

**Specification of Joel Benedict Nott : furnace with rotary cylindrical grate :  
tubular boilers : heating apparatus, &c.;**

**Contributors**

Nott, Joel Benedict.

**Publication/Creation**

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A:D. 1830 . . . . . N° 6026.

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S P E C I F I C A T I O N

OF

JOEL BENEDICT NOTT.

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FURNACE WITH ROTARY CYLINDRICAL  
GRATE; TUBULAR BOILER; HEATING  
APPARATUS, &c.

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L O N D O N :

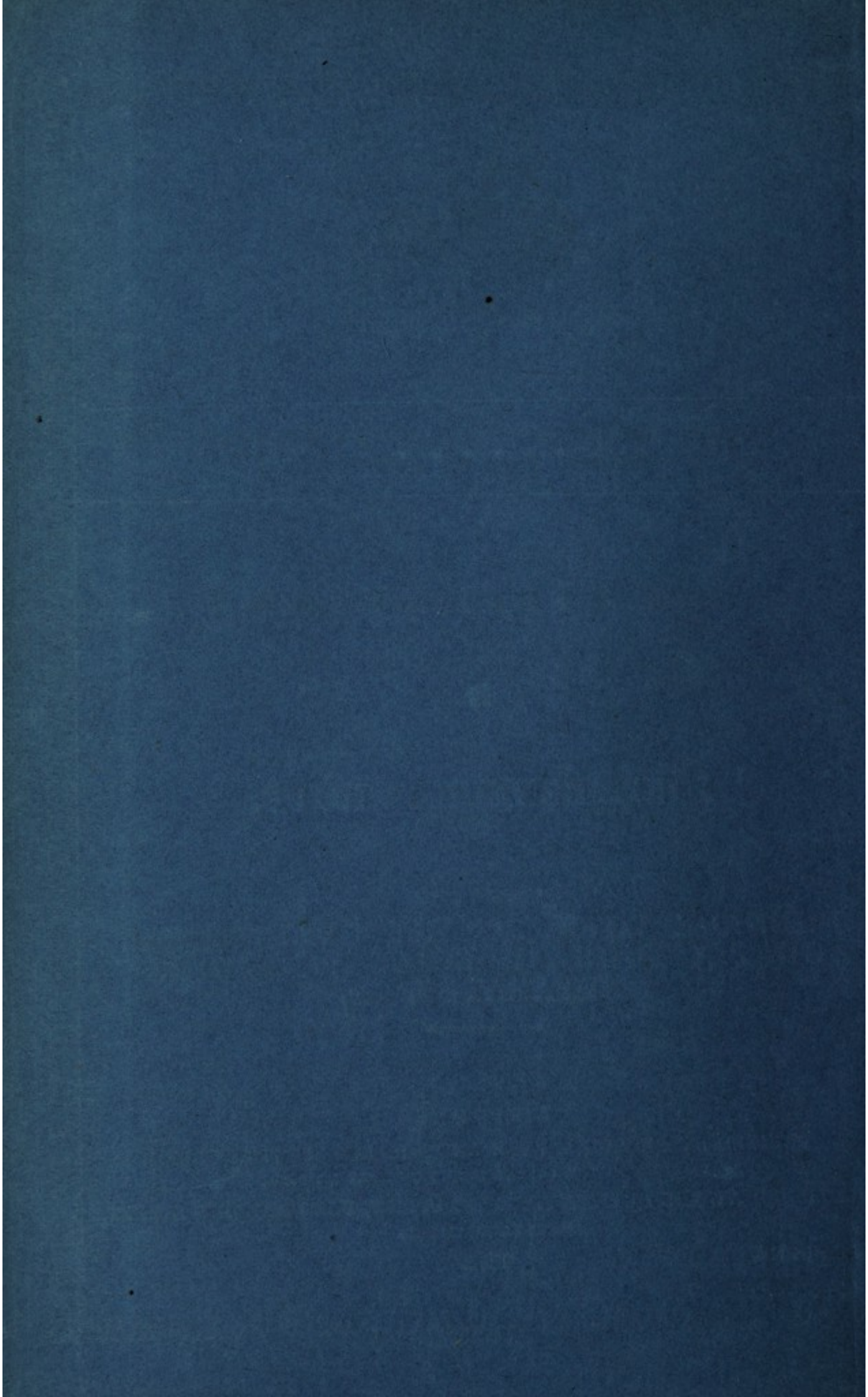
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A.D. 1830 . . . . . N° 6026.

**Furnace with Rotary Cylindrical Grate; Tubular  
Boiler; Heating Apparatus, &c.**

**NOTT'S SPECIFICATION.**

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOEL BENEDICT NOTT, of Schenectady, in the State of New York, but now of Bury Street, Saint James', in the County of Middlesex, Esquire, send greeting.

5 WHEREAS His present most Excellent Majesty King William the Fourth, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Fourth day of November, in the first year of His reign, did, for Himself, His heirs and successors, give and grant unto me, the said Joel Benedict Nott, His especial licence, sole privilege and authority, that I, the said Joel Benedict Nott, my exors, admors, and assigns, or such others as  
10 I, the said Joel Benedict Nott, my exors, admors, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein mentioned, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick upon Tweed, my Invention of "CERTAIN IMPROVEMENTS IN THE CONSTRUCTION OF A  
15 FURNACE OR FURNACES FOR GENERATING HEAT, AND IN THE APPARATUS FOR THE APPLICATION OF HEAT TO VARIOUS USEFUL PURPOSES," communicated to me by a certain foreigner residing abroad; in which said Letters Patent is contained a proviso that I, the said Joel Benedict Nott, shall cause a particular description of the nature of my said Invention, and in what manner the same is to be  
20 performed, to be inrolled in His Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.



*Nott's Improvements in the Construction of Furnaces for Generating Heat, &c*

**NOW KNOW YE**, that in compliance with the said proviso, I, the said Joel Benedict Nott, do hereby declare that the nature of my said Invention, and in what manner the same is to be performed, are particularly described and ascertained in and by the following description thereof, reference being had to the Drawings hereunto annexed, and to the figures and letters marked thereon 5 (that is to say) :—

