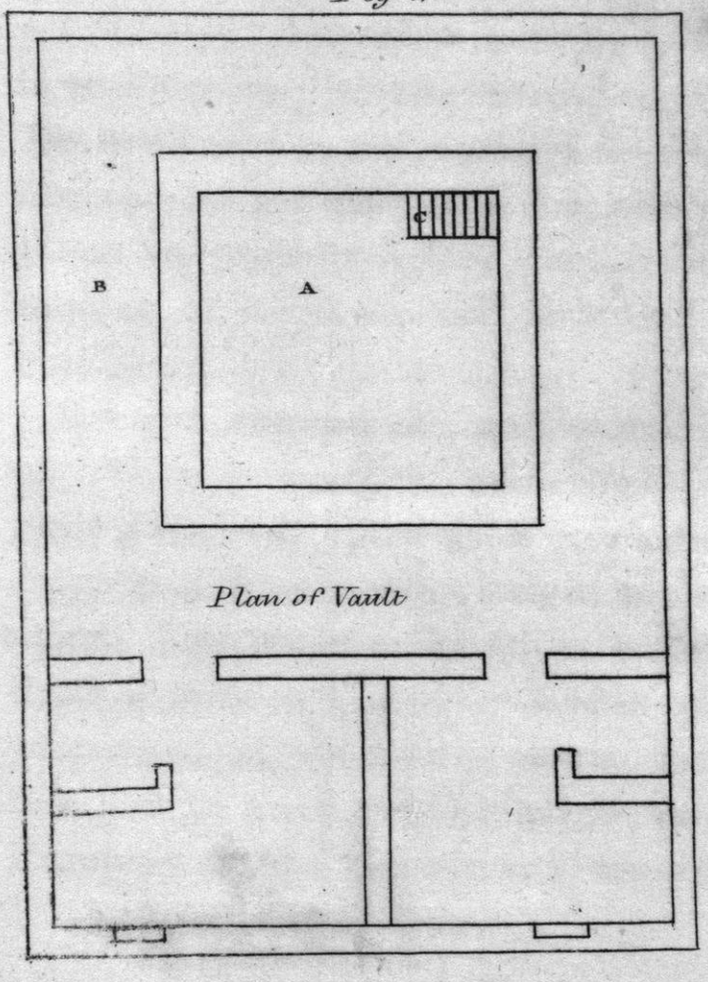
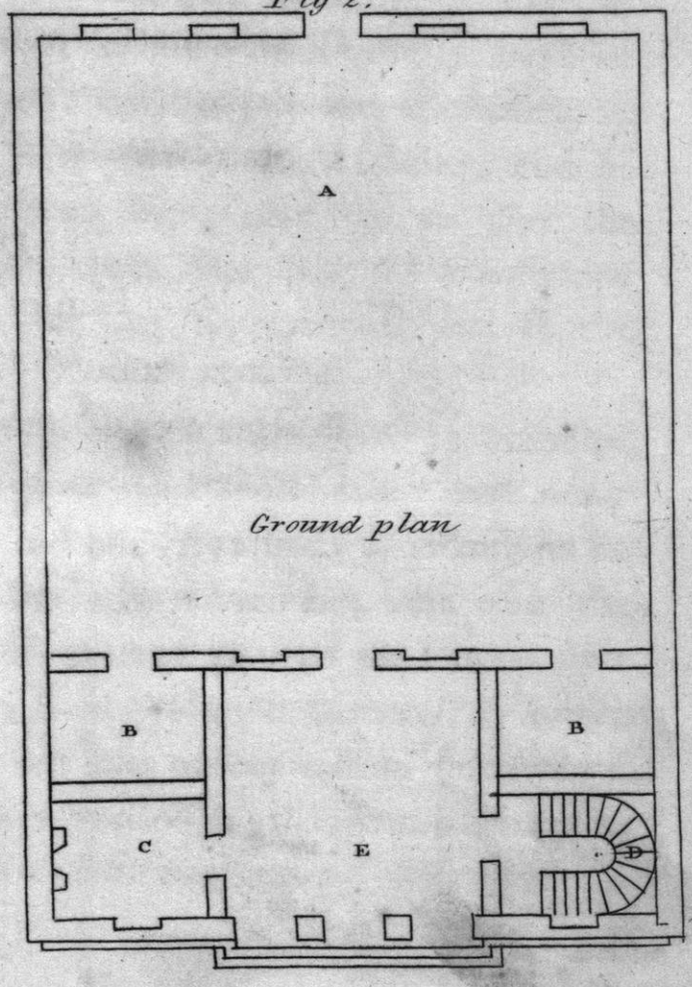


Fig 1.



