STAIRCASING & HANDRAILING BY LANGLEY BANKS.

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BY

LANGLEY BANKS.

THE

JOINERS' INSTRUCTOR.

STAIRCASING and HANDRAILING.

BY LANGLEY BANKS.

ENTERED AT STATIONERS' HALL.

LONDON:

PRINTED AND PUBLISHED FOR THE AUTHOR BY C. CHABOT, 9, SKINNER STREET,
SNOW HILL; and

WHITTAKER & Co., AVE MARIA LANE;

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1849

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PREFACE.

The Author begs to say, that on commencing this edition of the Work, he received numerous applications to publish it in Monthly Numbers, many of the workmen—for whom the Work is chiefly intended—stating that it would better suit their means. In compliance with this wish, he divided the Work into Twelve Numbers and commenced publishing them Monthly on the 1st of October, 1849. From the value of the Work being, however, ascertained by the publishing the first few numbers, by far the majority of subscribers have expressed their anxiety not to wait for the monthly numbers, but to have it complete at once. A similar request has also been made to the Author by every architect, builder, staircase builder, clerk of works, and foreman, who have seen the *principle* of the Work, to have it at once complete; he has therefore used every effort to do so, and he now presents it to the subscribers in its complete form, discontinuing the monthly numbers further than completeing those that are already out.

The Author begs further to state, that whilst an apprentice in the days of the late Mr. P. Nicholson, he felt fully convinced that something was yet to be achieved in the construction of Staircasing and Handrailing, and that it could be more plainly delineated, so that any journeyman or apprentice of ordinary capacity could carry out the work without being so puzzled as he has hitherto been. The Author has devoted the whole of his subsequent years to its study; and it is admitted that he has arrived at the very summit of the simplicity, economy and gracefulness of the art, by which the apprentice cannot possibly fail to carry up, by means of this plain and simple Work, a Staircase of any character whatever, without any other instructions. For one idea, however, the Author is indebted to Mr. Huggett, Staircase Builder to the trade, of Bayswater, who, together with every other person competent to offer an opinion on the Work, unanimously agree that every Plate cannot fail to prove of indescribable value to the trade.

Hull, *March* 26*th*, 1849.

Plan & Elevation of

STAIRS FOR LEVEL LANDING.

Designed by Langley Banks. Lithographed by C. Chabot.

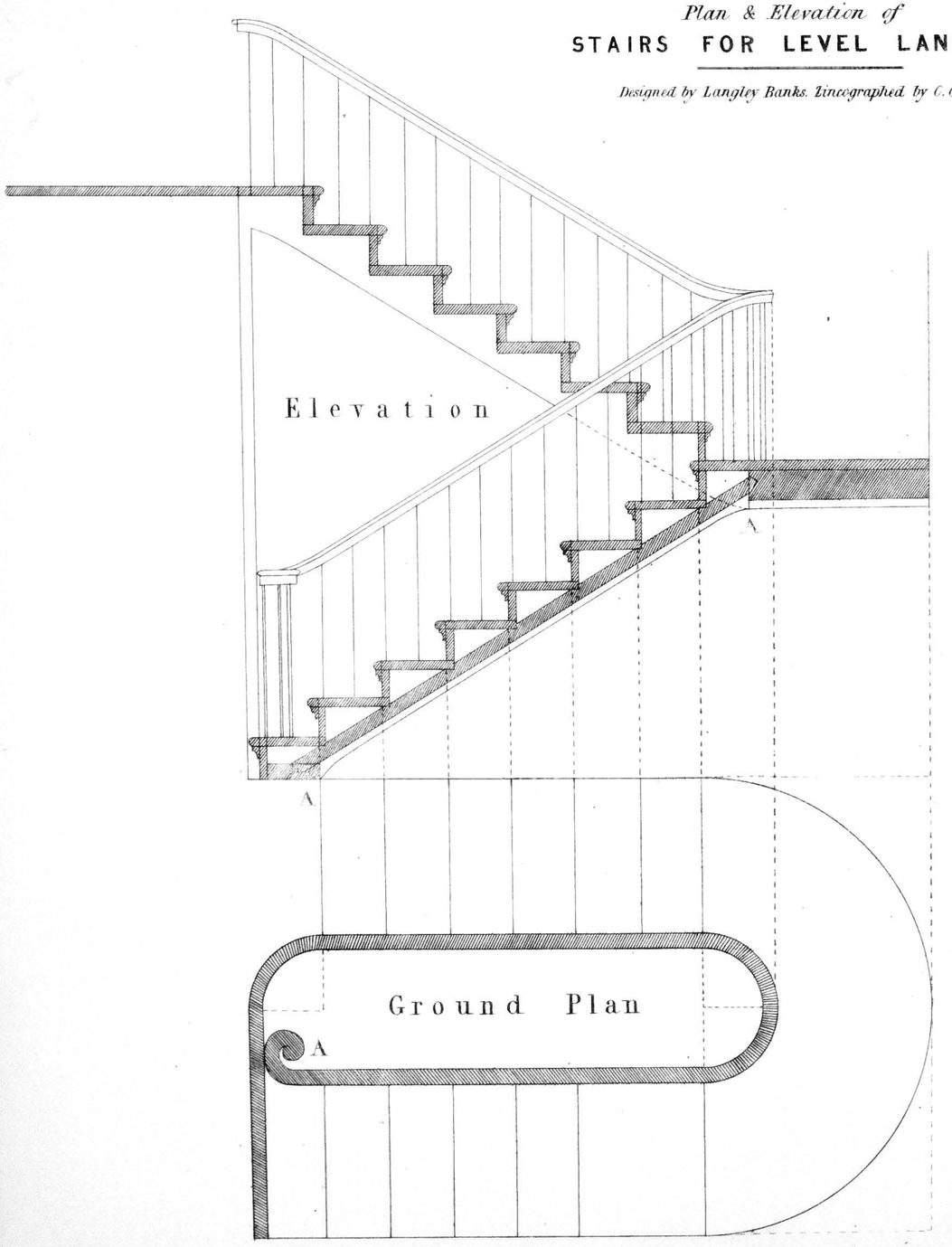
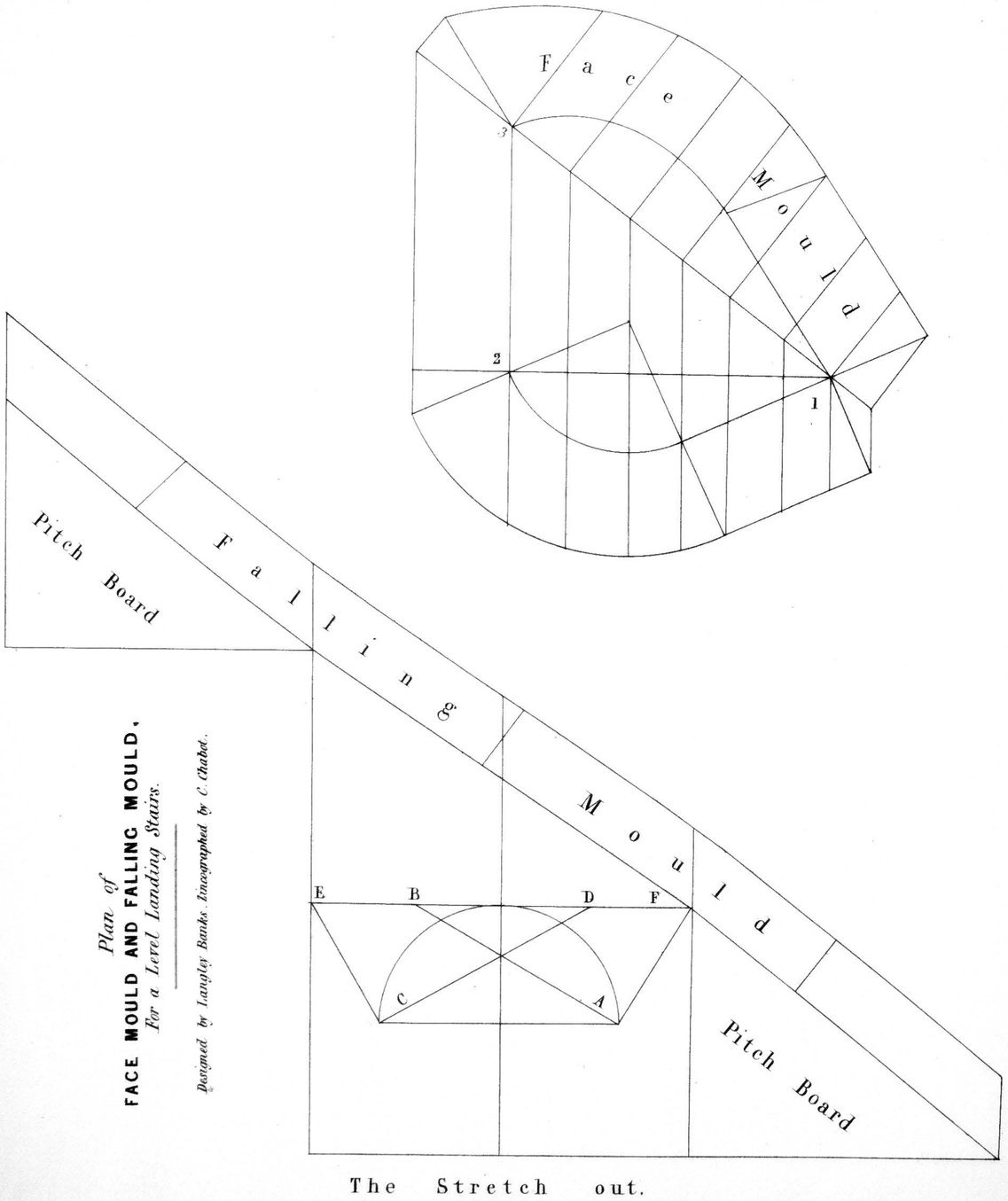


PLATE I.

Shews the ground plan and elevation of stairs with a level landing in the well. The ground plan also shews the rails, scroll, and where the rail may finish to its full extent, trimmers for stairs are oftentimes found to meet a doorway on the landing; and in cases where the opening for the stairs is too great, a sub-trimmer should be introduced to meet the proper situation of the last flyer,—and in such like cases the necessary easing of the rail to meet this is shewn by the finishing of the top of the rail in the elevations. In framing the landing and fixing the carriage, observe the plan. The keeping the landing back as shewn gives additional strength. In the necessary particulars to begin the stairs, you must find the proper distance or fly, then the height from floor to floor; then it would be desirable to give the rise of the step from 6 to 7½ inches, and the tread from 9 to 11 inches; but when the area will not allow it, you must adopt the same rule in this and in all other cases, viz. you must take the distance and height, and fix the number of steps nearest to the sizes given.



Plan of
FACE MOULD AND FALLING MOULD,
For a Level Landing Stairs.

Designed by Langley Banks. Lithographed by C. Chabot.

PLATE II.

Shews the Falling Mould and Face Mould for Level Landing, as Plate I. First lay down the size of the Well, then the size of the Rail, and then divide the circumference into three equal parts; then strike the line A. B. and C. D.; then make the line E. F., which will give the stretch out of the Well; apply the Pitch Board as laid down, by which means you will obtain the Falling Mould for the inside of the Rail. The joints to be as shewn.

To obtain the Face Mould, lay down the quarter, as in Plan, strike the line 1, 2; set up the height 2, 3; cut the line 1, 3; and by squaring the lines as shewn in the Plan, you will obtain the Face Mould. See Plate X., which shews a delineation of the one bevil, which will prove sufficient for Rails of any character whatever.

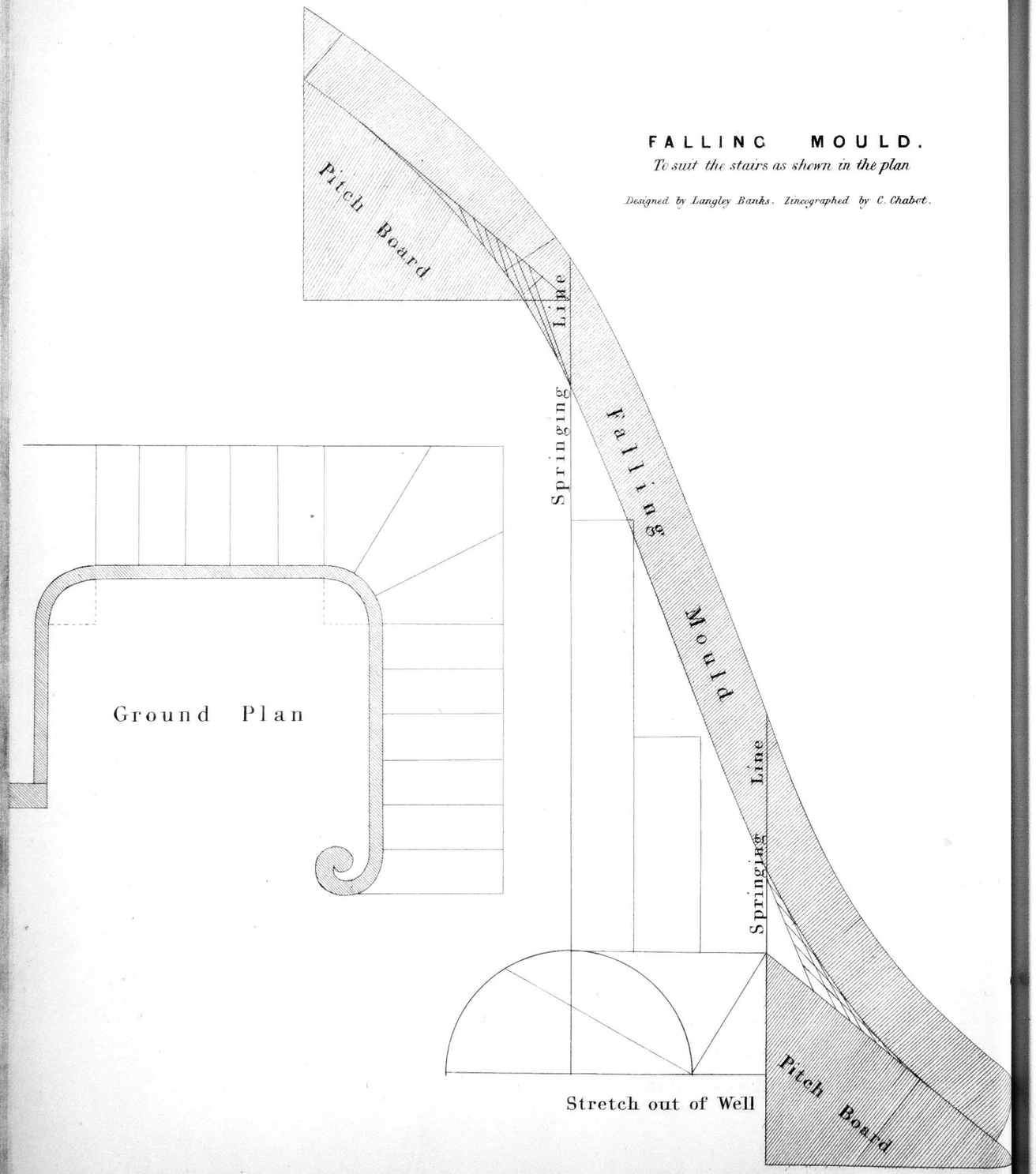
The applicant is shewn in Plate V.

Preface to the Second Number.

(Remarks.)

The Author intends by the following remarks to give not only a plain explanation, but clear idea of "setting up the height," as some (particularly young men) may not otherwise understand this. When the Author speaks of "setting up the height," he would wish it to be understood that attention must be paid to the particular character of the stairs. If a level landing Stairs and half a step of straight, as seen in Plate II, then you will have to set up one step, as it must rise half a step from the springing to the centre, and half a step for the straight, that making one step in the wreath; and by the same rule, as many steps as are in one quarter of the well, and the step of straight that is marked in each wreath, then set up accordingly: thus, if three winders in the quarter, set up your height four steps, and allow for the straight you get in the top end. If for eight winders in the well, then set up your height five steps, that is, four from the spring to the centre, and one step of straight, as seen in Plan, to either of which the square cut or one bevil is applicable.