My improvements in the furnace for generating heat, and in the apparatus for applying it to various useful purposes, consist partly in improvements in the furnace or furnaces for generating heat, and partly in improvements in the apparatus in which the heat so generated is applied to various use- 10 ful purposes. I construct the furnace in which heat is evolved separately from the apparatus where it is applied, and connect the two by a flue of slow conducting material; and I place both on rollers, so that they can be separated or combined at pleasure. The various parts of which the furnace is composed are, firstly, the basis A, Figure 5, upon which the 15 rest of the furnace is built. This plate is furnished on its upper side with eight projecting studs G, G, G, G, against which are to be placed the two side plates of the furnace H and I, Figures 9 and 10, as shewn by dotted lines H and I; and also the front and back of the ash pit J & K, Figure 11 and 12, as shewn by the dotted lines J and K; also with four recesses B, B, B, B, 20 near the four corners, in which are to be placed the lower shoulders E, Fig. 6, of four hollow pillars or segments of pillars C, C, Figs. 1, 2, and 3. This basis does not project between the recesses B, B, for the front pillars C, C, Fig. 1, but a little way beyond the front of the ash pit, as shewn by the dotted line J. Secondly, the said plates or ends of the furnace H and J, Figs. 9 and 10. 25 These plates are each furnished with a stud or small projection near the middle of their upper end 23, 23, Figs. 12 and 13; one of these side plates I, Fig. 10, has a hole 24, near the middle of the plate, and about one third of its height. Thirdly, the front of the ash pit I, Fig. 12. This plate is furnished with a bead upon part of the front of its upper margin 25, Figs. 4, 12, and 14, projecting 30 outwards and upwards also, with studs 26, 26, Figs. 4, 12, and 14, near the upper margin of its inside. There is also a gap 27, Figs. 12 and 4, in the lower part of this plate, through which the ash drawer 15, Figs. 1 and 4, is to pass. Fourthly, the back plate of the ash pit K, Fig. 11. This is simply a flat plate. Fifthly, the grate frame L, Figs. 13, 14, 18, 19. This is in the form 35 of a hopper with a flat border, and has two projecting ledges 28, 28, Fig. 19; along the insides of the front and back of the bottom of the hopper, part upon the edge of the back of this frame, is a border 29, projecting upwards; also several studs 30 and 31, Fig. 19, projecting from its upper and under sides,



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and not very far from the rear edge 29. To the inside of this hopper, adjacent to the end plate I, Fig. 10, which has a hole through it, 24, Fig. 10, is securely fastened, by rivetting or otherwise, a semicircular carriage S, Figs. 20 and 21, with radial arms 32, 32, Fig. 20, carrying a central socket T, Figs. 20 and 21.

- 5 Upon the opposite side is similarly fastened, as shewn at S, Fig. 18, a similar carriage carrying a smaller socket. Sixthly, a rotary cylindric grate M, Fig. 23. This grate is composed of thin circular rims *b*, Fig. 25, from which a third or fourth part, more or less, is wanting, as shewn at *g*, Fig. 25; each of these rims is furnished with studs *e*, *e*, *e*, *e*, *e*, *e*, *e*, Figs. 25 and 26, projecting  
10 from one side only, for the purpose of staying the rims asunder when put together; also with holes *d*, *d*, *d*, Fig. 25, near the middle and each end, through which holes rods *c*, *c*, *c*, Fig. 23, are passed for the purpose of bolting them together. These rods are furnished for the purpose with heads *c*, *c*, *c*, and also with screwed nuts *f*, *f*, *f*. The two exterior rims *Z*, *Z*, Figures 23 and 24, are  
15 furnished with radial arms, carrying a central opening *a*, Figure 24, through which central opening passes the axle W, by which the whole, when thus put together, is sustained in place.

The general appearance of this grate when thus combined, is that of a segment of a hollow cylinder, and when in place, the axis is horizontal, and the  
20 convex sides of the rims turned upwards. In this position it should nearly fill the opening in the bottom of the grate frame L, Figure 19; instead of making these rims circular they may be made in the form of polygons, cutting off one or more sides, or angular, that is to say, in the form of a roof with the angle turned upwards, or plane. But this last form is the worst, except for  
25 facility of construction, and other curvilinear or rectilinear forms will answer the purpose better the nearer they resemble the above described circular forms, which I consider the best. Seventhly, an axle W, Figure 22, for the rotary cylindric grate. This axle is furnished with pivots U and V, to correspond with the sockets, as shewn by dotted lines in Figure 18, in the grate frame;  
30 between the two pivots it is square Y, Y; also with a collar 21; the part projecting beyond the collar X is square. This axle W, when in place, Figures 2, 4, 8 & 13, passes through the hole 24, Fig. 10, in the side plate of the furnace I, Fig. 10, also through the sockets T, T, in the carriages S, S, of the grate frame as well as through the square holes *a*, Figure 24, &c. It is held  
35 in its place by means of an escutchion 19, Figures 2, 13 and 34, which fits against the collar 21, Figure 22, and which is also secured to the plate I, Figure 10, of the furnace by screws. By means of a winch or handle, attached to the square part of the axis projecting beyond the side of the furnace, the grate may be put in motion for the purpose of passing ashes through, or so far  
40 revolved as to produce an opening between the grate and the frame, through



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which the coal cinders may be emptied (by turning the grate until the extremities of the rims of the grate are in the same vertical plane). Eighthly, the door plate N, Figures 1, 4, 32 and 35. There is a gap or opening in this plate, around the inside of which there is an irregular border, projecting inwards, *u*, Figures 35, 33, 34 and 38, which constitutes a partial casement to the corresponding opening in the brickwork, Figures 4 and 30, of the fire-place. This border is furnished upon each of its opposite sides, near the bottom, with an aperture *s* and *t*, Figure 35; one of them, *s*, Figure 35, is elongated upwards as shewn at *v*; also with an aperture 33, Figure 35, upon one side, a little above the middle; also with an aperture near the top of each opposite side 6, 6, Figures 33, 34, and 35; also with a projection upon each of its opposite sides 9, 9, Figures 33, 34, & 35, near the middle. Ninthly, a vertical grate 4, Figures 4, 33, 34, 35 and 38. This grate is formed of slender vertical bars, connected by horizontal ones. These vertical bars are narrowed at bottom 4, Figures 33 and 34. This grate is furnished on each side with a pivot 5, 5, Figure 35, connected by a bent angular arm 7, 7, Figure 38, to each side at its upper edge 5, 5, Figure 35, which are to be lodged when in place in the holes or apertures 6, 6, in the upper part of the border *u*, Figures 33, 34, 35, and 38, surrounding the aperture in the door plate of the fire-place N, Fig. 35. The grate 4 is put into its place by being introduced nearly horizontally and obliquely into the aperture in the door plate of the fire-place N, Figure 35, when one of its pivots 5 being inserted into one cavity 6, Figure 35, the other pivot 5, Figure 35, may be lodged in its corresponding cavity, and then the grate may be placed in its proper vertical position, in which position it latches behind the projections 9, 9, Figure 35, on the sides of the border surrounding the opening or aperture in the door plate of the fire-place N, Figure 35, by means of a projection 8, 8, upon each side of the grate near its lower part *g*, *g*, and for this purpose the pivots are allowed a great deal of vertical play in their sockets. Tenthly, a glazed door *q*, Figure 32. This door is composed of two separate parts *w* and *x*, Figure 36, edge view, which are united together by pins at the corners *y*, *y*, *y*, *y*, Figures 32 and 37, & *y*, *y*, Figure 36; the outer part *w*, Figure 36, is perfectly flat, except a projection 3, Figures 32 and 36, near the middle of the upper part of its front, by means of which the door may be lowered or raised. The inner part *x*, Figures 36 and 37, is furnished on its front with several raised knobs *z*, *z*, *z*, Figures 36 and 37, the uses of which are to keep the two parts *w* and *x*, Figure 36, at proper distances asunder, and to confine the glazing of mica, or any other suitable material, in its place. It is also furnished with two projecting pivots *r*, *r*, Figure 37, at its lower edge, by means of which it is held in its place in the apertures *s* and *t*, near the bottom of the projecting border *u*, Figure 35, surrounding the open-