Plan of Vault

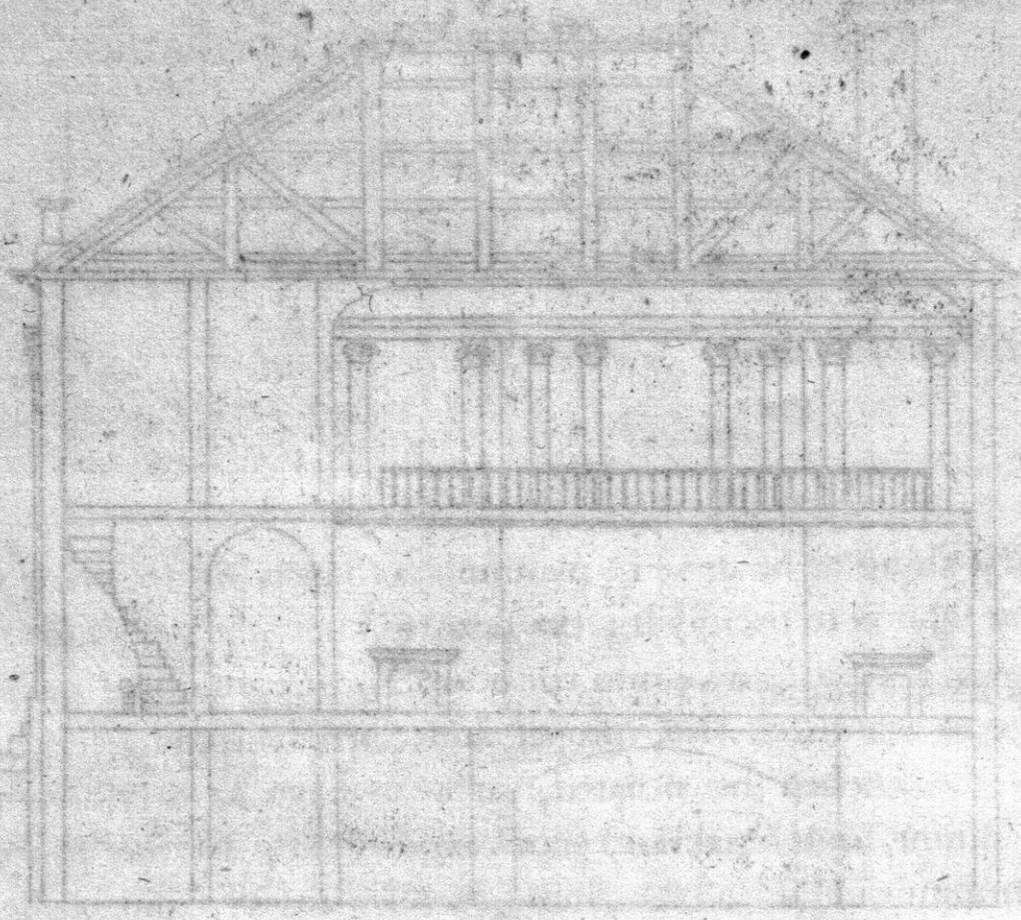
Fig 2.