Observe that the setting up the height 2, 3, is understood to be *set up in the inside*, as seen in Plate IV; and thus by careful attention to this system laid down for the setting up the height for any character of Stairs, looking at the Falling Mould and taking the height from that, you will find both to agree.



FALLING MOULD.

To suit the stairs as shown in the plan

Designed by Langley Banks. Lineographed by C. Chabot.

PLATE III.

Shew the ground plan and falling mould for Stairs, with three winders in the quarter, curtail step, scroll, and flyers. This Falling Mould requires considerable attention: the Plate shews the pitch board both at the bottom and the top, also the rail stretched out and the winders set up. In this class of stairs I would recommend the rail being lifted and lowered half the thickness of the rail, to suit both the hand and the eye, to be lifted from the nosing at the bottom and lowered the same at the top; then coming down stairs you will not loose your handhold, and in going up you will not find the rail too soon in the hand.

By observing the Falling Mould, you will find there is one step wrought in the wreath at the bottom end. The joints and the top easing are to be as shewn on Plan.

This system will cut out of less materials than any other heretofore published. The Face Mould is seen in Plate IV, the Applicant in Plate V. This will work a rail two inches seven-eighths by two inches and a quarter from a two-and-a-half-inch plank, and a plenty of material will be found to square up the rail, the same as if making a straight one, and by squaring the wreath across, you have an opportunity of getting the rail out and finishing it more perfect.

To obtain the stretch out, proceed the same as in all other Plates. The springing lines upon the Falling Mould are to be applied in the interior of the wreath when cut out; and by keeping the springing lines perpendicular with each other, that will give the rake of the rail both on the top and under sides. This will be sufficient to teach the inexperienced how to get out a falling mould for this class of stairs.

PLAN OF FACE MOULD.

To suit the Stairs in Plate 3.

Designed by Langley Banks. Lincographed by C. Chabot.

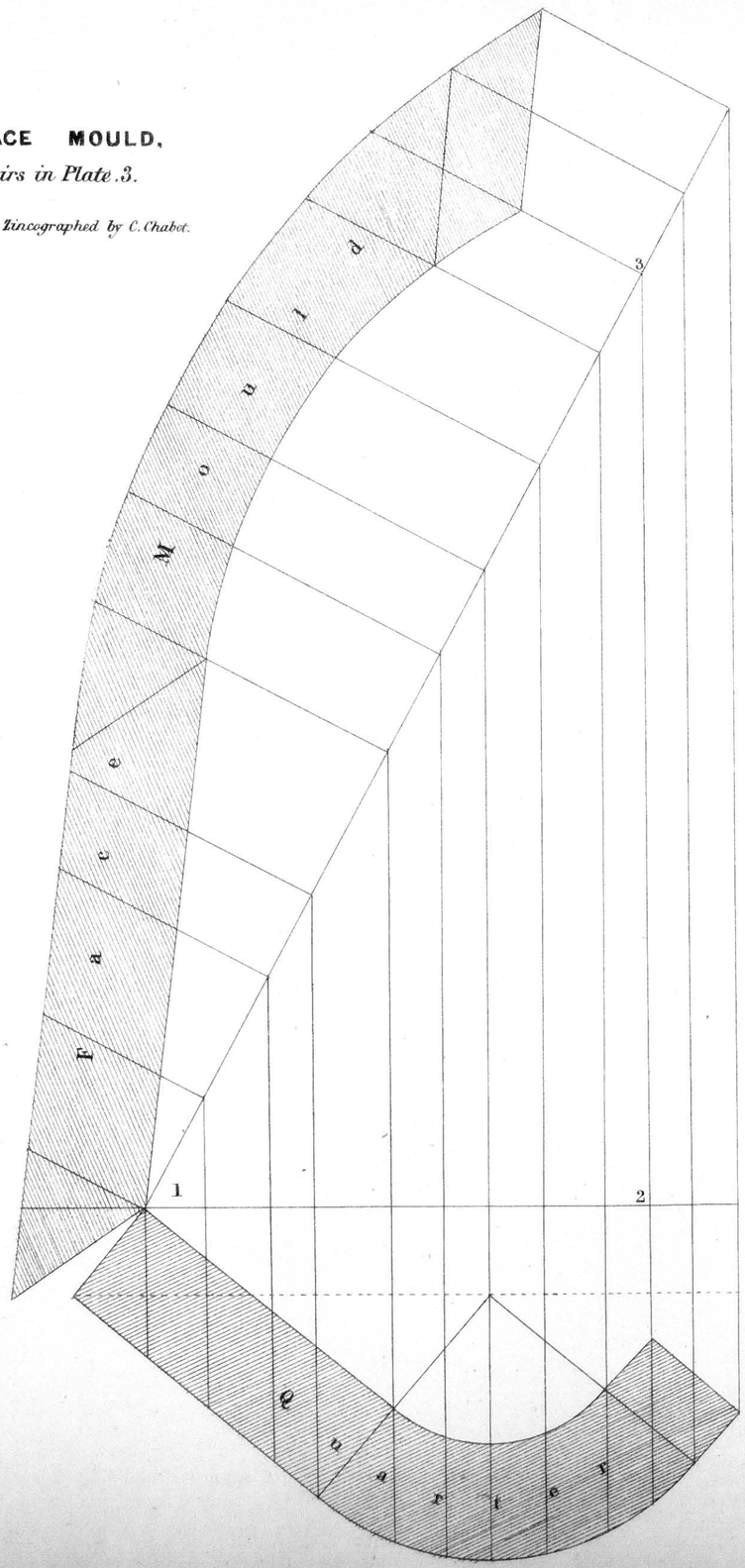


PLATE IV.

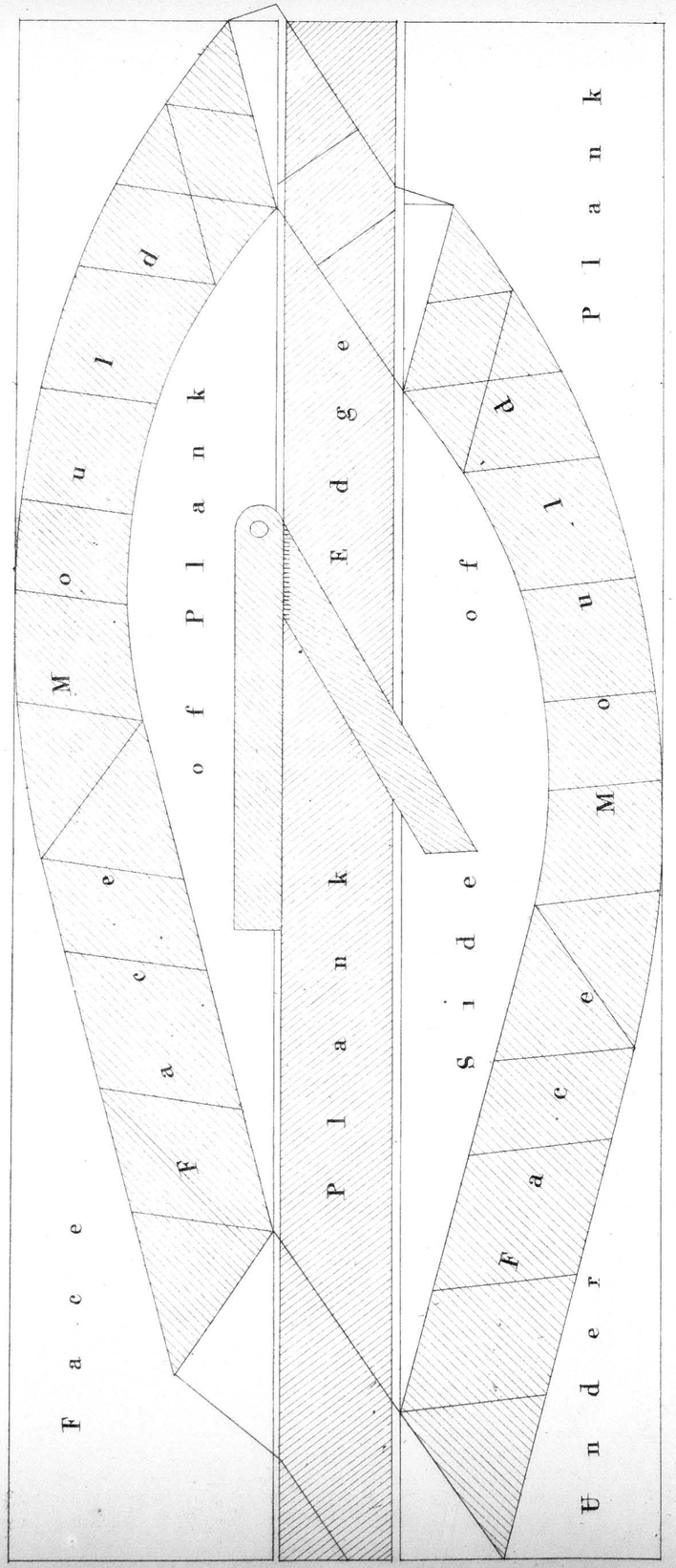
Shews the Face Mould for three winders in the quarter, involving the greatest difficulty the enquirer has to contend with. Lay down the quarter as shewn in the Plan; cut the line 1, 2; set up the height 2, 3; then cut 1, 3, which will give the proper pitch for the Face Mould; square the ordinates, as shewn in the Plan, and the Face Mould will be obtained by squaring the lines from 1, 2, across the quarter, parallel from the dotted line. This quarter is thrown down at the centre, to prevent the mould from being wider at that end. The half-inch of straight is to prevent a joint at the springing. This mould is a quarter full size, making two inches in full size. The plank would be cut to waste by getting it more, which seems uncalled for. The Face Mould is shewn in Plate V. in the Applicant. The step of straight in this and all other Face Moulds which is applicable to the one bevil, may be procured as per dotted line.

Preface to the Third Number.

(Remarks.)

The Author deems it here well to give the following instructions, as to how the young man may gather the necessary information required to begin and finish a Staircase of any character. In the first onset, take the proper distance from where you intend to start with the first step to the back wall, then set off your landing the same from the wall as the length of the step when the well is taken off, (that you will learn from the width of your opening); then divide the fly into so many parts to bring it so near to 9-in. as you can; then take the height from floor to floor (that is, from the top of one floor to the top of the upper floor); then divide the height into equal parts, from $6\frac{1}{2}$-in. to $7\frac{1}{2}$-in. rise: if you can get up with the tread and rise mentioned, then make a level landing stairs as in Plate I. If you cannot procure this dimension, then introduce one rise in the well; if that is not sufficient introduce two—or otherwise winders—all of which character of Stairs you will find in the work.

When you have decided on the quantity of steps and the plan of them, before you commence fixing the carriage, see Plate I., which shews you how the trimmers are to be fixed; and bear in mind that the landing or carriage, whatever the number of steps may be up to the landing, is to be kept down the thickness of the landing boards. By strictly observing the way in which the carriages are fixed in Plate I., you will find it to leave plenty of room for the well in the generality of Stairs: in every subsequent Number, the learner will find that information necessary to teach him upstairs, as if the Author was standing by.



Method of
APPLYING
To the Plank.

Designed by Langley Banks. Lithographed by C. Chabot.

PLATE V.

Method of shewing the Face Mould on the plank for three winders in a quarter, or any other. The Plate shews the Face Mould of both top side and under side of the plank, and also the plank edge and the rails squared up.

The Plate also shews the ONE *Bevil,* which is applicable to all Face Moulds up to Plate XVII. This character of rail (three winders in the quarter,) has always been thought one of the most difficult that any man could have to contend with. In all other works heretofore published, it has been either set back, or the edge of the plank bevelled. But when you have procured the Face Mould, as shewn in Plate IV., then see this Plate, which will be sufficient to instruct you how to apply the mould, and at the same time prove that it will square up a rail of the finished dimension, of two inch seven-eighths, by two inches and a quarter from a two and a-half inch plank. You will also find by getting the easing in the wreath at one end, that it will produce a more graceful Rail than by any other system.

It may here be truly observed, that by applying ONE *Bevil only* for a wreath of this character, nearly one half of the material and nearly one half of the time is saved; and you will find the principle here laid down so plain and simple as to give every thing required.

As this applicant serves for all up to Plate XVII, when the learner has acquired it for one character of rail it will make him master of the whole, excepting the square cut, which will be seen in Plates XIX, XXI, and XXII, in the work.

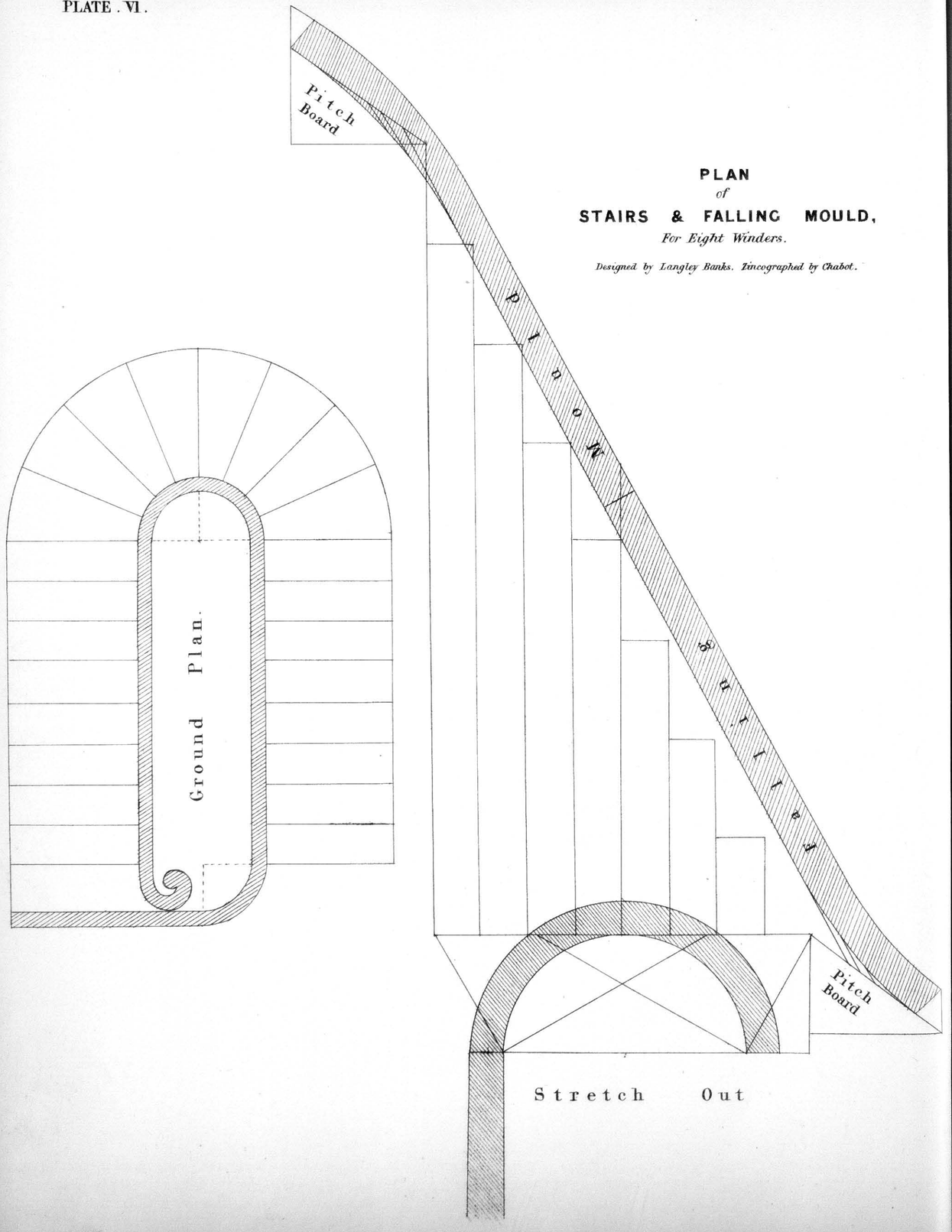


PLATE VI.