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ing or aperture in the door plate of the fire-place; and sufficient play is allowed in these apertures to admit of lowering or raising the door, also to admit of a slight lateral movement. This glazed door can be removed or replaced when necessary by sliding one of the pivots *r*, Figure 37, up or down the elongation  
5 *v* of one of these apertures. It is also furnished with a slight stud 2, Figures 32 and 37, a little above the middle of the side adjacent to the side of the projecting border of the door plate *N*, which is furnished with an aperture 33, Figure 35, a little above its middle, into which aperture this stud is to be bolted by means of the lateral motion above described. Eleventhly, the flue plate *O*,  
10 Figs. 1, 2, 3, 4, 8, 13, 14, and 17, of the fire-place, which is sometimes used. This back plate is furnished with a recess or enlargement, Figs. 8, 13, 14, & 17, so as to leave a passage for the smoke between it and the brick lining of the furnace. This enlargement is broadest at the top; it is furnished at the back with a projecting rim, near its upper margin, and is somewhat prolonged  
15 above the rest of the plate, Fig. 32. *O* is a front view of the upper part of the flue. Twelfthly, the top plate *P*, Fig. 15, of the fire-place. In this plate there is an opening 34, Fig. 15, through which the fuel is passed, around which and on the upper side of the plate passes a rim or border. The under side of this plate has a raised border, running around the front and sides, also partially on  
20 the back, except a slight break near the middle 36, 36, Fig. 15, of each side, opposite which breaks are placed studs 12, 12, Fig. 15. The object of this raised border is to receive the upper ends of the side plates of the furnace *H* and *I*, Figs. 9 & 10; also the upper end of the door plate and flue plate of the fire-place *N*, Figs. 32 & 35; also the upper shoulders or ends *D*, Fig. 6,  
25 of the segments of the hollow column *C*, Fig. 6. Whenever the fire-plate is used, the back part of this top plate is cut away, as shewn at 35, to receive the upper part of the enlargement or recess of the flue plate, along the front of which gap 35, there is a rim or border which, together with the prolonged portion of the recess of the flue plate, constitutes a shoulder, over which is placed  
30 the flue *O*, Fig. 4, that connects the furnace with the chimney, in which I recommend the placing of a register or damper. Thirteenthly, a follower 18, Figs. 4 and 33. This plate is made of a suitable material and furnished with a loop or staple 37, Figs. 4 and 33, by means of which it may be raised or lowered at pleasure, by means of a hook 38, Fig. 36, affixed to the lever, by  
35 means of which the axle of the grate and the grate itself may be revolved. This follower is intended to lie upon the fuel, and by that means to secure its descent in the fire-place, and also to check the radiation from its upper surface. Fourteenthly, the ash drawer 15, Figs. I. and 4, which is constructed so as to close the opening 27, Fig. 12, in the front plate of the ash pit, and to pass  
40 under the rotary cylindric grate when in place. This drawer, when nicely



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adjusted, answers the purpose of a register for regulating the admission of the air. Fifteenthly, four pillars C, C, C, C, Figs. 1, 2, & 3, or segments of hollow cylinders, (that is to say,) hollow pillars with a part cut out of each the whole length F, Figs. 6 and 7, with a small shoulder at top D, and also at bottom E. Sixteenthly, a trunk 16, Figs. 1, 2, and 4, with its lid or cover 17, Figs. 12 5 and 4, which may be made in any required manner. The foregoing parts are all made of cast iron or other suitable material. Seventeenthly, the brick or other slow conducting lining of the fire-place, which rests upon the grate frame, as shewn in section in Fig. 4, and in plan at Fig. 8. Each side is coated with one entire brick *h*, *h*, Figs. 4 and 8, and one of which is shewn separately 10 in Fig. 27. The back receives two bricks *i* and *k*, the uppermost of which, *i*, is shewn in Figs. 4 and 8, and separately in Fig. 28; and the lowermost, *k*, with a wind hole *l* in it, in Figs. 4 and 30, and separately in Fig. 29. The front has a lower brick *m*, Fig. 30, and an upper one *n* laid across it above and below, and small side ones *o* and *p* placed upright between them, as shewn in 15 Fig. 30, a single one being shewn in Fig. 31, the bricks being properly bedded in fire clay. Any other shaped bricks may be used, only taking care to leave an opening in the front corresponding to the opening in the door plate of the fire-place, and also another opening *l*, which I call the lateral outlet in the back and near the bottom of the furnace, through which the fumes and heat pass to the 20 chamber and apparatus in which heat is applied. The foregoing parts may be put together in the following manner:—Upon the basis A, Fig. 5, and against the projecting studs G, G, G, G, on each side, I place the side plates or ends of the furnace H and I, Figs. 9 and 10, as shewn by dotted lines H and I. In the same vertical position and against the remaining projecting studs 25 G, G, G, G, I place the front and back plate of the ash pit I and K, Figs. 12 and 11, as also shewn by dotted lines I and K. Upon the front and back plates of the ash pit I and K, Figs. 12 and 11, and between the side plates of the furnace H and I, I now place the grate frame L, Figs. 18 and 19, in such manner that the front edge of the plate around the hopper part may fall upon 30 the projecting studs of the front of the ash pit 26, 26, Figs. 4, 12, and 14, and the back upon the back plate of the ash pit K, Figs. 4 and 14, the bearing being outside of the projecting studs 31, Fig. 14, on the under side of this plate. The rotary cylindric grate M, Figs. 4, 13, and 14, is now put in its place, Figs. 4, 13, and 14, by introducing it through the opening in the front 35 plate of the ash pit and raising it until the axle W, Fig. 22, can be passed through the hole 24 I, Fig. 10, in the side plate, and also through the holes in the sockets T, T, Figs. 20 and 21, of the semicircular carriages S, S, fastened to the inner sides of the hopper part of the grate frame, and also through the square central holes in the exterior rims of the grate. When the 40