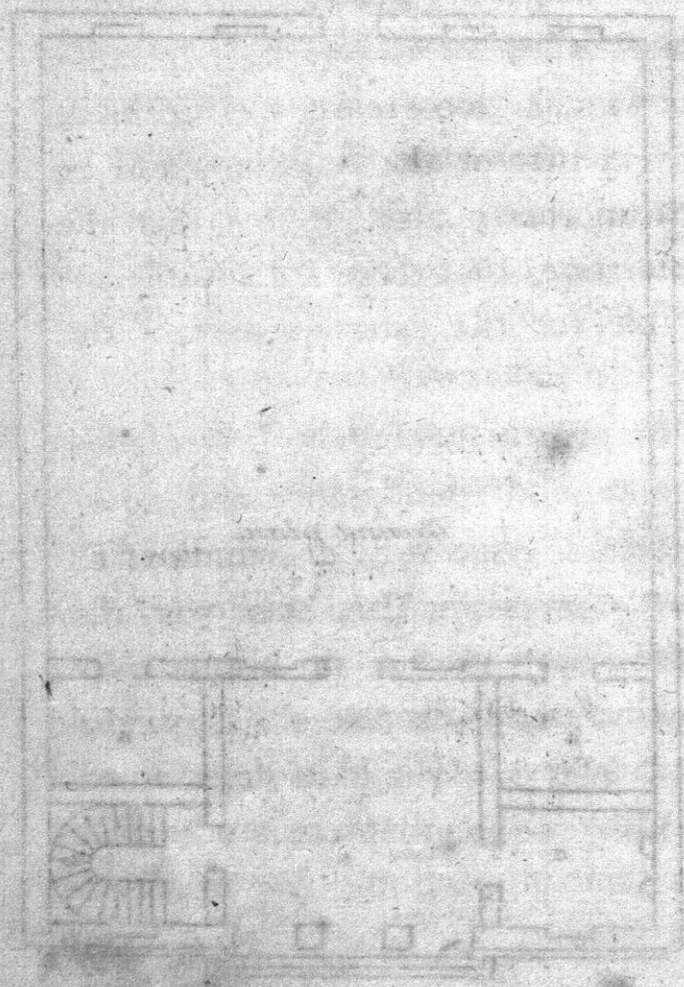


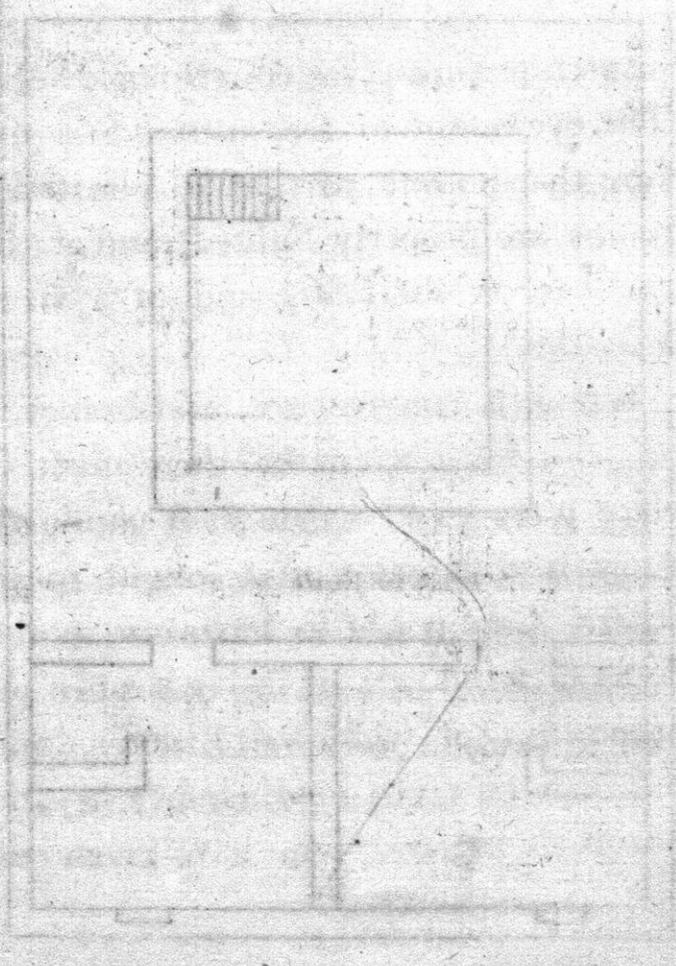
Ground plan

Raynard Del.