Shews how to find out the falling mould for eight winders in the well. First lay down the size of the well, then the size of the rail, then divide the circumference into three equal parts with the same radius. Apply the pitchboard as shewn on Plan, and divide the stretchout of the well into eight equal parts then set up the steps and lift and lower the rail as shewn in Plate III. which will give the falling mould.

The Author has obtained one step of straight rail in the mould, but it can be obtained without the straight rail, to joint from the springing of the well, but where that is the case there is some difficulty in getting the rail in its proper position; and there is an objection to a joint near the springing, where there is winders in the well, or in the quarter, and there is plenty of thickness in a two-and-a-half inch plank to work the easing in the wreath. This may be produced without loss of time or material and will be found the best and most simple method that can be given.

Preface to the Fourth Number.

(Remarks.)

The Author intends in this Preface, to shew that instruction necessary to convey the proper system of cutting out the Block for the Scroll and Shank. First strike out the scroll as you see in the Plan; then, when you have cut out the block from a plank three inches in thickness, begin to rise close in the scroll, then you will find the scroll to look well, and at the same time be in its proper form. When you have got out your face mould, apply it on the face of the plank, then apply the pitch-board, and when the wreath is in its proper position, let the longest point be at the bottom, then when held up in proper place, you will find that the bevil part will be plumb down, so that it will intersect. Apply the pitch-board to the outside of the scroll,—rise one step at the extremity of the pitch-board and at the same time make it to rake with the flyers. This will answer for any scroll where there is not winders against the scroll. When you commence to square up the rail, you will have plenty of material to take off the top side of the rail on the inside, and the under-side of the outside. If even a stranger to this department pays due attention to these instructions, he cannot fail to carry out any scroll without asking one question. It must be understood that this treats on the *one bevil.*

I shall shew in one plate that the Shank is to be cut from the plank square, without any bevil or waste whatever. In Plates XVIII, XIX, and XX, the Square Cut will appear; as it must be understood that all Plates, as far as XVII, are applicable with the *one bevil.*

Further instructions will appear in our next preface.

PLATE . VII.

PLAN OF FACE MOULD,

For Eight Winders.

Designed by Langley Banks. Lineographed by C. Chabot.

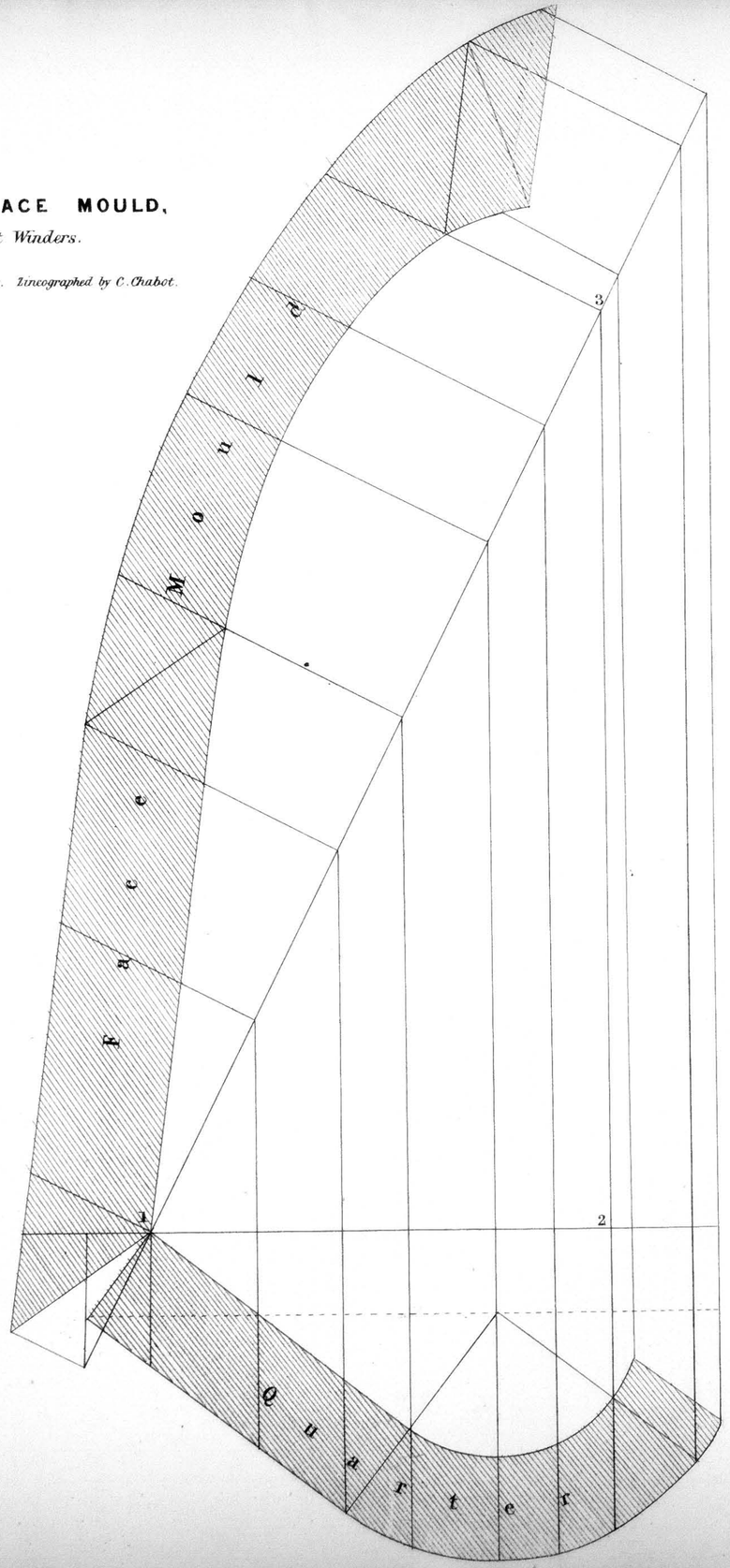


PLATE VII.

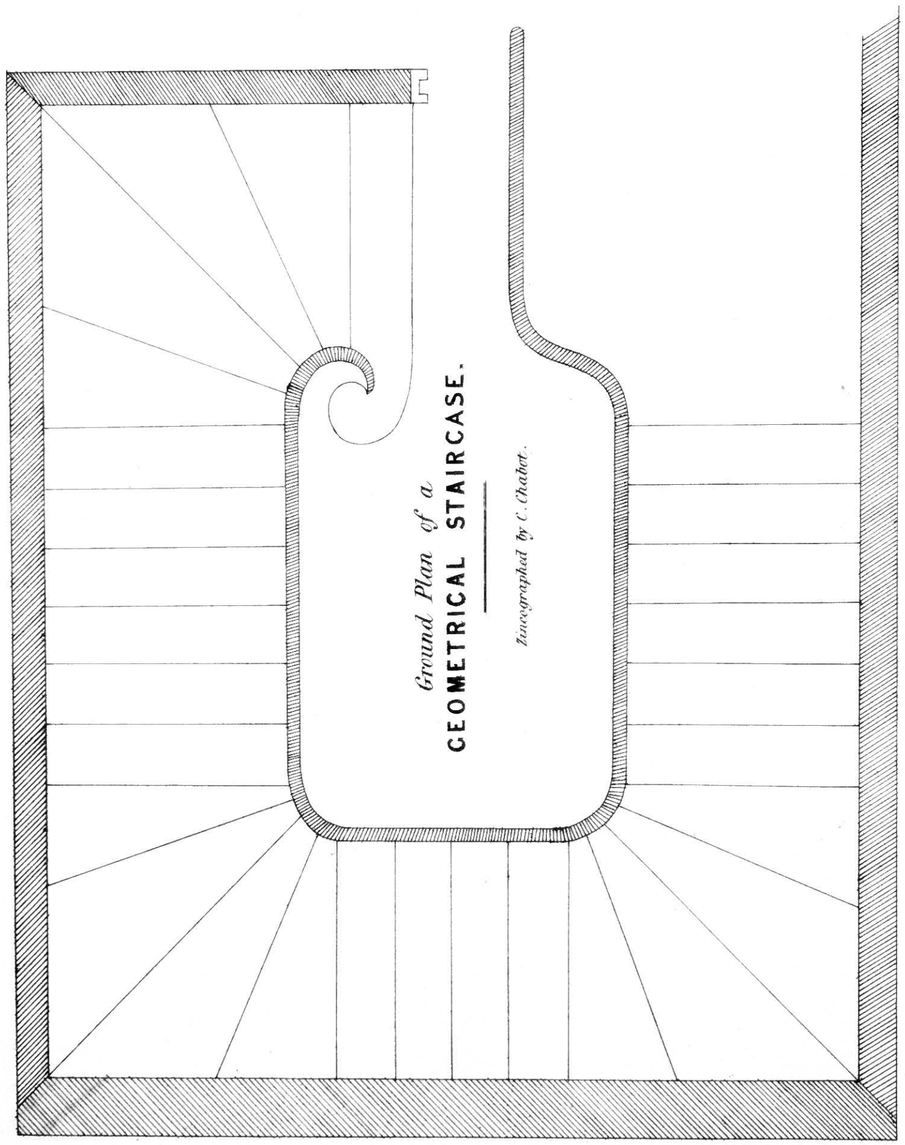
Shews the Face Mould for eight winders as in Plate VI. First, lay down the quarter as shewn,—*take the dotted line* for example; cut 1, 2; set up the height 2, 3; cut 1, 3; square the ordinates as shewn, and square from the line parallel to the one dotted; then by reversing the *moulds* both easings will be obtained. You will find this the best and most simple method of obtaining the above rail ever offered to the notice of the trade. The learner will find that the face mould is left longer for a butt joint, this being preferable to a plumb joint.

When the wreath is cut out, and the Falling Mould applied in the interior of the wreath, that will give the butt joint as shewn in the falling mould in Plate VI., which is only to give the idea. For the Applicant see Plate V., and for your Bevil, Plate X.

Plate VI. shews the Ground Plan and Falling Mould; Plate VII, the Face Mould;* Plate X, the Bevil; and Plate V, the Applicant.

The Author considers that those four Plates are sufficient to give every thing from the commencement to the finishing of a staircase of this class.

* Quarter full size.



Ground Plan of a
GEOMETRICAL STAIRCASE.
Lithographed by C. Chabot.

PLATE VIII.

Shews the ground plan of a geometrical Staircase in a very difficult position.

The Author has laid this down to shew one of the many varied ways by which Stairs may be carried up ; a design of this kind having long been wanted. Refer to Plate XVI., in which you will see the method of finding the Falling Mould and Face Mould adjoining the Scroll, and also a Face Mould for the four winders in each of the rightangles.

It must be understood that in this particular class of Stairs (where winders adjoin the Scroll) there is a great difficulty in making the rail to look well and at the same time to be in its proper form, but if you strictly observe the Falling Mould and Face Mould in Plate XVI., you will find every requisite to effect this art.

Preface to the Fifth Number.

(Remarks.)

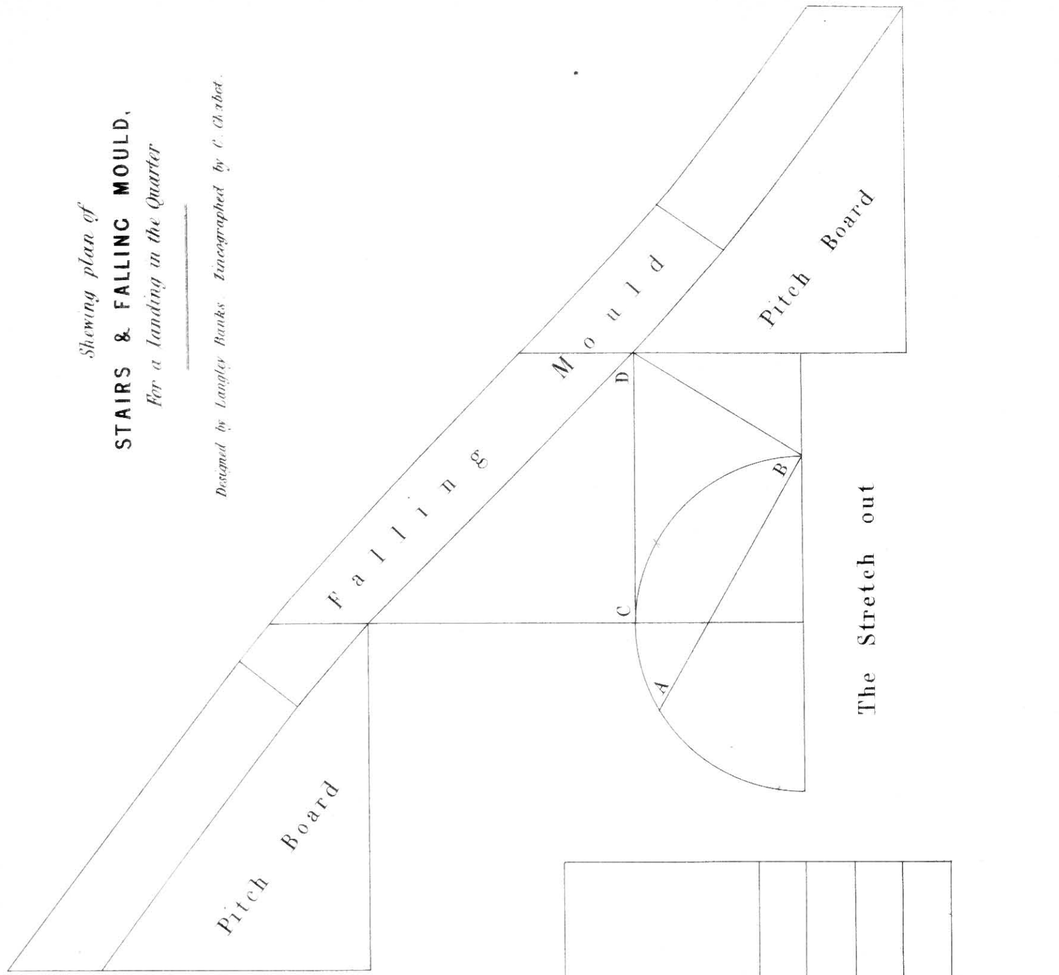
In other works brought out on Staircasing & Handrailing, the following necessary information is not to be found, and which is the only means whereby proper instructions can be obtained, and this only to its full extent, by a practical, rather than a theoretical man. To convey the right method of applying the mould upon the plank, so that there can be no mistake, you will find it properly delineated in Plate V; but recollect that there is no setting back on the under side of the plank, or bevelling the plank edge, but keep both points of the mould to the edge of the plank, both top and under sides of the same, and by the instructions given respecting the ordinate lines crossing the face mould, when cut out, you will find the interior to fit the well from the saw; and when pitched up to its proper height, and the falling mould is applied giving the plumb lines and the rake of the rail, by holding the square perpendicular to the springing lines, that will shew how to square up a rail. The falling mould in Plate III shews the joints for three winders in a quarter, and a face mould is also shewn in Plate XV. for a geometrical staircase as in Plate XIV. This face mould is applicable to the one bevil, but bear in mind, this mould can be obtained by the square cut, and when understood will save nearly half the materials, and be produced in much less time, and is admitted by the cleverest staircase hands and masters, that no other system after this is known, will be allowed to be used, as materials so saved is an important object, and the Plates will be so clearly and simply laid down, so that no one can fail to understand them.

Shewing plan of

STAIRS & FALLING MOULD.

For a landing in the Quarter

Designed by Langley Banks Lithographed by C. Corbet.