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grate and axle supporting it are thus properly adjusted, the axle is securely confined by the escutcheon 19, Figs. 8 and 13, as before described. Upon the upper edge of the front plate of the ash pit and behind the projecting bend 25, Figs 12 and 4, I now place the door plate N of the fire-place, when the flue plate O of the fire-place, Fig. 13, is used ; it is now placed upon the back edge of the grate frame and just within the projecting border before described, 29, Figs. 4, 13, 18, and 19. The hollow pillars or segments of cylinders C, C, C, C, are now each inserted in their places, Figs. 1, 2, and 3 ; that is to say, in the recesses B, B, B, B, before described in the basis of the furnace, in such manner that one edge of the opening or gap F in each is placed against C, C, C, C, one of the side plates H and I of the furnace, Fig. 8, &c. Upon the whole thus adjusted, is now placed the top plate P of the furnace, Figs. 4 & 15, & secured by 4 iron rods Q, which rods have projecting heads at one end of each, and are screwed at their other ends to receive screwed nuts upon them Q and R, Fig. 16, which rods are passed through holes made to receive them in the basis of the furnace, and also in the top plate P of the fire-place ; the heads of the rods being beneath the basis of the furnace, and the screwed nuts being bound upon the top plate of the fire-place. Upon the top plate of the fire-place may now be placed the trunk 16, Figs. 1, 2, and 4, with its cover or lid 17, both of which are made to fit very close. The fuel is introduced in the furnace thus described, through the opening in the trunk. The column of fuel thus introduced is kindled at its bottom, and the follower 18 is placed upon its top ; the lid of the trunk is closed, and thus the combustion is chiefly confined to the lower section of it ; the upper portion of the column of fuel will thus become heated before it descends into the place where the combustion is chiefly carried on. The apparatus in which the heat is applied to various useful purposes is constructed nearly in the same form, but with different combination of it, according as it is to be used for heating anything, or for a retort, or for the purpose of condensing or cooling fluids. The apparatus next described is applicable to the generation of steam, and the whole of it (except where otherwise particularized) may be considered as made of iron. I use a number of hollow vertical prisms or tubes 39, 39, Figures 37 and 38, of small lateral dimensions, to contain the water ; these tubes are riveted at convenient distances from each other, at their upper and lower ends, into parallel horizontal plates 40, 40, Figs. 37, 38, and 39. The arrangement is in the quincuncial order, as shewn in the Plan, Fig. 38, which makes the current of heated air more effective by impinging on each tube, than if a straight unobstructed passage were left from the entrance 41, Fig. 37, of the heated air to its exit 42, Fig. 37, at the opposite extremity 42, of the



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generator, and also leaves the tubes easily accessible from the sides and ends, for the purpose of being cleaned or repaired; for the latter purpose I make the side walls, or any convenient portion of them, 43, enclosing the tubes, removeable at pleasure. To facilitate the removal of these walls, I make each wall, 43, Fig. 40, front view, Fig. 41, section view, of two parallel metallic plates, which I prefer to be iron, enclosing between them any suitable slow conducting material. I also place, in or near the bottom of the outer plates of the side walls, small moveable doors, 44, 44, Fig. 40, through which the slowly conducting material may be removed. Upon the upper plate 40 I flanch on, or securely fasten a vaulted chamber 45, Fig. 37, called the upper or steam chamber, furnished with the usual openings, such as steam pipe 46, steam valve 47, gauge cocks and man-hole 49. Each tube opens above into this chamber, which is otherwise entirely closed. Upon the lower plate 40, I likewise securely fasten another vaulted chamber 48, Figs. 37 and 39, called the lower chamber or water cellar. Each tube opens below into this chamber, which is entirely closed, except at these openings, and two others called the feed pipe, 50, and a waste pipe, which last is only occasionally to be opened. The lower surface of the upper chamber, and the upper surface of the under chamber, are the boundaries in these directions of the current of heated air which passes between and amongst the tubes. The heated air is admitted through an opening 41, in the front wall inclosing the tubes, communicating by a flue with the wind hole *l*, of the furnace before described; in which case the flue plate O, Figs. 4, 13, and 14, before described, is dispensed with, and escapes through a hole 42, in the back wall to the chimney. Several groups of tubes, each furnished with a separate upper and under chamber, may be placed adjoining each other and inclosed in common side walls, forming a continuous passage amongst the tubes of all the groups for the heated air; the communication for the water from group to group being solely through the pipes 51, 51, Figure 37, leading from the upper chamber of each to the under chamber of the group next to it, and nearer the chamber of combustion. The fresh water is admitted by the feed pipe 50, of the under chamber furthest from the furnace, and the steam emitted by the steam pipe 46, of the group nearest the furnace. In some cases, when slow evaporation is required, it may be allowed to take place from the whole of the upper chamber, which may therefore be left open at the top for that purpose. M, Figure 37, represents the rotary grate; *h*, the body of the furnace; 16, the trunk, in which is a side aperture with its cover 52, for the purpose of supplying the furnace with fuel, and also within it a barrel 53, around which a chain is passed for raising the follower 18.



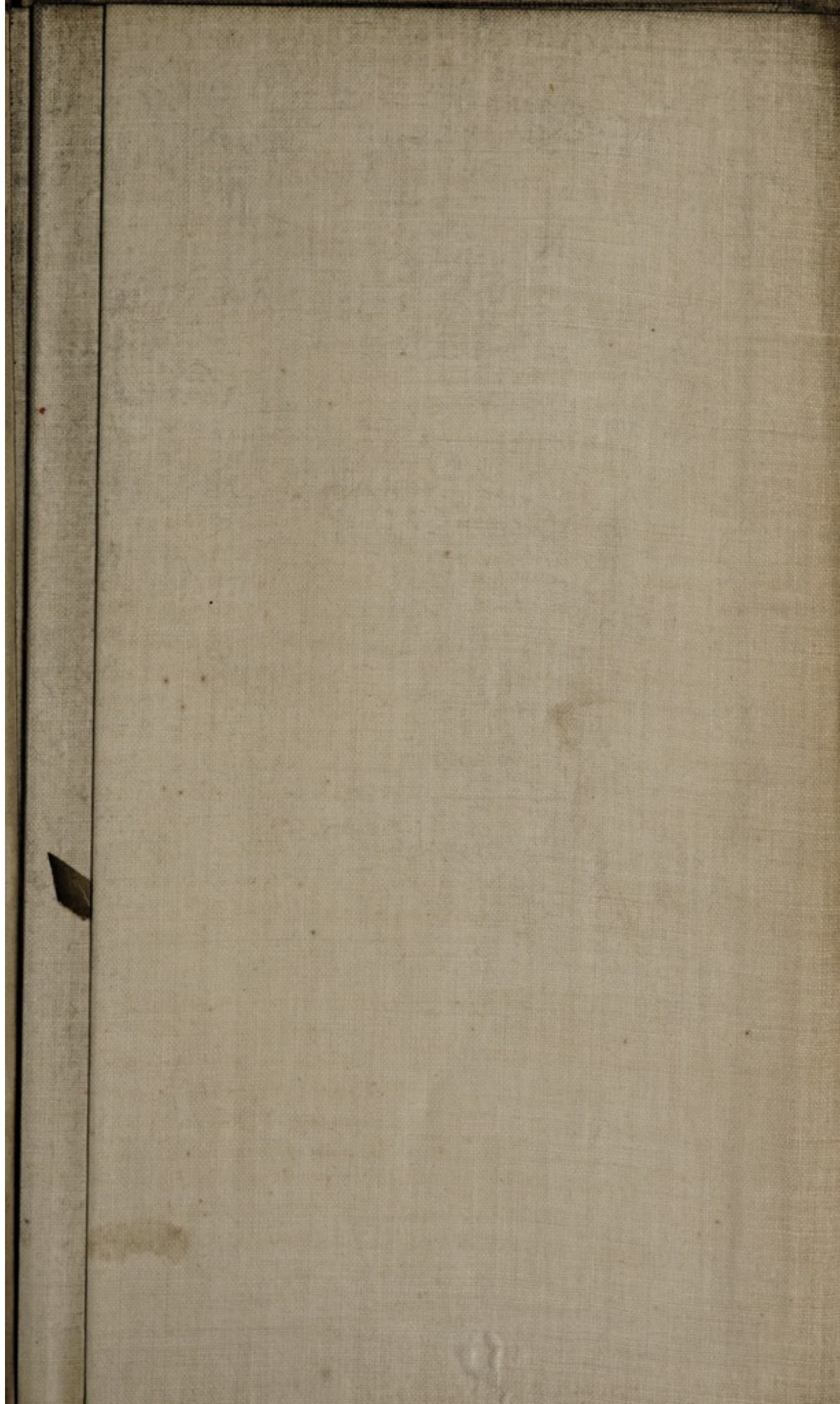




FIG. 32.