Wyghtman Sc.







OBSERVATIONS

On building of Houses, to elucidate the preceding plans, and assist the student in the practical parts.

THE first thing to be done in planning a house, is to know the wants of the person who is to occupy it; the next, to know the situation of the ground it is to cover; then to take into consideration the number, size, and height of the rooms wanted; also, proper and convenient stairs, entries, passages, &c. Let the kitchen be situated, so as to have as easy a communication with the dining and breakfast rooms as possible; let the pantry or china closet communicate with the diningroom by a door, and with the passage from the kitchen by a door or window. Place the doors in such a manner as to make the distance from one part of the house to the other, as short as possible; still keep uniformity in view, as it is one of the greatest beauties in architecture; yet convenience ought not to make too great a sacrifice to it. The eye ought to see, at the same time, every part of the building, and be sure that no one part of it interferes with another; also, to see that the rooms are properly lighted, and at the same time, that there are a sufficient number of windows, and of a size suitable for the external part of the building.

Strength, convenience, and beauty, are the principal things to be attended to. To have strength, there must be a good solid foundation; and never place piers over openings of windows or doors. Openings of windows or doors in different stories, ought to be exactly perpendicular, one over the other. Care ought to be taken, not to place heavy girders or beams over doors or windows, or to lay timber of any kind under fireplaces. As to the proportion of windows to rooms, we do not believe any certain determined rule can be given for their height and breadth, although there are several European writers, who have given rules for their proportion. We think sir

William Chambers has given the best proportion of any one we have seen, yet we do not find it to answer in all cases; he adds the depth and the height of the rooms on the principal floor together, and takes one eighth part thereof for the width of the window. The width and height of doors, depends on the size and height of rooms in some degree, although there is not any room so small as not to require a door sufficiently large for a person to pass through its opening. In the course of our own practice, we have made doors for rooms of sixteen by eighteen or twenty feet, and ten feet high, three feet wide, and seven feet or seven feet two inches high. When rooms have been twenty by twenty three or twenty four feet, and twelve or fourteen feet high, we have made the doors three feet six or seven inches wide, and seven feet eight inches, or eight feet high; all the doors in the same room ought to be of the same size, except where two doors are placed together between the two principal rooms, which are called folding doors. They ought to be made from eight to twelve inches higher than the other doors of the room, or they will, on account of their width, appear to be lower than the others; these folding doors are commonly used in Boston, and are very convenient, particularly so when placed between small rooms, both for the circulation of air, when windows and doors are opened, and for the reception of large companies.

The size of outside doors, must be governed by the building in which they are placed. If in a townhouse with a narrow front and small windows on each side, like plate thirty four, three feet four or six inches will do very well for its width, but if wanted for a large house, and without side lights, it ought to be made much wider; say from three feet ten inches to four feet; and in some cases, four feet four or six inches wide, and never less than two diameters high.

The chimney ought not to project into the room more than from fifteen to twenty inches if it can be avoided, and care should be taken to place them on the most convenient side of the room. For size of fireplaces, see explanation of chimney pieces. Never make the funnel less than twelve inches square, and if there is sufficient room, sixteen inches is a good size where a fireplace is about four feet between the jambs.

TABLE OF CONTENTS.

NEW AND VALUABLE PUBLICATIONS,

FOR SALE AT THE BOOKSTORE OF

ETHERIDGE AND BLISS,

No. 12, CORNHILL, BOSTON,

WALKER'S Critical Pronouncing Dictionary.

Johnson's Dictionary, with Walker's Pronunciation.

Johnson's Dictionary in miniature.

Webster's Dictionary.

Cumberland's Memoirs.

Secret History of the Court and Cabinet of St. Cloud.

Mariners' Chronicle, 4 vols. 12 mo. containing an account of the most remarkable shipwrecks, fires, famines, &c. &c. by Archibald Duncan, Esq. late of the royal navy.

Life and pontificate of Leo the Tenth, 4 vols. 8 vo.

American Letters from Europe, 2 vols. 8 vo. This work contains a series of letters during a tour through Switzerland and Italy, in the years of 1801 and 1802; written by a native of Pennsylvania.