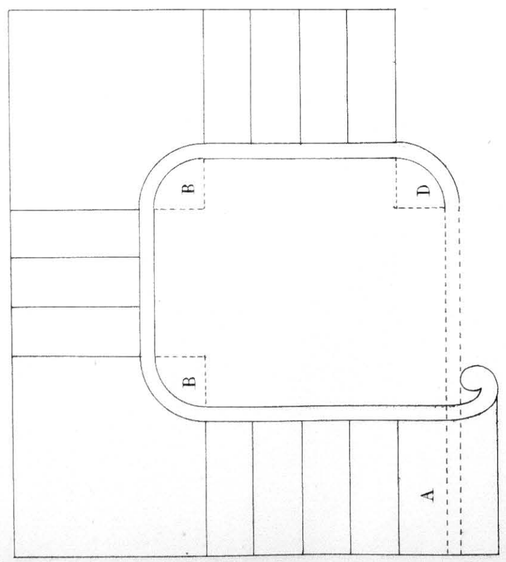


PLATE IX.

Shews the ground Plans and Falling Mould of Stairs on a Level Landing in the Quarter. First lay down the size of the Well, then the size of the Rail; divide the circumference into three equal parts; strike the line A. B. and square therefrom; then cut C. D., which will produce the stretch out. Apply the Pitch Board as shewn, from which you will obtain your Falling Mould.

For the applicant, see Plates V. and X.

PLATE . X .

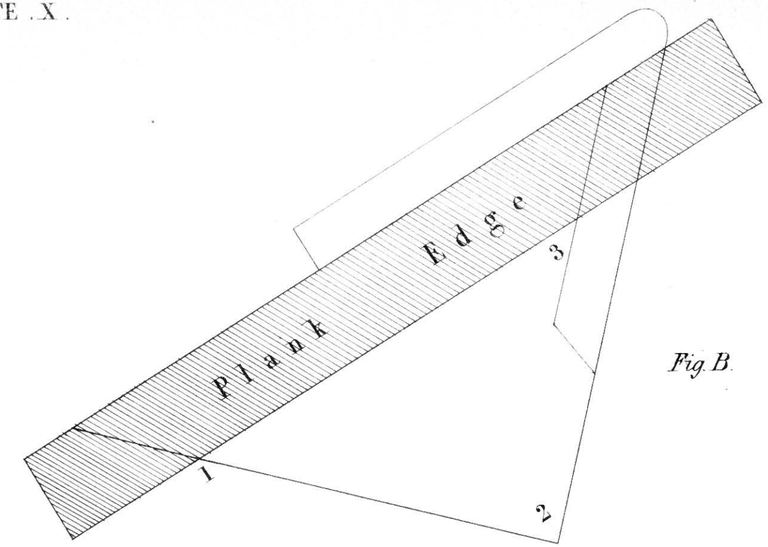


Fig. B.

Shews the

FACE MOULD FOR STAIRS AS PER PLATE. 9.

Likewise how to get your bevel and also shews the Plank edge.

Designed by Langley Banks. Lincographed by Chabot.

Fig. A.

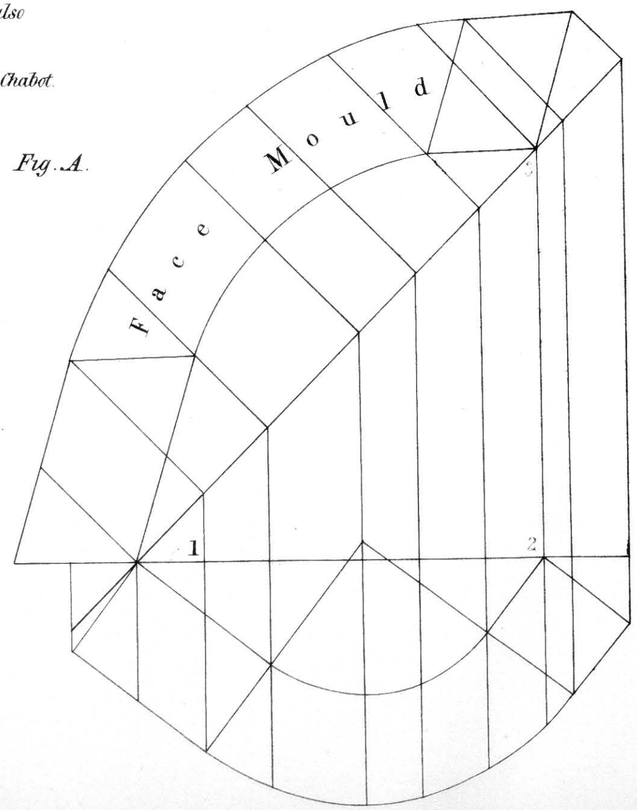


PLATE X.

Fig. A. shews how to get the Face Mould for a Level Landing in the Quarter to suit the Stairs in Plate IX. Lay down your Quarter as shewn, cut the line 1, 2; set up the height 2, 3; then cut the line 1, 3, which will give the pitch line; then square your ordinate lines from the line 1, 3; by this you will procure the Face Mould. Fig. B. shews the Plank edge, take the Bevil 1, 2, 3, and apply it on the Plank as you see it laid down, observing the ordinate lines that cross the Face Mould to be marked on the surface of the Plank on either side, both inside and outside of the Mould, by which means you will keep at a right angle with your bevil.

Preface to the Sixth Number.

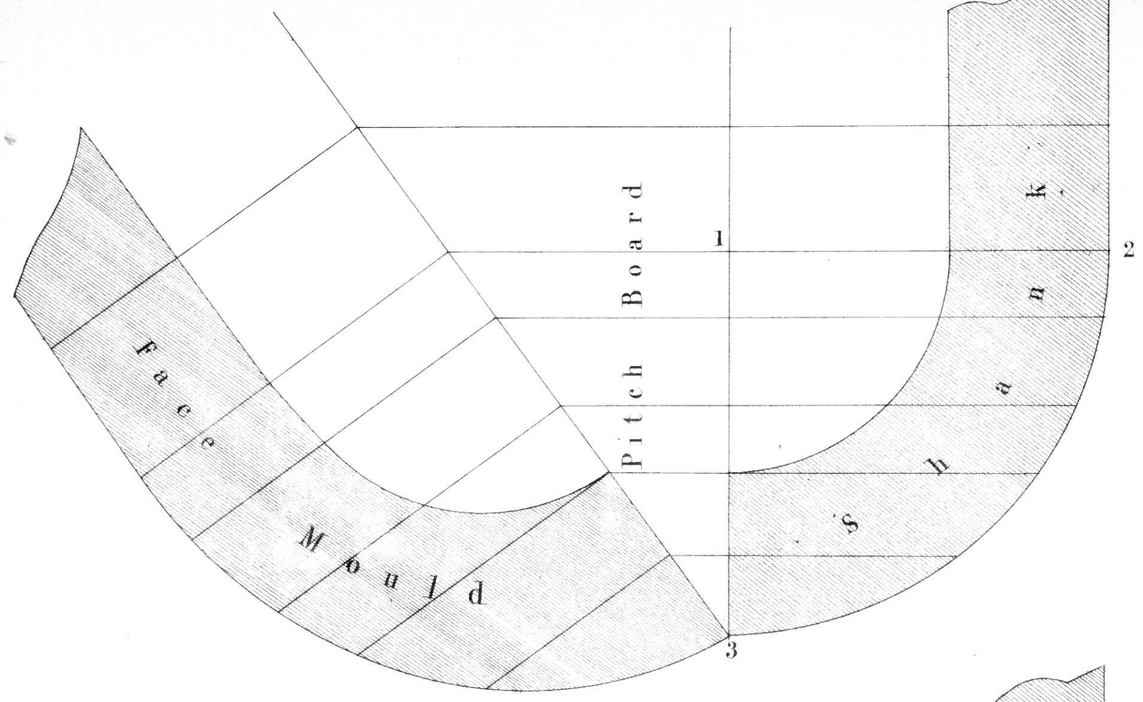
(Remarks.)

This number treats upon Plates XII & III. Plate XII shews the plan of an Elliptical Stairs, a falling mould, a bracket and section of a rail. Plate III shews plan of stairs and falling mould for three winders in the quarter. It may be considered desirable here to give the learner some information upon the best mode, and the care required in putting rails together upon their correct rake; the way the Author would recommend is, to strike out the well upon the bench, then, when placed in the screw, and the bottom end is in its proper rake, set up the height of the extremity of the wreath, then apply a lathe on the bench, and take the height of the under side of the rail, fasten the lathe to the end of the rail, then try, if the height of the spring correspond, and if the heights agree, then the rail must be in its proper position. I give these particulars to obviate any mistake, as it sometimes happens that the falling mould is brought down or lifted up out of its right juxtaposition, but when tried by this rule it cannot fail to obtain its proper rake. When the falling mould is rightly applied, and the spring lines in the wreath, and the spring lines upon the falling mould are perpendicular to each other, this will keep the rail right at every resting point; when you commence to cut out the top easing, apply the top end of the falling mould, when you have got out your wreath, the mould works in the bottom easing. It is possible to get both easings in the same plank, but it cuts the plank to waste; but if required it can be so done, by setting up one step more in the mould, and making a step of straight in each end of the quarter, make the line 1, 2, at the extremity of both points, then set up the height 2, 3, then make the line 1, 3, that will be the pitch line, and squaring the ordinates as in other plans, you will procure the face mould, by setting off from the quarter and from the pitch line as seen in Plate XV, which will answer for all face moulds up to Plate XVII.

Preface to the Sixth Number.

(Remarks.)

This number treats upon Plates XII & III. Plate XII shews the plan of an Elliptical Stairs, a falling mould, a bracket and section of a rail. Plate III shews plan of stairs and falling mould for three winders in the quarter. It may be considered desirable here to give the learner some information upon the best mode, and the care required in putting rails together upon their correct rake; the way the Author would recommend is, to strike out the well upon the bench, then, when placed in the screw, and the bottom end is in its proper rake, set up the height of the extremity of the wreath, then apply a lathe on the bench, and take the height of the under side of the rail, fasten the lathe to the end of the rail, then try, if the height of the spring correspond, and if the heights agree, then the rail must be in its proper position. I give these particulars to obviate any mistake, as it sometimes happens that the falling mould is brought down or lifted up out of its right juxtaposition, but when tried by this rule it cannot fail to obtain its proper rake. When the falling mould is rightly applied, and the spring lines in the wreath, and the spring lines upon the falling mould are perpendicular to each other, this will keep the rail right at every resting point; when you commence to cut out the top easing, apply the top end of the falling mould, when you have got out your wreath, the mould works in the bottom easing. It is possible to get both easings in the same plank, but it cuts the plank to waste; but if required it can be so done, by setting up one step more in the mould, and making a step of straight in each end of the quarter, make the line 1, 2, at the extremity of both points, then set up the height 2, 3, then make the line 1, 3, that will be the pitch line, and squaring the ordinates as in other plans, you will procure the face mould, by setting off from the quarter and from the pitch line as seen in Plate XV, which will answer for all face moulds up to Plate XVII.

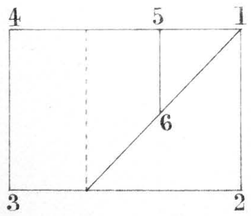


Method of

DRAWING A SCROLL.

And to get the Shank on a new principle

Designed by Langley Banks. Zincographed by C.Chabot.



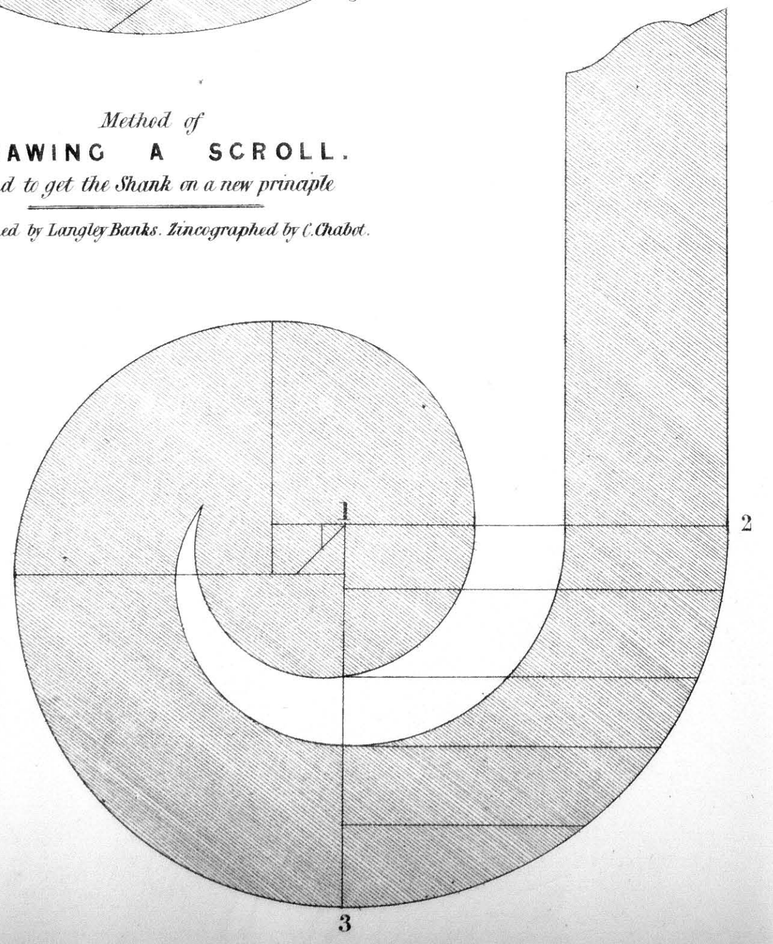
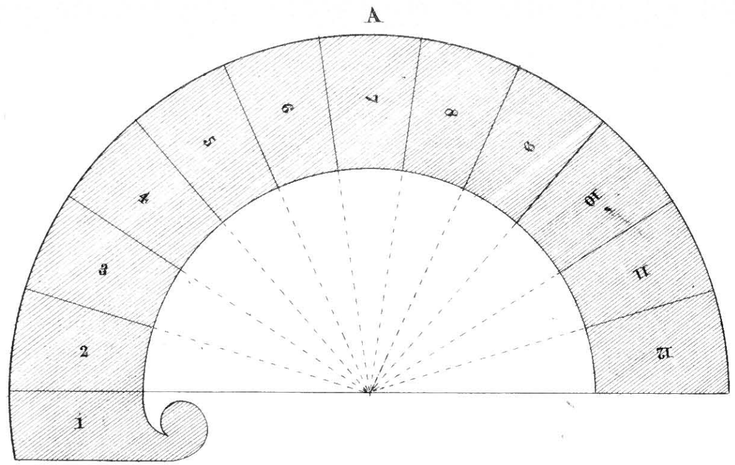


PLATE XI.

Shews an easy method of drawing a scroll by six points, which will answer for any kind of staircase.

The large square, or parallelogram, will answer for a full size scroll. Nos. 1, 2, 3, 4, 5, 6, gives the outside circumference; the inside you will procure from the same points; it also shews how to get out the shank of the scroll upon an entire new principle, by which a considerable quantity of materials will be saved. 1, 2, 3, on the shank is taken from 1, 2, 3 on the scroll; and by the application of the pitch-board as laid down, and by squaring therefrom as shewn, you will obtain the face mould.

The application for this is the same as in Plate V.

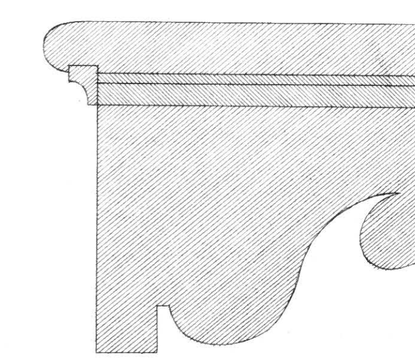


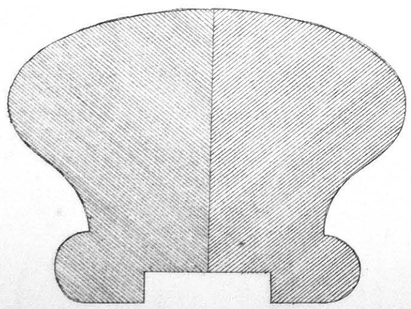
Shewing

PLAN OF ELIPTIC STAIRS.