FIG. 1.

FIG. 33.

FIG. 8.

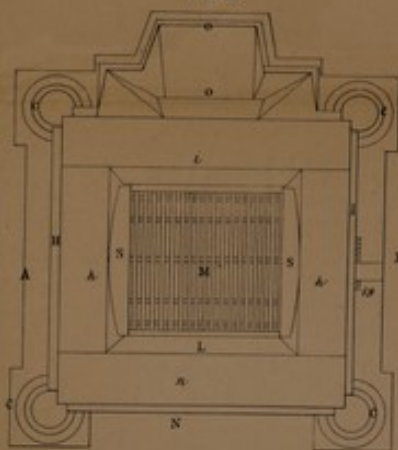


FIG. 30.

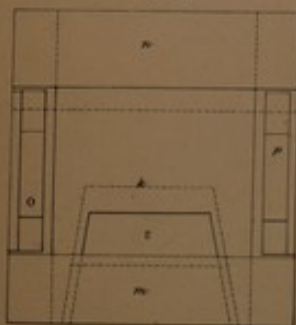


FIG. 31.



FIG. 27.

FIG. 28.



FIG. 29.

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FIG. 1.

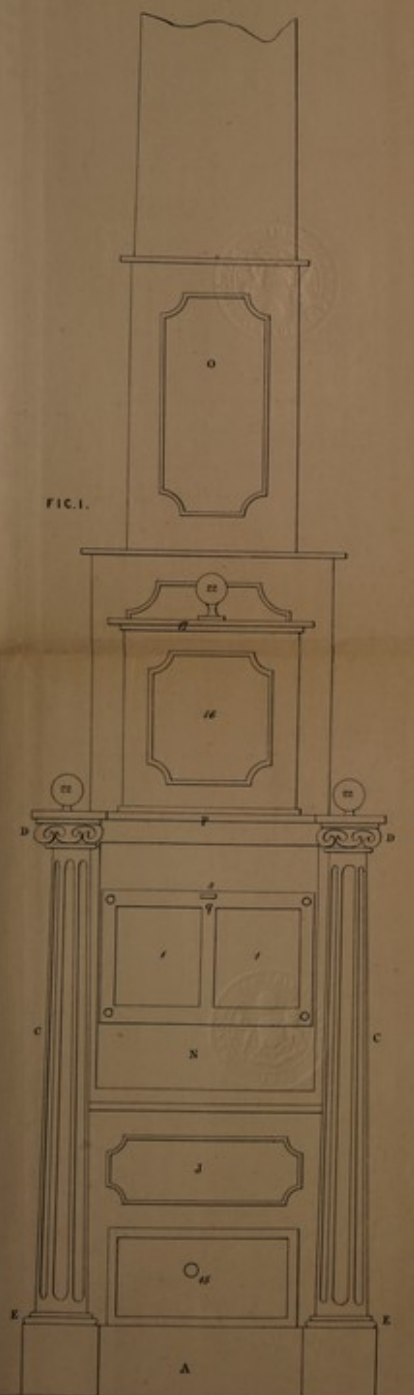


FIG. 2.