Massilon's Charges, by Bishop of Clermont, addressed to his clergy.

Ewel's Discourses.

The Original Anecdotes of Frederick the Second, King of Prussia, and of his Family, his Court, his Ministers, his Academies, and his Literary Friends; collected during a familiar intercourse of twenty years with that Prince; translated from the French of Dieudonne Thiebault, Professor of Belles Lettres, in the Academy at Berlin, 2 vols. 8 vo.

ALSO,

A variety of well chosen LAW BOOKS.

THEY DESIGN TO KEEP CONSTANTLY FOR SALE,

A great variety of Mathematical Instruments; drawing, writing, and letter paper, together with Reeve's colours, India ink, Camels' hair and lead pencils, of the best quality. Those gentlemen who design to make Architecture their study, will find it for their interest to apply as above, to furnish themselves with books and every other article necessary to facilitate their study.

SAID E. & B. HAVE NOW IN PRESS,

ROLLIN'S ANCIENT HISTORY,

IN EIGHT VOLUMES OCTAVO,

TO BE ILLUSTRATED WITH SEVERAL USEFUL MAPS.

THIS work will be comprised in eight volumes 8 vo. of 500 pages each. The price to subscribers will be two dollars a volume in boards, to be paid for on the delivery of each volume. To nonsubscribers the price will be considerably enhanced. It is printing on a superfine paper, with an elegant, new pica type, cast at Philadelphia expressly for the work. It is the intention of the publishers to print it in a style superior to any edition heretofore published.

ALSO FOR SALE,

A variety of Fancy Articles; Bibles of all sizes and prices, Testaments, Spelling and School Books of every description; Psalm and Prayer Books; a variety of religious Tracts, well chosen. A supply of New Publications will be constantly received. Social and private Libraries supplied on the best terms. Lottery Tickets and Quarters kept constantly for sale.

PROPOSALS

ARE ISSUED FOR, AND WILL SHORTLY BE PUT TO PRESS,

(TO BE EXECUTED IN A NEAT STYLE OF PRINTING,)

THE

LAY OF THE LAST MINSTREL.

A POEM.

BY WALTER SCOTT, ESQUIRE.

THIS elegant POEM has received great encomiums from the European Reviewers; and the following flattering commendation is taken from the Monthly Anthology, of October, 1806, printed at Boston.

"European Reviewers have so justly displayed the beauties, and appreciated the merits of this interesting composition, that we have little, if any thing, to add to their remarks; but we cordially join them in praising a poem, which has afforded us exquisite pleasure, and which "has raised its author to a permanent rank among the classical poets of his country."

"In towns, where trade occupies every thought, at all times and seasons, and in every company monopolizes the greatest share of conversation; where its maxims and spirit pervade every class of society, and would confine all mental exertion within its own contracted sphere; it must be peculiarly gratifying to the few, whose faculties are not shackled and benumbed, to read of other times, of other manners, of other men; with different objects in view, with more ardent, as well as nobler passions: and whose vices, while they neither exceeded in number or enormity those of later times, were balanced by many virtues; among which unbounded generosity, steady friendship, faithful love, and heroic valour, shone conspicuous. It is therefore with great satisfaction that we strongly recommend, to the rising generation particularly, this vivid effort of genius and learning; but as it is probable more attention will be paid to *samples*, than to mere recommendation, we shall select a few specimens and vouch for the goodness of the whole."

THE Editors of the Monthly Anthology, after selecting nearly two pages from this poem, and clothing them in the highest terms of commendation, close with the following just and pertinent remarks.

"We pretend not to say we have selected the most beautiful passages of this delightful poem, but they struck us as possessing great force and beauty; nor do we fear, that those, who can feel with the poet, will think our quotations too long, or numerous. If our admiration, warmly expressed, can induce many to read the book, it may kindle the pure and ardent flame of native genius in bosoms, where the spark now lies dormant; and the view of its rare excellence may repress the presumption of obtrusive poetasters, who would not pester the public with so many vavid rhymes, clumsily strung together, did they not mistake pertness and selfconceit for brilliant talents and uncommon powers."