And Falling Mould.

Designed by Langley Banks. Zincographed by C. Chabot.





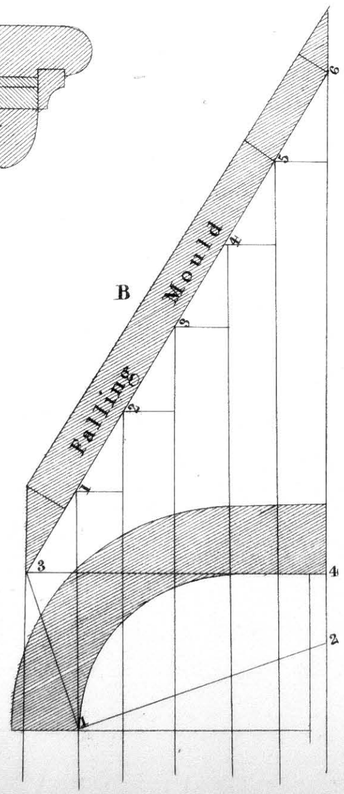


PLATE XII.

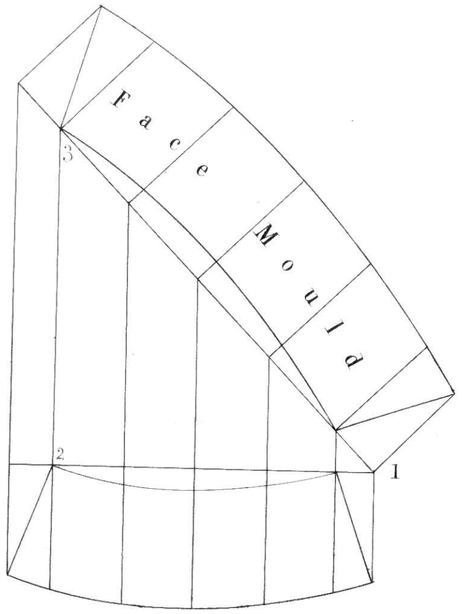
Shews the ground plan and falling mould of an elliptic stairs and rail; Fig. A shews the ground plan, and Fig. B the falling mould, and the stretchout of the well, and the steps, set up 1, 2, 3, 4, 5, 6, by strictly observing this plan, and setting up the steps as laid down, you will find the underside of your falling mould, the thickness of the rail giving the top side—the joints to be as shewn, viz: that whatever number of steps you intend getting out in one wreath, you will ascertain before getting out your moulds—strike out the proper size of your well, then the size of your rail as seen on plan.

To get the stretchout proceed as in all others, that is to say, divide the circumference into threeequal parts, then make the lines 1, 2, and square therefrom, then make the lines 3, 4, then 1, 3, will be the stretchout, and by paying due attention to the plan you will find every thing requisite to get out a falling mould of this character. The ground plan A. shews twelve steps; this is merely laid down to shew that stairs of this kind can be finished wherever you think proper. You will find a bracket and return nosings, also a plan of rail which will be found easy to the hand; by the plan you will see that the steps are struck from the centre—the face mould as shewn in Plate XIII. completes a staircase of this character. The Plates that are seen in Plate XIII. are applicable to the *one bevel.*—It can also be produced from the square cut as will be shewn in Plates XIX, XXI, XXII, XXIV.

Preface to the Seventh Number.

(Remarks.)

In this Preface the Author deems it necessary to give an idea of his method of getting out wall strings where there is winders in the well, so that the stairs may be made secure without the framing of carriages in the well, by notching the winders and flyers into the wall string. First get out the strings for the flyers, lay down the string on the bench, then refer to the drawing where the winders are shewn. Take the proper distance from the face of the last flyer to the face of the next winder, then place the string in such rake as will allow the height of the first tread, and be plenty of rise for the next step, and set the back string out by the same rule, also the last string for the winders, halve the strings where they meet the flyers, and screw or glue them together. Plug the wall to fix the string, and fix all the winders together at the shop as well as the flyers; on fixing apply the bottom flight, and make that secure. Then fix your winders, but in fixing either, care must be taken to observe the resting points correctly. This will finish the first or second stories. The strings should be tongued together in each angle. The Author will shew a Plate on this by which its utility may be more clearly seen and any mistake obviated.



Shewing

HOW TO GET FACE MOULD,

For an Elliptic Rail .

Designed by Langley Banks. Lithographed by C.Chabot.

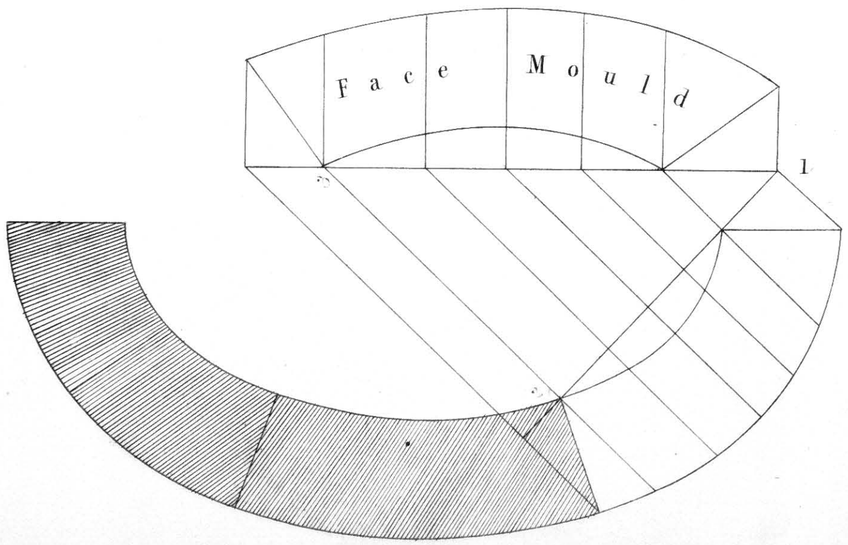


PLATE XIII.

Shews how the Face Mould is to be procured to suit the Stairs in Plate XII. Take a certain number of Steps, suppose four, and lay down the width of your rail in the position of the Stairs; cut the line 1, 2; set up the height 2, 3; cut the line 1, 3; that will give the pitch line; square your ordinates as shewn in the Plan, by so doing you will procure the Face Mould; get your Bevil as shewn in Plate X., and for applicant see Plate V.

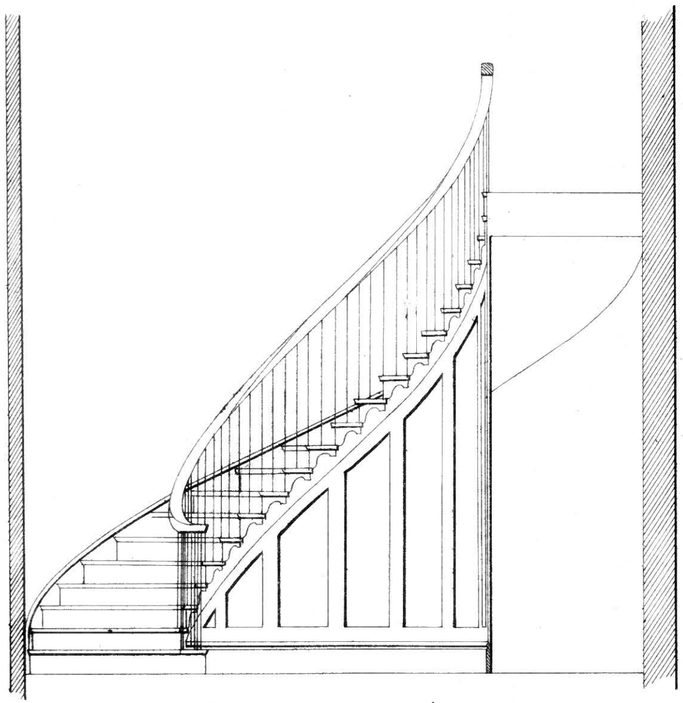
N.B. By comparing the method laid down in this Plate with that shewn in any other Work previously published, you will find (like in all other Plates in this Work) the *rail* produced from much less materials, and at once fitting from the saw the interior of the well.

Ground Plan & Elevation of

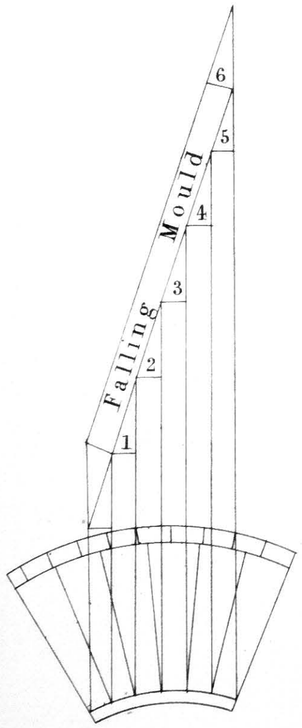
GEOMETRICAL STAIRS.

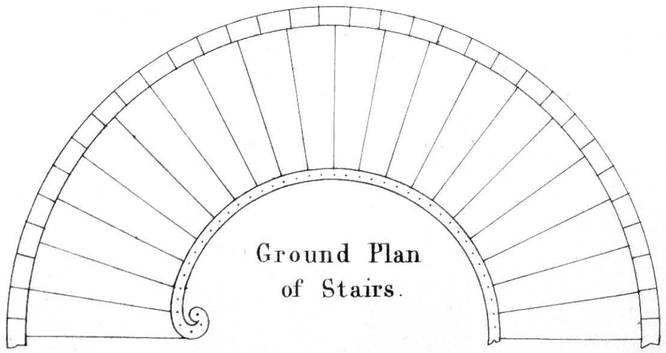
And Falling Mould to suit.

Designed by Langley Banks. Zincographed by C.Chabot.



Elevation.





Ground Plan
of Stairs.

PLATE XIV.

Shews the ground plan and elevation of a semi-circular geometrical Staircase, and Falling Mould to suit.

To obtain the Falling Mould lay down the size of the well, then the size of the rail, then take a given length of the radius, suppose six steps, as shewn in Plan. Then set up your steps 1, 2, 3, 4, 5, 6, which gives the under side of the Falling Mould, the thickness of the rail giving the top side. The joints to be as shewn on Plan.

For the Face Mould see Plate XV.

The elevation shews the rail inside and outside, and by the Falling Mould you will effectually obtain the top rail of the spandril, and by paying due attention to this part of the Plate, you will find everything required for this Class of Stairs.

Preface to the Eighth Number.

(Remarks.)

Some explanation and instruction to the inexperienced the Author thinks it desirable to give in this Preface respecting the Well. He would recommend the board to be one inch in thickness, and lessened or ripped from the back side to the thickness of a veneer on the face. Be careful to cut the board so that when applied in its proper position it will be plumb down with the cylinder; wedge the veneer tight round the cylinder, and set them with the best glue, and this will be found the strongest and best method of effecting it.

The Author trusts that as his work is considered to be a practical one, intended chiefly to teach the young and inexperienced, that this plain information will not be so far considered unnecessary. Before applying the veneer on the cylinder you will have the stretch out of the Well; and when marking the springing lines upon the veneer, then set out your steps before bending it on the cylinder, so that when glued up and properly set, you can cut out the Well before leaving the bench; and if the stairs are fixed correctly the rail will fit at once, which will save much time, and be found in its proper position if jointed by the method given in other references.

PLAN OF FACE MOULD,

To suit the Stairs plate 14.

Designed by Langley Banks, Lincograph.d by Chabot,

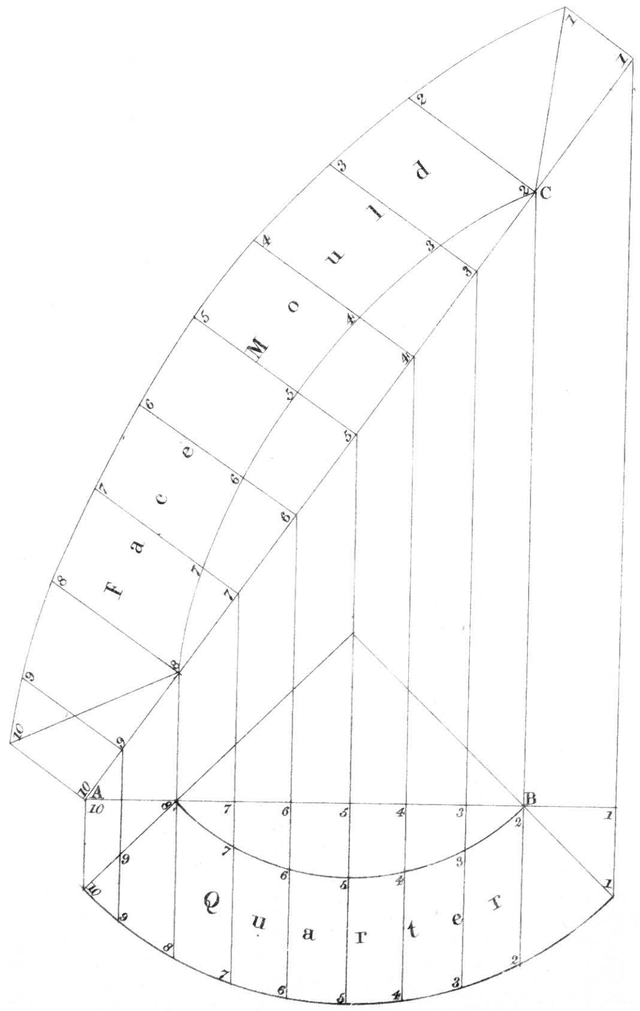


PLATE XV.

To obtain the Face Mould of a semi-circular geometrical Staircase, as in Plate XIV, first lay down the size of your well, then the width of your rail in the position of the stairs. Then take a certain number of steps to suit the plank, and lay down your quarter as shewn. Strike the line A. B., and set up the height B. C., according to the number of steps you intend to cut out in one wreath.

Observe here that the Face Mould upon this Plan will cut out a long wreath, say from four to six steps, with less waste than any other system ever before published. The Author requests especial attention to this Plate, as the following remarks are applicable to every other corresponding Plate touching a Face Mould throughout the work. Square from the lines A. B. and A. C., as shewn, and by taking 1, 1, in the quarter and setting the same from the pitch line 1, 1, you will find the line 1, 2, being the end of the Face Mould. Then set off 3, 3, in the quarter, and 3, 3, in the Face Mould, and all corresponding lines from 1 to 10 must be set off in the same manner.

The figures cannot fail to give every thing required for this as well as all other Face Moulds throughout the Work.

For the (*one*) Bevil, see Plate X., and for the Applicant, Plate V.