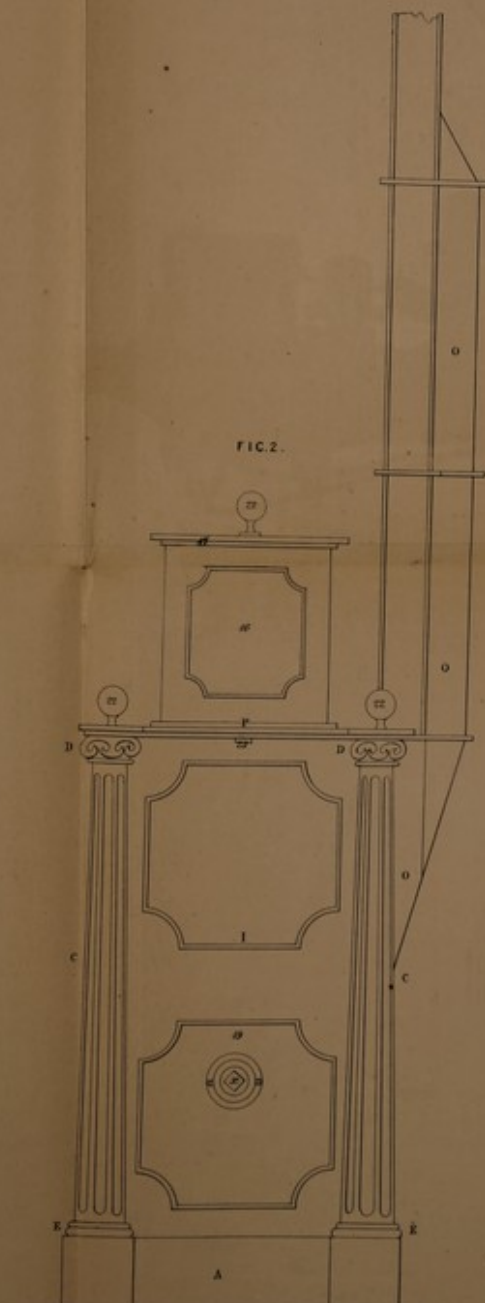
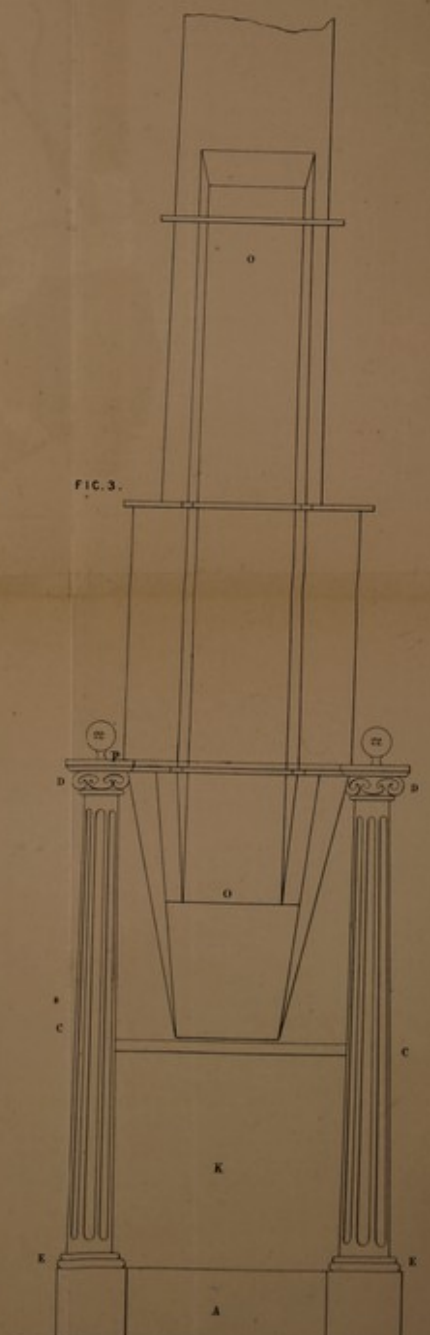
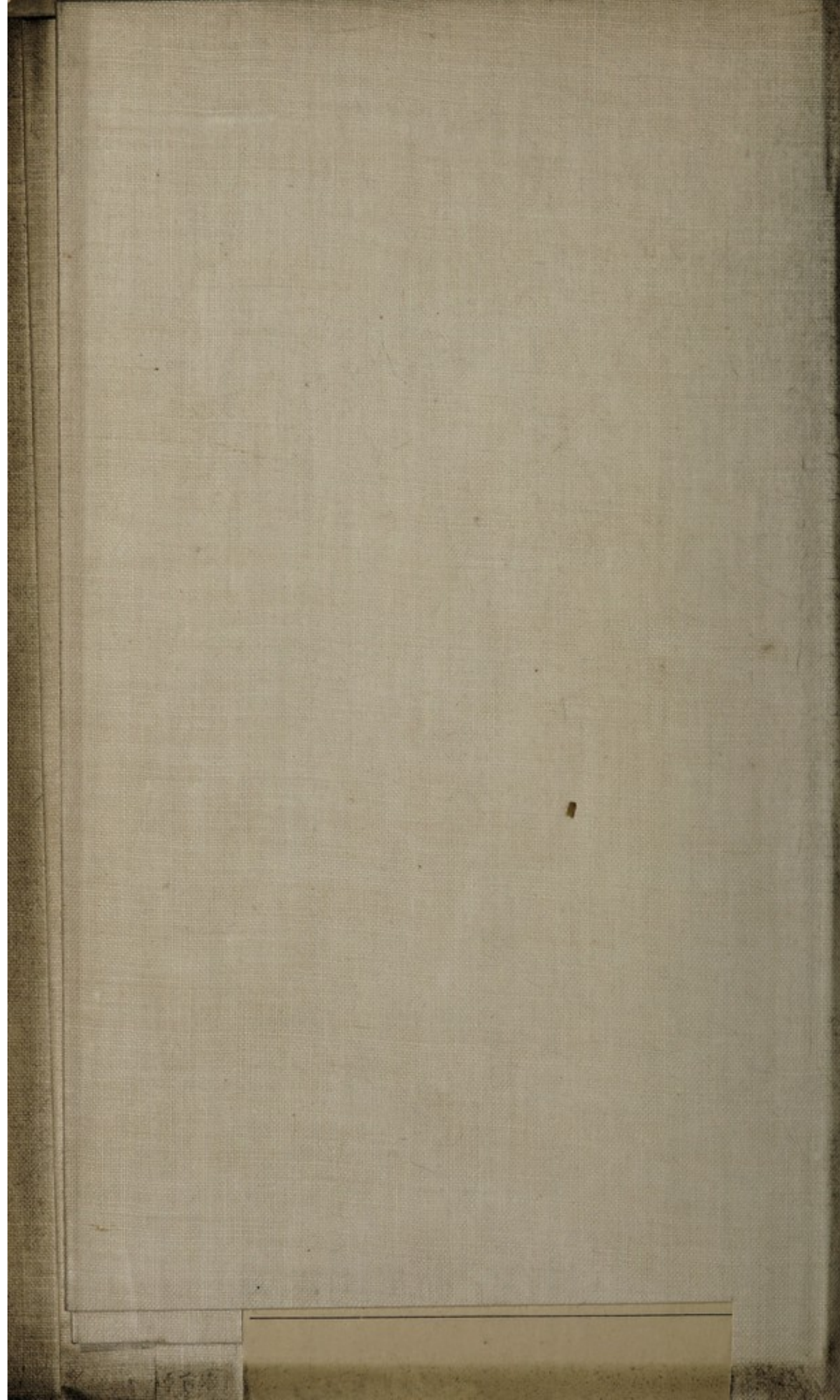


FIG. 3.

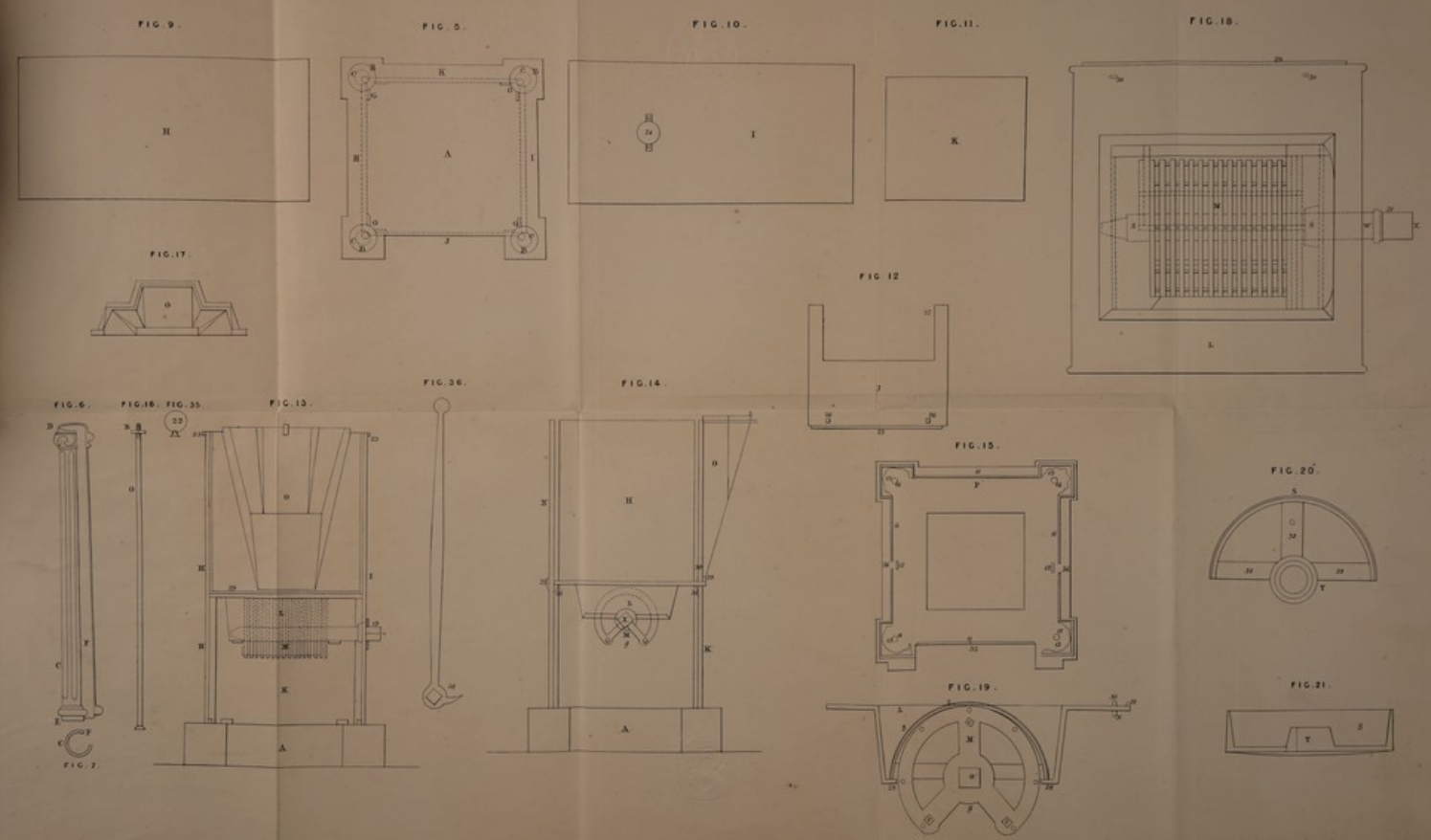








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NOTTS SPECIFICATION.



The model drawing is colored.

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W. & A. G. & Co. 1834.



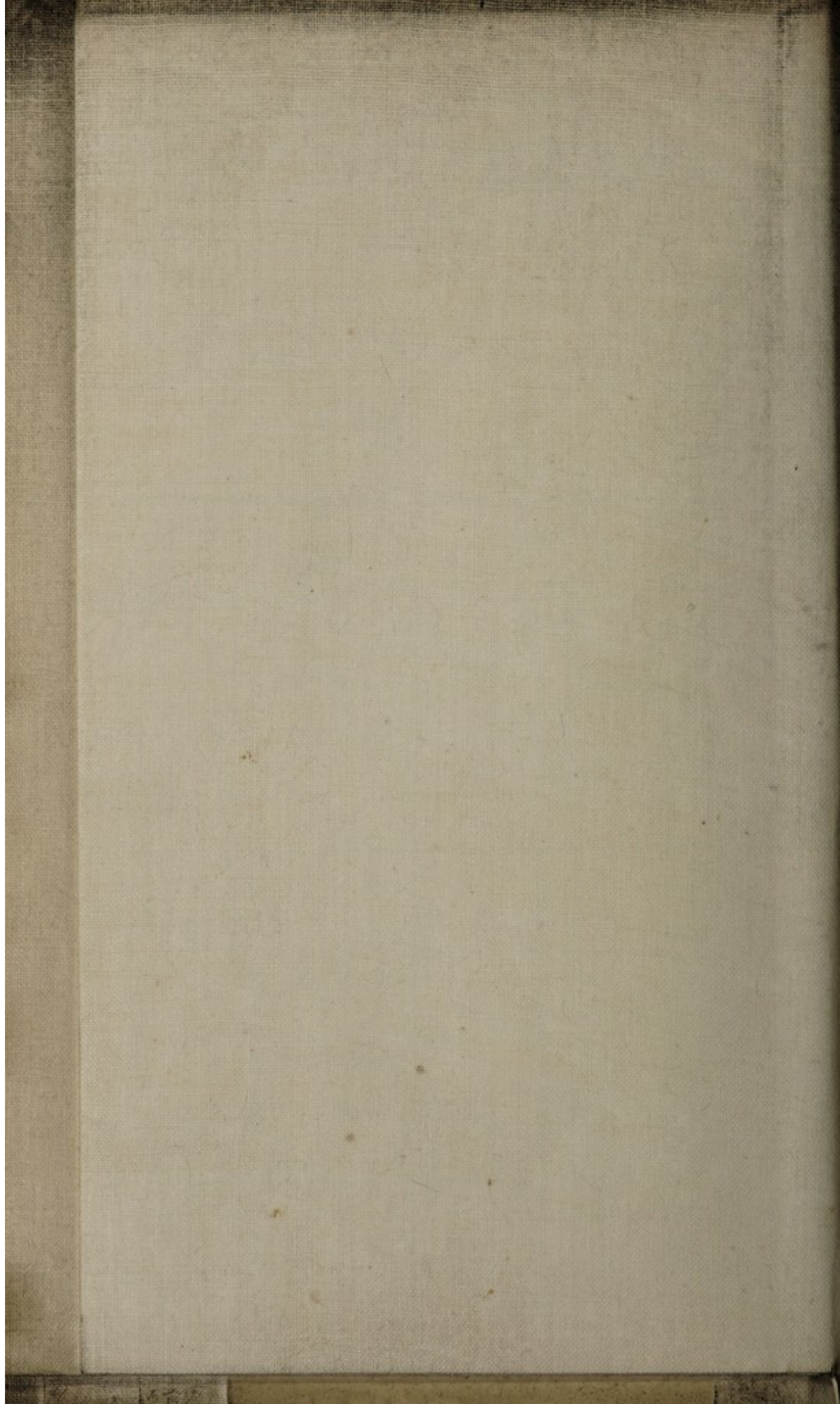




FIG. 26.



FIG. 25.



FIG. 22.

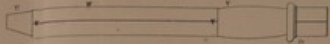


FIG. 23.



FIG. 24.



FIG. 34.



FIG. 32.

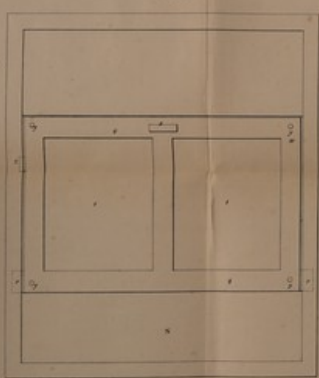


FIG. 33.

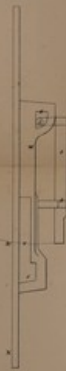


FIG. 35.

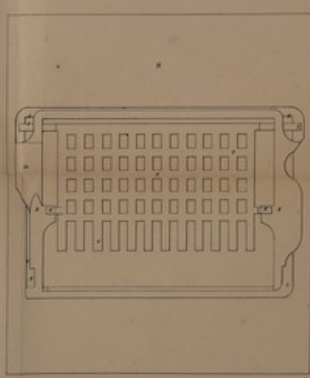


FIG. 36.

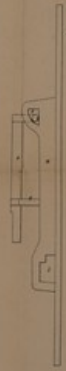


FIG. 40.

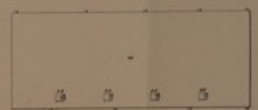


FIG. 41.



FIG. 37.