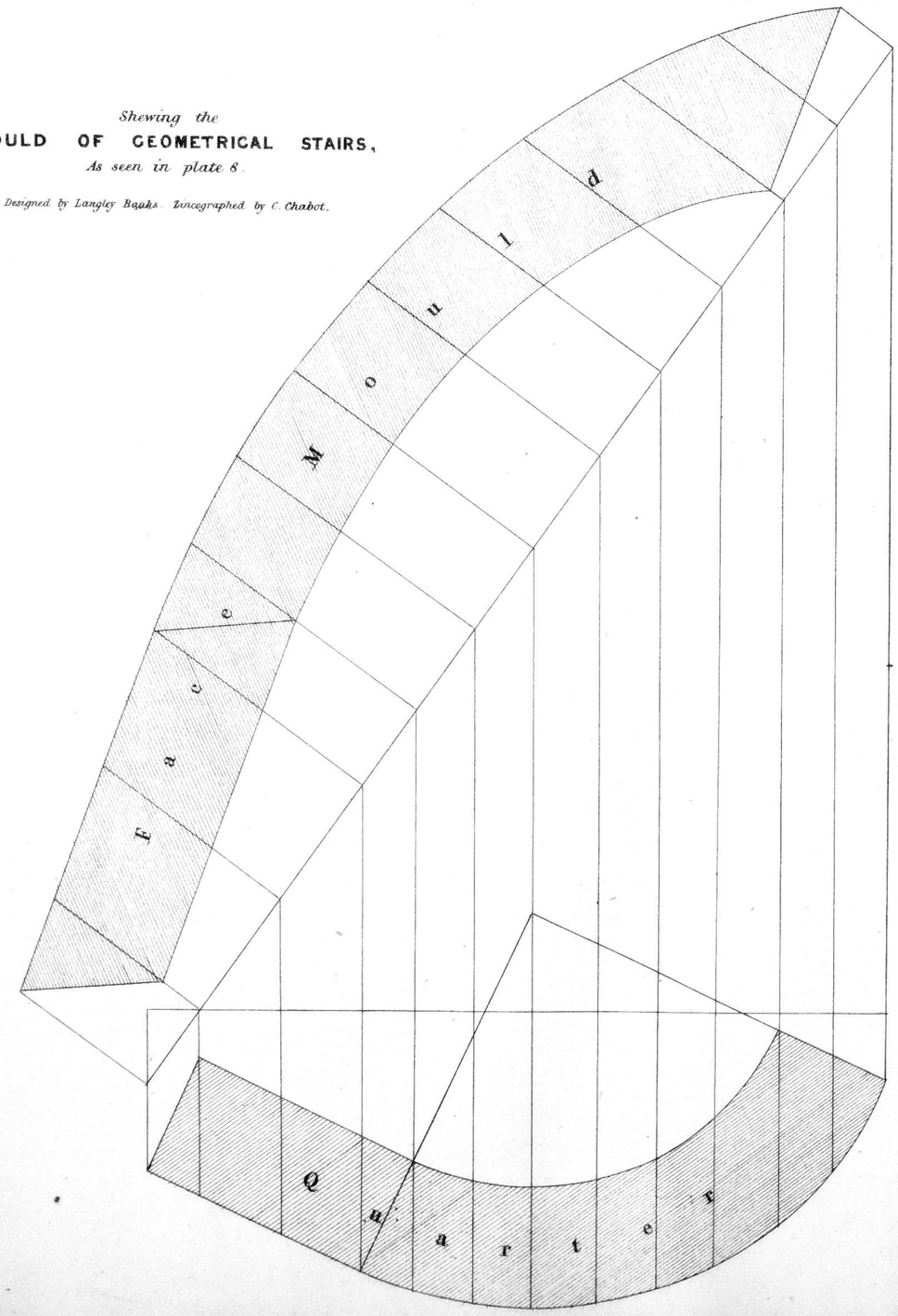


PLATE XVI.

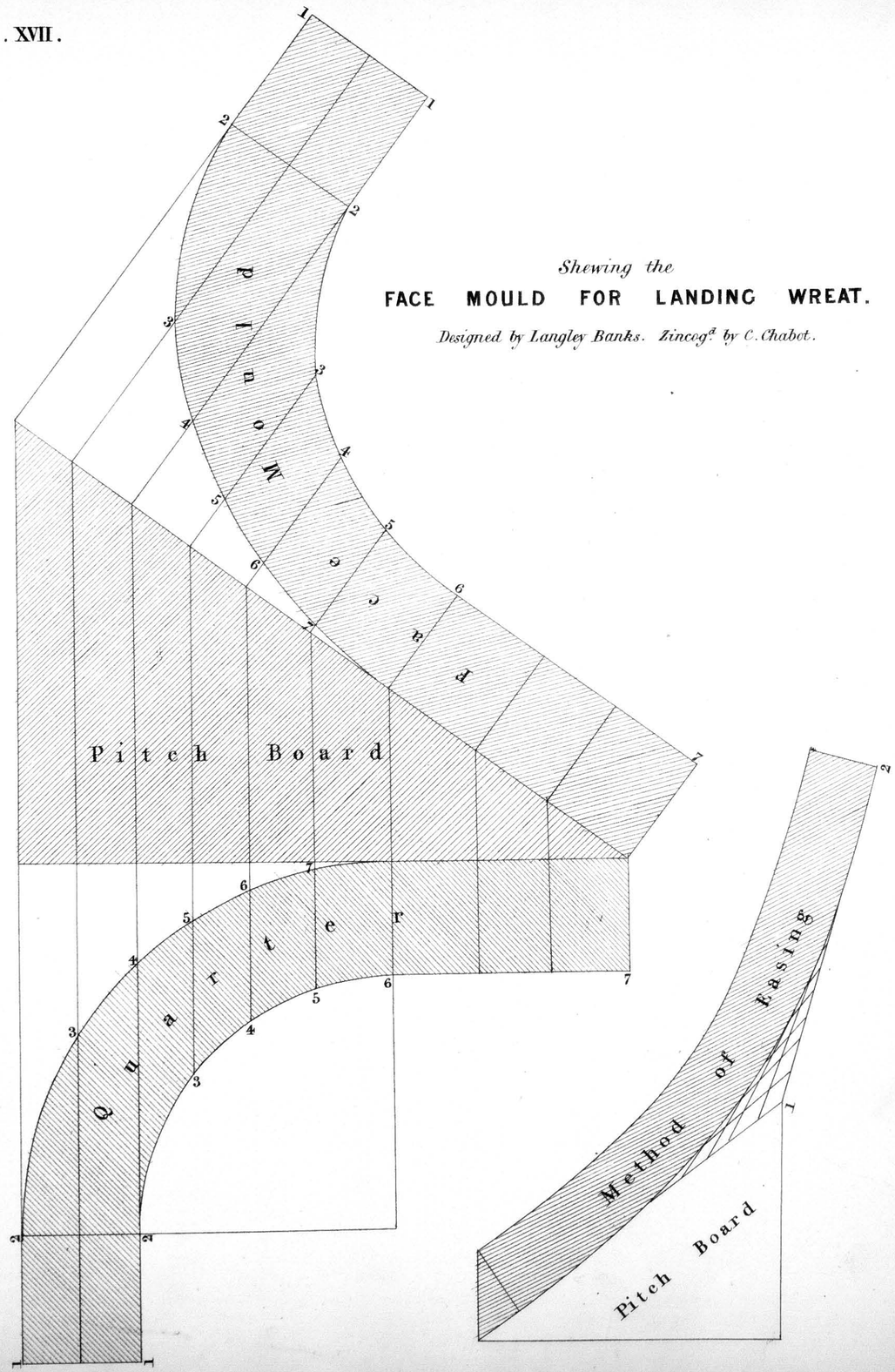
Shewing how to get the Face Mould for a rail, for a geometrical Staircase as shewn in Plate VIII. Cut the line 1, 2; set up your height 2, 3; cut the line 1, 3; that will give the pitch line; square the ordinates as shewn in Plan, by so doing you will produce the Face Mould. It must be understood that when the wreath is properly cut out, and the Falling Mould applied, this will give the plumb line, and by holding the square perpendicular to the plumb line, that will square up the rail, and the inside will be found to fit the well from the saw, and by squaring down the quarter as shewn, and marking the line 1, 2; this will get the Face Mould wider at the bottom end, so that there is plenty of material to get the rail in its proper form.—The Author made a reference to Plate XVI. for Face Mould and Falling Mould, but there not being sufficient space on that Plate, they will be given in Plate XXIV.

Preface to the Ninth Number.

(Remarks.)

The Author is desirous here to treat upon the system of Stairs, where nothing but winders constitutes the Staircase, as seen in Plate XIV. In preparing this class of Stairs, where there is apparently nothing to fix them to excepting the bottom and top, one step must support the other; so that to make these stairs secure depends much upon the workman: and, as there are many different systems, it is necessary to shew one such as will answer and make them secure. The way the Author recommends is, to make the tread one inch and a quarter in thickness and the riser the same, and the inside string I should get out of an inch-and-a-half plank, and take out of the back side every other inch and leave every other inch, that is to say, saw across the plank,—cut within a quarter of an inch of the face of the plank, and cut a little dove-tailing, so that when bent upon the cylinder and blocked and glued, the string cannot give way, and will be as strong as if the plank was straight upon the face, or had never been cut; and if the risers are notched back the thickness of the string and the bracket, and secured through the string into the ends of the risers, and the steps tongued together, as seen in one of the Plates, and the outside string bent in the same way or in thickness, as there might be an objection to the blocks, but if properly done this plan is the best. If screwed to the riser in the same manner, and made fast at the bottom and top, this will give general satisfaction.

PLATE . XVII .



Shewing the

FACE MOULD FOR LANDING WREAT.

Designed by Langley Banks. Zincog.ª by C. Chabot.

PLATE XVII.

Shewing how to get the Face Mould for a landing wreath when leaving the stairs, and to get the proper height of the rail on landing, that is to say, where there is room for the quarter to go back in the landing from the face of the last riser, but where there is not room for this, then ramp one step from the landing, and get out the mould as in Plate II. The only difference is, you must leave three inches of straight, as shewn in this Plate, and the pitchboard will answer for the Bevil in this case, by the same applicant as shewn in Plate V.—By holding this wreath up in its proper rake, you will see that the waste material, squares off the outside of the top, and the inside on the underside, then whatever straight you have allowed, that will be level upon the landing and be the regular height, namely, 3 feet 1 inch to the top side of the rail, and if due care be taken in the wreath, the great evil that has hitherto existed, will be obviated. The Author has also shewn how to get an easing of any rise —the pitchboard is laid down as shewn in line 1, 2, the supposed rake of winders, or any others, and for the top easing, where there is winders in the quarter, or in the well. To get the face mould, see figure on the Plate. This can also be produced by the square cut.

Shewing a

FACE MOULD FOR SIX WINDERS.

in the Quarter & Three sections of Rails.

Designed by Langley Banks. Lithographed by C. Chabot.

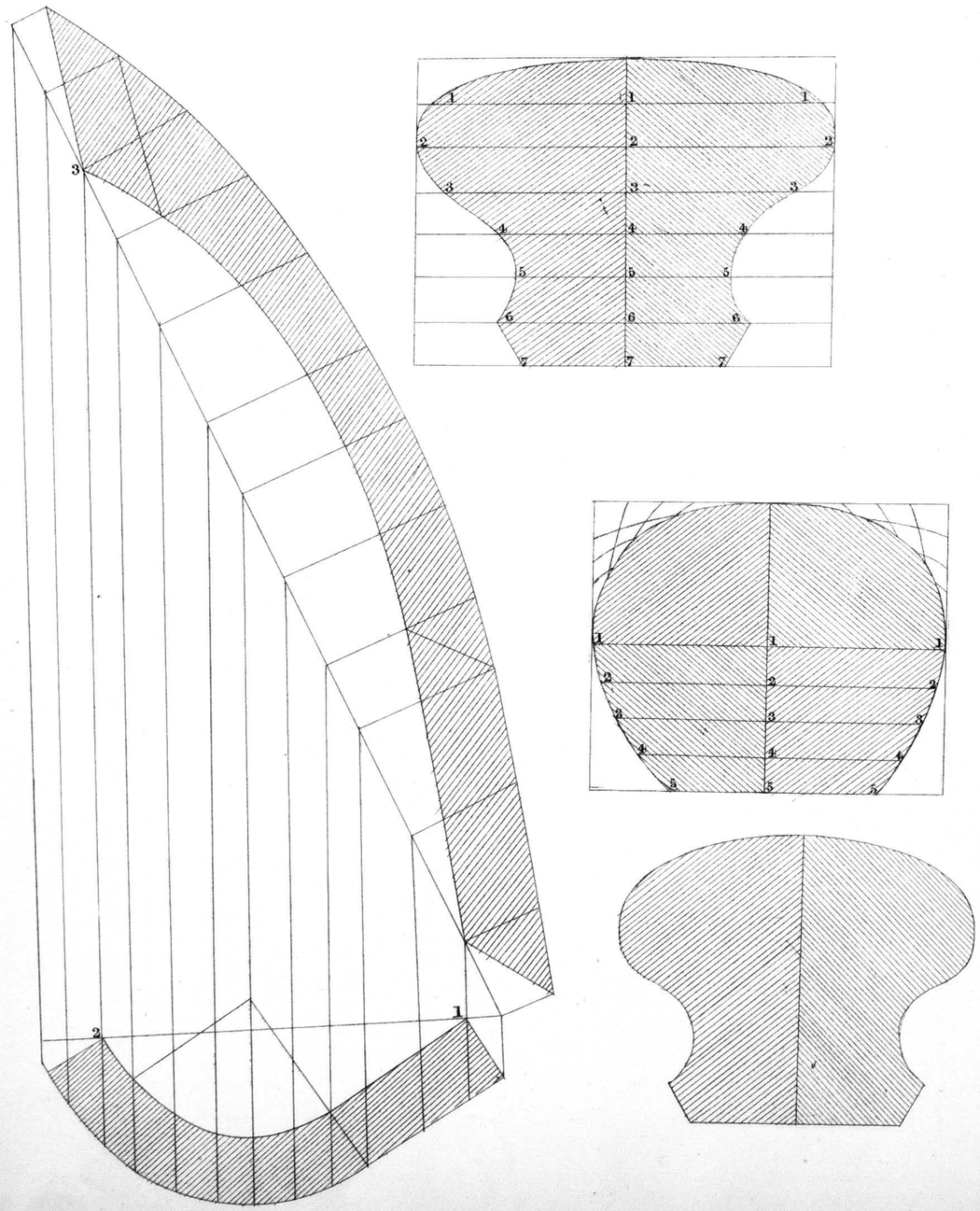


PLATE XVIII.

Shewing a Face Mould for six winders in the quarter.—This is upon a small scale, but upon the same principle as the Face Mould in Plate IV. otherwise than that the quarter is brought up to the line 1, 2; this is to shew that any mould can be got out by this method, but when this plan is adopted the mould is wider than is required as cut out by the One Bevil.—Whatever width the mould is to commence with, it will square up the same, still the other moulds are brought to the plank edge as seen in Plate V. You will perceive that there is one step of straight, so that the easing can be worked in the wreath as in others. This can also be got out by the square cut, and as this is a steep or quick pitch, the square cut will produce it by a great saving of material, from its not being cut a Bevil.—This Plate also shews sections of three rails, intended for the Young Man as patterns he is likely to require first to begin upon.

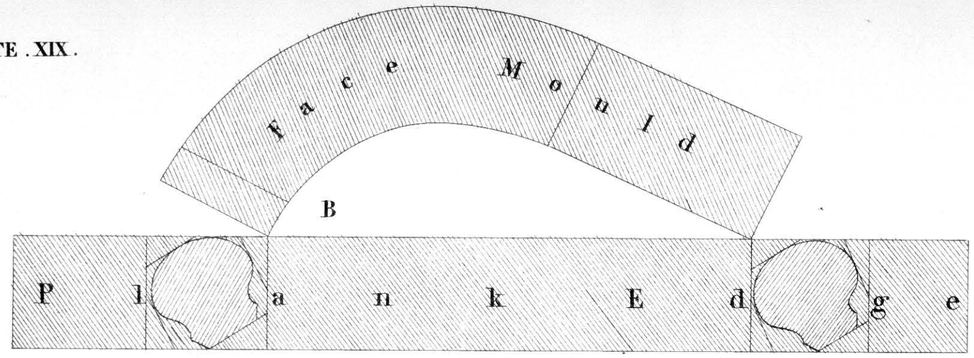
Preface to the Tenth Number.

(Remarks.)

Many improvements on Staircasing, but more particularly Handrailing, have been made from time to time to a greater or less extent; and much credit was due to the late Mr. Peter Nicholson, for the attainments he acquired by his studies towards perfecting the art; in fact he revolutionized, as it were, some part of the former system, but like the great Watt, who did not accomplish every thing to make the steam engine what it now is, so the late Mr. Nicholson fell short of accomplishing every thing that was possible in the art of Handrailing, *as this Volume unquestionably proves*, for it should here not be forgotten that what Mr. Nicholson obtained by less thickness of plank in producing the wreath, over any other system, he more than lost in the breadth of the plank. But by the principle shewn in this Work, the lesser thickness is obtained without any encroachment on the breadth of the plank, and this accomplished, too, by more methods than one, *either of which* at once doing away with *his* system of Springing, Setting Back, or Bevelling the Plank Edge; so that whether you take the application of the *one* Bevil only, instead of two Bevils, or above all the production of the "Square cut," either of which is sufficient to demonstrate that the summit of the art was never obtained before the publishing of the present Work, and the whole accomplished, too, by so few lines, and those few being reduced to the simple right angle, instead of (at least to the learner) puzzling acute and obtuse angles. The principle altogether only requiring but little letter press to convey every facilitating information necessary for the most ordinarilly discerning and inexperienced workman.

The Author will add but one further remark in elucidation of this Preface, by an allusion more particularly to the Square Cut, which produces the wreath in that incredible way by cutting square through the Plank, that the few persons whom he has put in possession of it, designates it—"One of the wonders of the world."

PLATE . XIX .



Shews

FACE MOULD & APPLICANT,

For a Level Landing Wreath, by the Square Cut.

Designed by Langley Banks. Lincographed by Chabot.

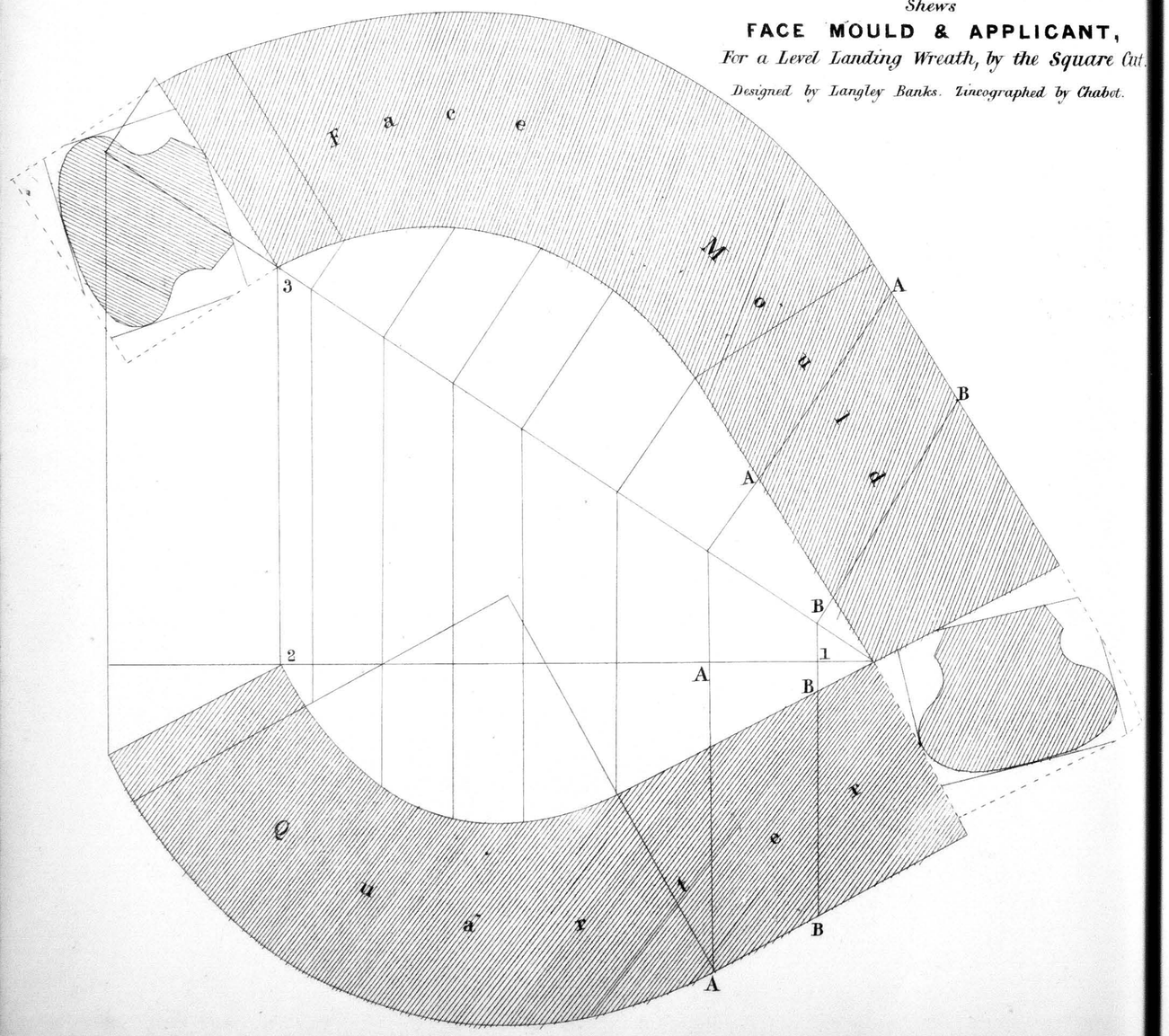


PLATE XIX.

Shews the first drawing of the *Square Cut*.—This Plate brings before your notice a Face Mould for a level landing as seen in Plate I. and is shewn half full size, in order to be better understood: it at the same time shews that a rail of any character can be obtained by cutting square through the plank, saving half materials and much labour, giving the workman an original, simple, and most correct method of producing the wreath, such as no other book has ever shewn, nor has any prior Author ever been in possesion of to communicate. To get out the Face Mould, lay down the qnarter as on Plan, make the line 1, 2; set up the height 2, 3; then make the line 1, 3; that will be the pitchline: square from 1, 2; and from 1, 3; and set off from the same for the interior of the Face Mould,—let the Fig. A. A. upon the quarter be A. A. on the Face Mould, and B. B. be the same, and what the width of the straight end of the mould produced by those letters, make the mould the same in the well, that is to say of a parallel width as in Plan. · The section of rails at bottom and top end, give the method of squaring up the rails, but understand the inside should be squared up first, which is seen by the Plan, and then take off at the top end springing, and of the bottom, as seen in plan, apply the falling mould in the inside, when that is done the form of the rail is at once seen; there you have the inside carefully to mind, which with a little attention, will prove exceedingly plain. This cut is considered the greatest achievement ever accomplished in the Handrail Art.—The Plate marked B. shews the applicant for the square cut, and also shews the plank edge and section of rails top and bottom. This Plate is shewn quarter full size.

PLATE . XX.

Shews

WALL STRINGS FOR FIVE WINDERS,

in the Well.

Designed by Langley Banks. Lithographed by Chabot.

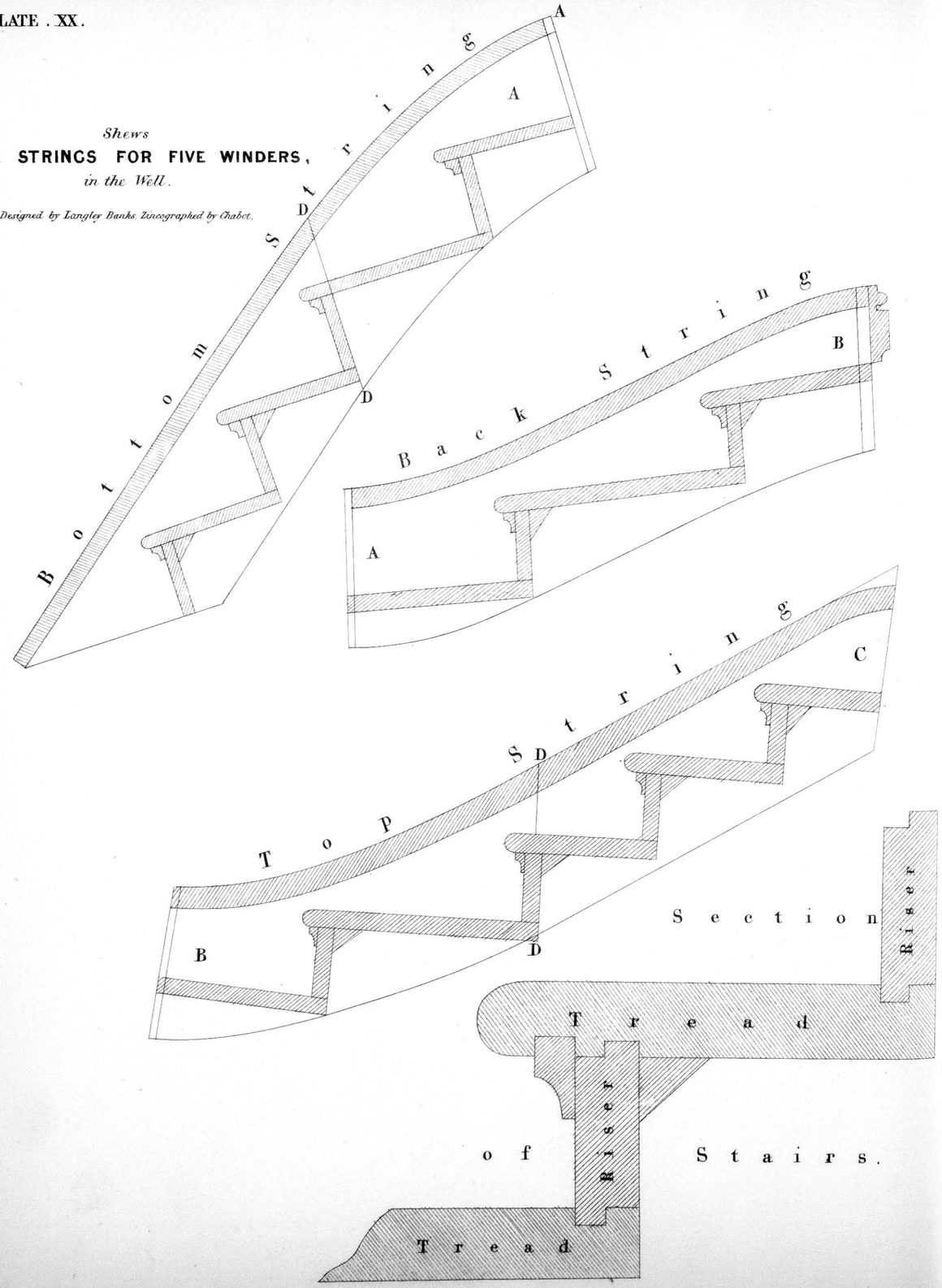


PLATE XX.

Shews a Wall String for a Staircase with five winders in the well, and of the winders grooved into the string the same as the flyers. Fig. A shews the bottom string with two flyers and one whole winder, and one half the angle ditto, and by joining A. A., to the back string, the other half of the winder will be seen; and by joining B. B., that with additional flyers at the bottom or top, (if required) finish the first or any other story:—bear in mind that you can introduce any quantity of winders up to eight.—This Plate is introduced to shew the system of letting winders and flyers into the strings, which strings should be halved, glued and screwed together at D. D., which will make them one, upon this Plan you may get them out of eleven inch wide board, but if this be not sufficient, then get the board out at full length, and glue on to form your easings, but the first plan is the best and strongest, and is preferable to where there are carriages in the well.—The sections of stairs, shews the manner of putting the step and riser together.

Preface to the Eleventh Number.

(Remarks.)

This Preface is intended to shew the system of cutting out wreaths both by the One Bevil and by the Square Cut, so that no information may be omitted that may afford the fullest instructions to the Subscribers to the Work, or to leave out any thing that may prove in any way useful to him. It must be understood that 1, 3, in every Plate is the Plank edge, and that both points must in every instance be brought to the plank edge on both sides. If by the One Bevil, the inside will be ready to square from; but when cut out by the Square Cut, you will have to take off the top aris and the bottom of the under aris, then by looking at the Plate and the section of the rails, and the reference given, you will find this not only to save much material but also much time, for so soon as you have got the inside to fit, there is so little to take off that it is done as it were at once, and in the same form as any other. The same Falling Mould, as shewn in Plate III, is applicable, only this is one-third the full size, and Plate I, quarter full size.

PLATE. XXI.

Shews

PLAN OF FACE MOULD FOR THREE WINDERS.

in the Quarter By the Square Cut.

Designed by Langley Banks. Lincographed by C.Chabot.

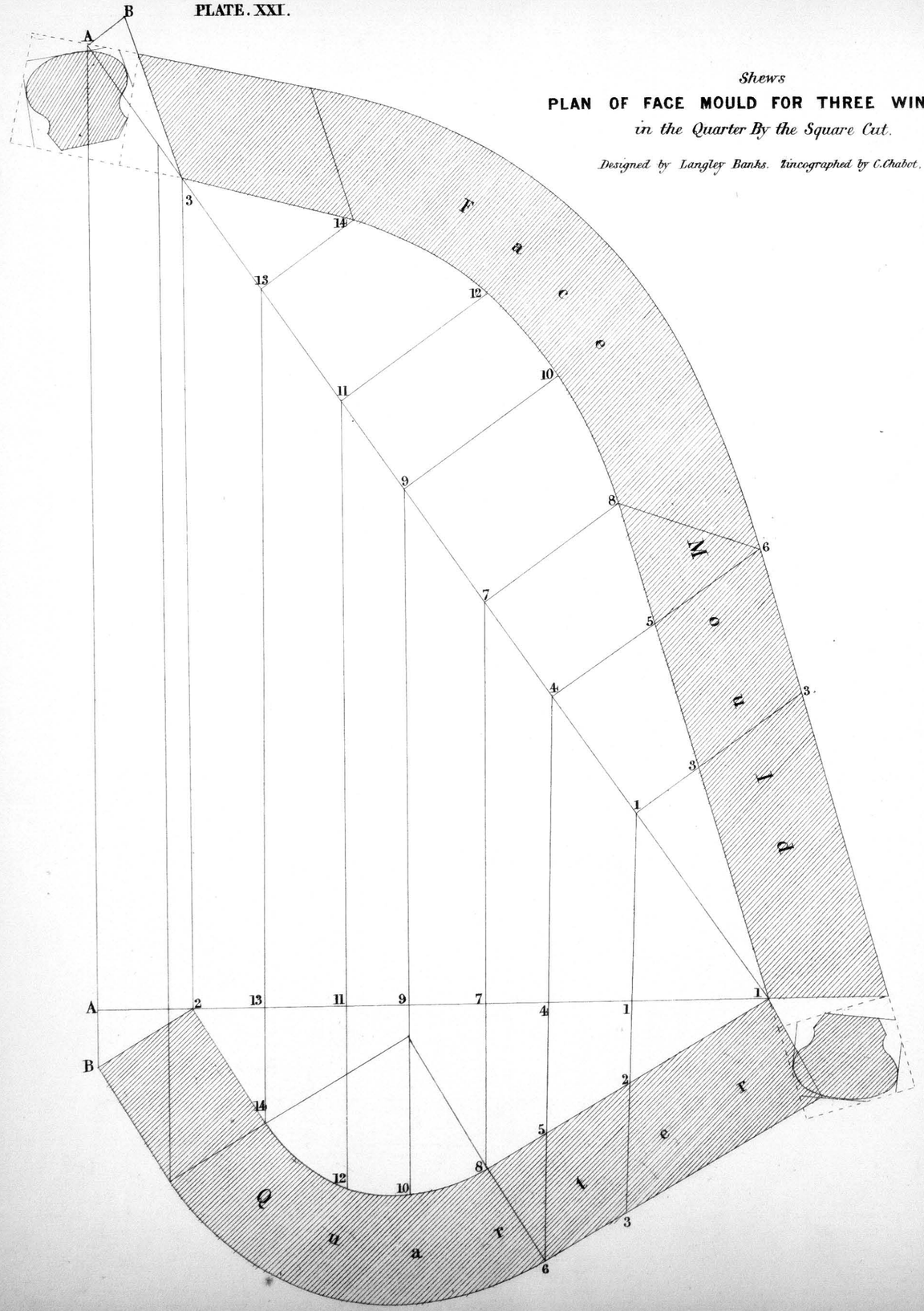


PLATE XXI.