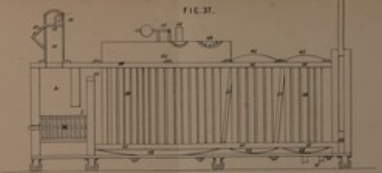


FIG. 37.



FIG. 36.



FIG. 38.

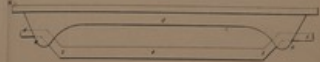


FIG. 39.

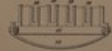
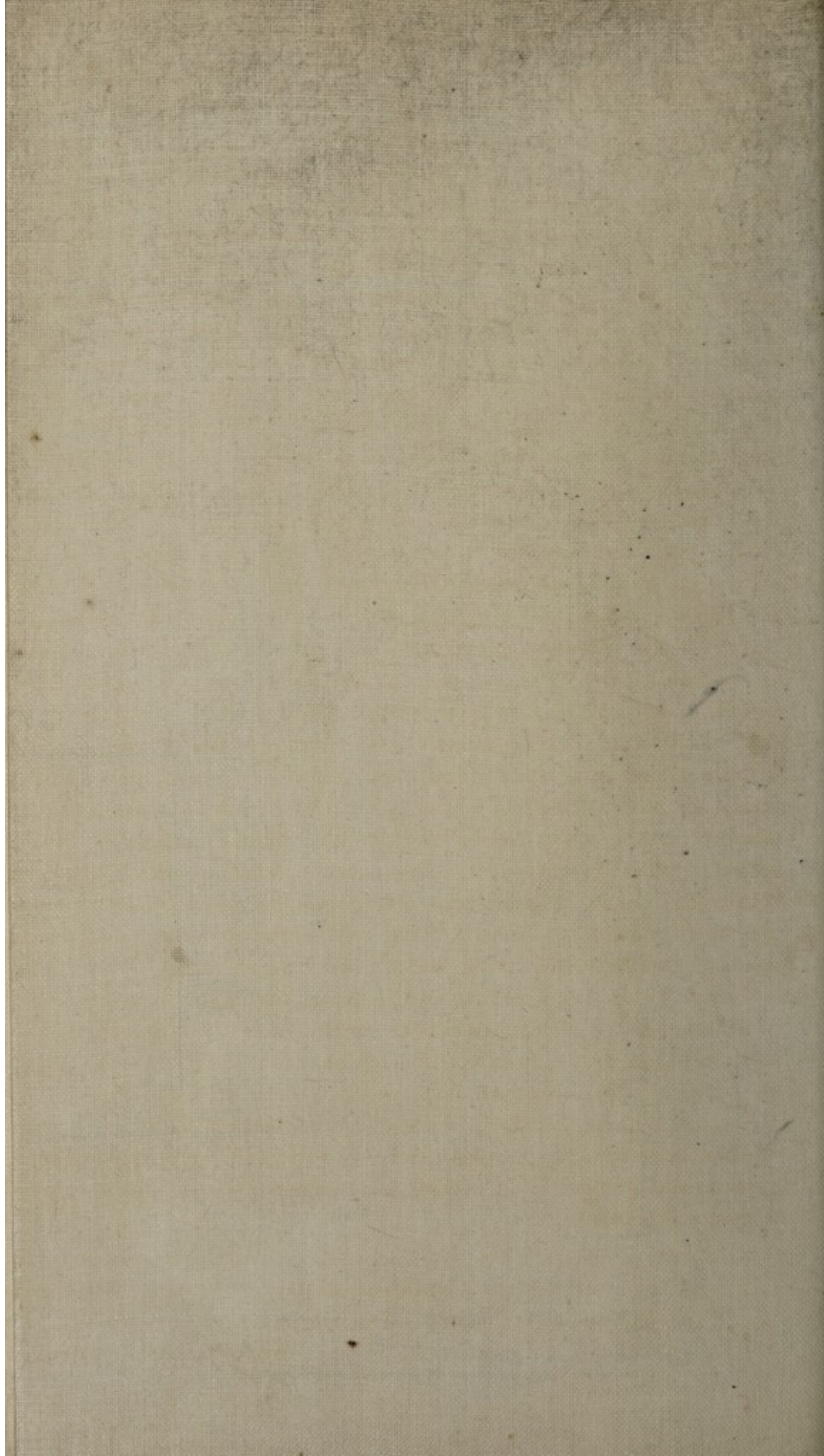


FIG. 38.









*Nott's Improvements in the Construction of Furnaces for Generating Heat, &c*

And whereas, in the foregoing description I have occasionally specified the materials which I prefer for constructing various parts of the said chambers, and which I hereby again declare to be the most suitable for their respective purposes with which I am at present acquainted, yet I declare that  
5 the same may in each case be constructed of any materials now generally used and known to be suitable for such purposes. I shall now enumerate the parts and contrivances and combination of parts and contrivances herein-before described of and in the furnace or furnaces for generating heat, and in the apparatus for applying it to various useful purposes, which alone I claim as  
10 new, and of which alone I appropriate the sole manufacture, use and sale; protesting that I do not claim as new, or attempt to appropriate by virtue of the same, any parts or contrivances, or combinations of parts and contrivances, other than are herein-after particularly specified and claimed. In the apparatus in which heat is evolved, as herein-before described, I claim as new, and  
15 appropriate by virtue of and according to the said Letters Patent, the sole manufacture, use and sale of an axle (as above described) for supporting a grate, whether vibratory, rotary, or stationary, at the bottom of the fire and pile of fuel. I also claim the grate as above described, whether made of circular or polygonal bars, with the convex side uppermost, beneath a pile of  
20 fuel. I also claim the combination of which the door-plate of the fire-place with the glazed frame and vertical grate (as before described) is composed. In the apparatus for applying heat to various useful purposes, before described, as a generator for steam, I claim the apparatus above described, the middle section of which is composed of hollow tubes, placed in a vertical position at  
25 convenient distances in quincuncial arrangement, and opening into the upper and lower sections; one or more of the walls or portions of the walls which inclose the middle section being made in such manner, and so adjusted, as to be removeable at pleasure; around and among the hollow tubes or prisms, which compose this middle section, the current of the heating and cooling  
30 medium is alone to pass, in its way from one end of the apparatus to the other; the matter or substance to be heated, cooled, or condensed is contained within the apparatus above described. I also claim the combination of two or more of these instruments or apparatus (as before described) for applying heat to various useful purposes in the manner before described, so as to form one con-  
35 tinuous middle section.

In witness whereof, I, the said Joel Benedict Nott, have hereunto set my hand and seal, this Fourth day of May, in the year of our Lord One thousand eight hundred and thirty-one.

JOEL B. NOTT. (L.S.)



*Nott's Improvements in the Construction of Furnaces for Generating Heat, &c.*

Cross. AND BE IT REMEMBERED, that on the Fourth day of May, in the year of our Lord 1831, the aforesaid Joel Benedict Nott came before our said Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and everything therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the 5 tenor of the Statute made for that purpose.

Inrolled the Fourth day of May, in the year of our Lord One thousand eight hundred and thirty-one.

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Printers to the Queen's most Excellent Majesty. 1854.