Shews a Face Mould for three winders in a quarter.—This mould is cut square through the plank,—to procure this Face Mould, strike out the inside of the rail, and then the width of the same, and as much straight as you intend getting in the wreath; then lay down the quarter as in Plan, make the line 1, 2; then set up the height 2, 3; then make the line 1, 3; that will give the edge of the plank; to find the joint of the Face Mould, A. B. on the quarter, A. B. the joint; to find out the width of the rail, set off from 1, 2, 3, on the quarter, and 1, 2, 3, on the Face Mould, and 4, 5, 6 the same, then by setting off from the interior of the Face Mould, and when cut square through, look at the section both top and bottom, and this will give you the system, and shew after being cut square, how the rail is to be produced as well by being cut square, as if cut on the Bevil: the way to do this is, to take the inside as seen on Plan, then apply the Falling Mould, and that will be every thing required; for when that is done, you have only to joint from the inside of the dotted lines, which shews the wreath when cut from the plank. By paying ample attention to this drawing as well as the others on the square cut, you will find every thing needed.

PLATE . XXII.

Shews

FACE MOULD FOR EIGHT WINDERS IN

the Well by the Square Cut.

Designed by Langley Banks. Lineographed by C. Chabot.

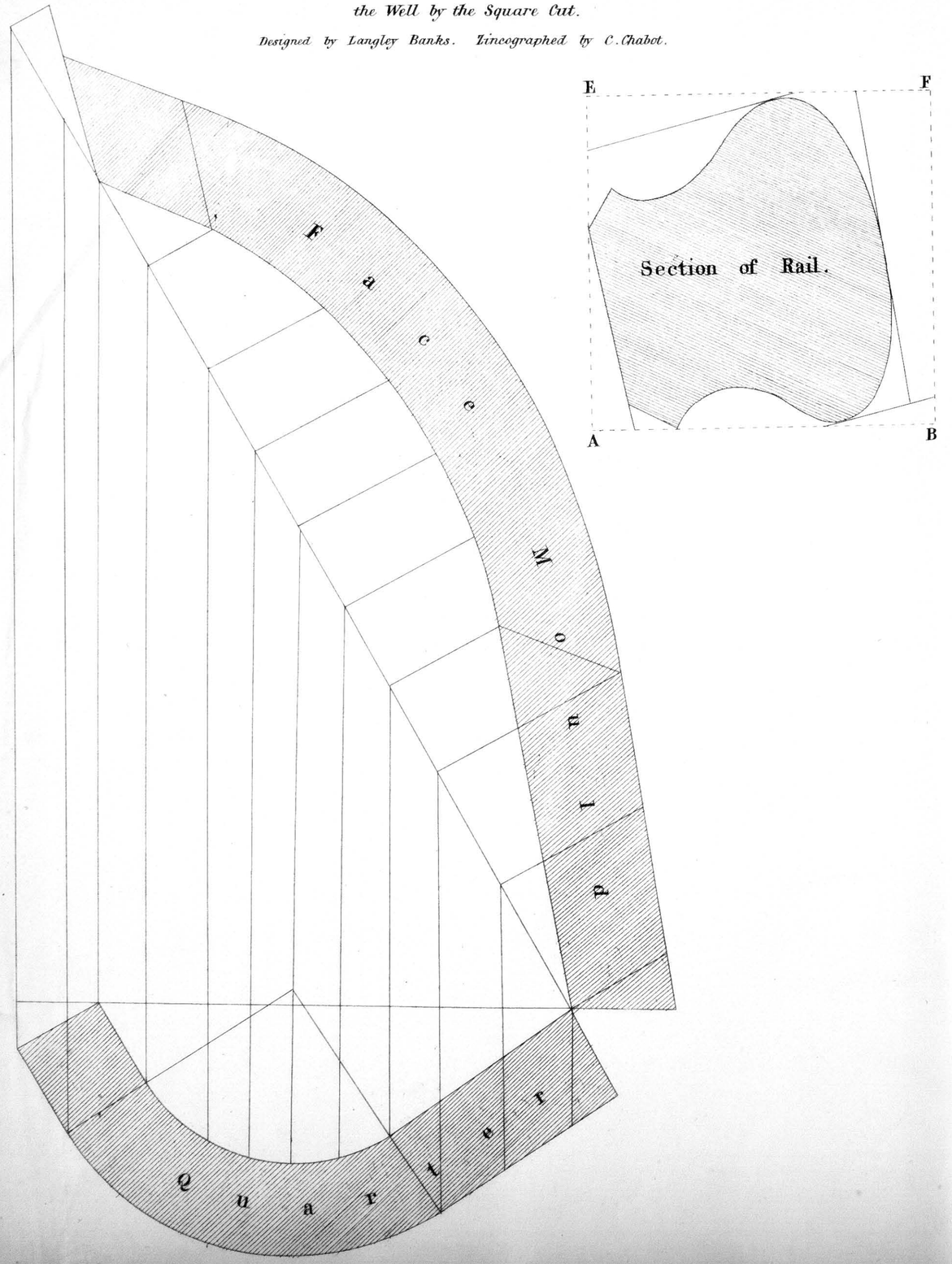


PLATE XXII.

Shews the Face Mould for eight winders in the well, on the square cut.—In order that the learner may not cut the wreath too short, I have shewn a little straight in the top end, so that he can make a butt joint, and have a little to spare: this is shewn entirely for the learner, as it is not improbable, but he would without practice, otherwise get it out too short: When the Falling Mould is applied, that will give the butt joint, this must work in a step of straight, or it will do with three inches at the bottom, that is left to you, the same as seen, A. B; E. F. in the wreath when cut out, A. B. the bottom side, when cut out equal, and E. F. the top side, and if due attention be paid to this, it will shew the bottom section as well as the top; by getting F. B. from the top side at the bottom end, will shew how much to take off the bottom aris, as well as the top, and give the idea so plain, that it cannot fail to be clearly understood.

Preface to the Twelfth Number.

(Remarks.)

In the elucidation of this Work, the Author begs to recapitulate, that it is brought out to teach the Young Man, the most easy and simple principle of the Art of Staircasing and Handrailing, and at the same time is admitted by the professed Staircase hands in every town that he has visited, that it contains that which they themselves feel bound to appreciate—as being original and useful,—saving much time and materials over any system ever brought before them, or acquired by their own practical experience; and it is also universally admitted, that a work by a practical man, even without the extraordinary result of the One Bevil and Square Cut has been long wanted, to give that plain and literal view of the Art, obviating that intricacy found in every former system, and at the same time throwing aside the setting back, bevilling the plank edge, and springing the plank, systems altogether puzzling and waste of materials, and so difficult to be understood, that but few persons can ever acquire it: but here theAuthor has endeavoured to give a system by which the inexperienced cannot fail to become an entire master of it; but should any one be desirous of asking for any information whatever, any queeries will be promptly applied to, though the Author cannot but think that the various Plates and Letter-Press, will afford by due attention every thing required.

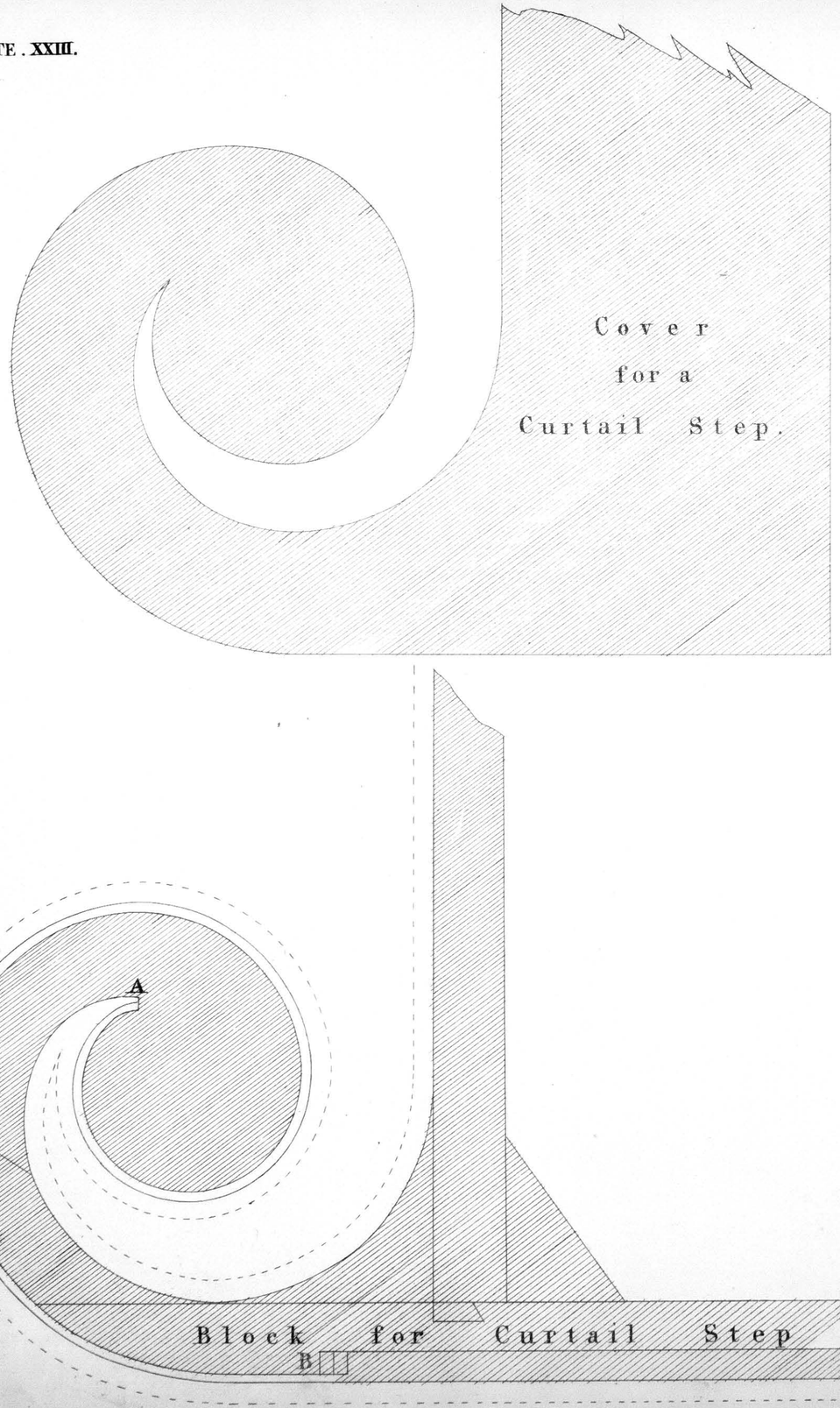
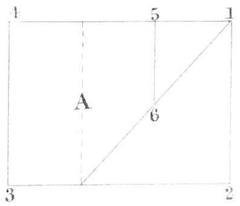
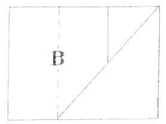


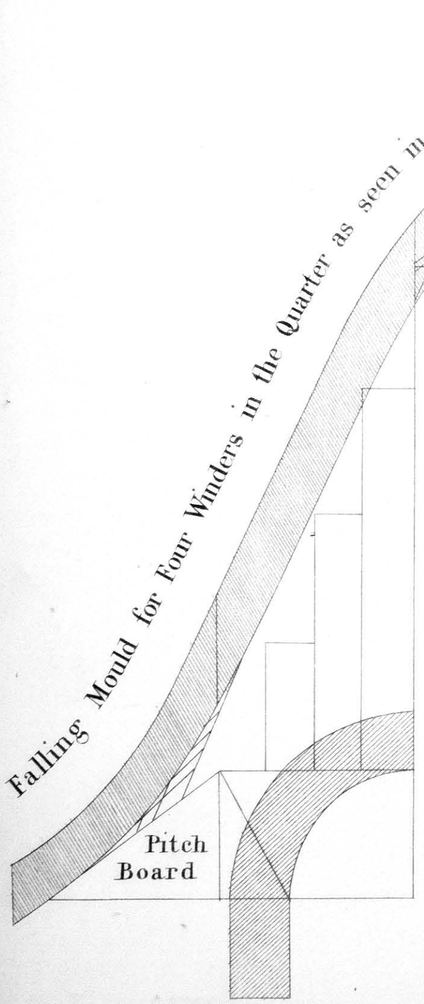
PLATE XXIII.

Shews the block and cover for a curtail step.—The block is that which the Author would recommend.—First dovetail two pieces of wood together, then look at the Plate, by which you will find that the end grains are upwards, the glueing will thus adhere much better, each of which may be worked before glueing together, and may be done without veneering the inside radius, that is from the rise of the step to the top of the string board.—The dotted lines shews the nosing, and the cover is the same size.—*This Plate is intended to shew the inexperienced a plain and simple means, obviating any mistake that may otherwise arise upon this part of the work, namely, the getting out of the block and nosing, which when properly understood, will, like every other Plate in the Work, afford the necessary practical information.

* Fig. A upon the Block is a wedge to secure the veneer. Notch the face of the Block as shewn at B, so as to wedge the veneer tight rouud the curtail step.







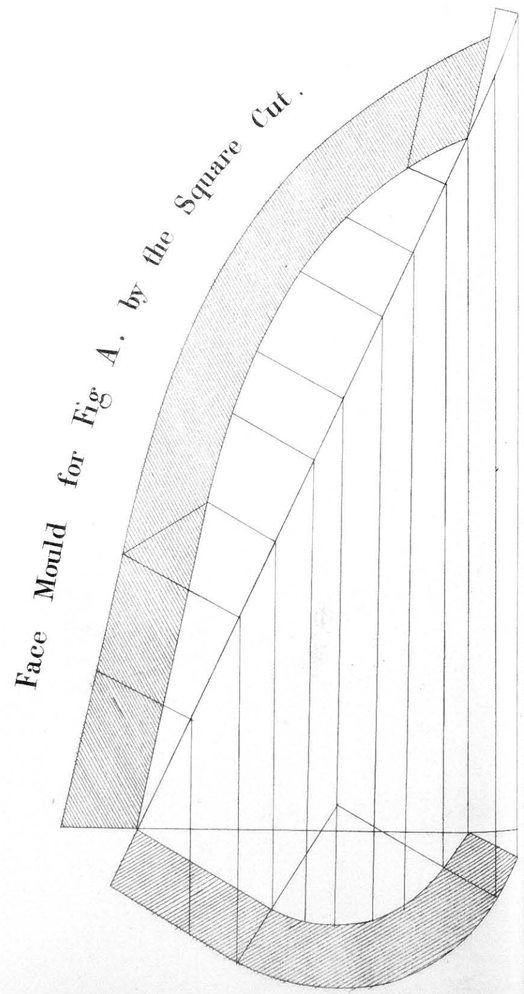


PLATE XXIV.

Shews the Falling Mould for four winders in the quarter, to suit the stairs in Plate VIII. marked A.—The Plate also shews the Face Mould, to suit the principal of the *square cut*.—The Falling Mould shews the joint at the top end, and the wreath will work the same length as is shewn in Plan. To obtain the Falling Mould and the Face Mould, see the Plate.—This Falling Mould will answer for the winders adjoining the Scroll.—The parallelogram marked A, will answer for a scroll thirteen and half inches outside.—The one marked B. a scroll nine inches outside, and the Fig. C., four and a half inches outside.

These three different figures are put in at the request of some Young Men, each figure carrying out the principal of striking different size scrolls, as shewn in Plate XI.

The Author having endeavoured to insert in the various Plates and Letter-Press throughout the Work, every thing necessary to lead the inexperienced up stairs, and make him a complete master of the Staircase Art.