3 Sheets—Sheet 1.

M. J. MOSHER.

Bake-Oven.

No. 210,871. Patented Dec. 17, 1878.

Fig. 1.

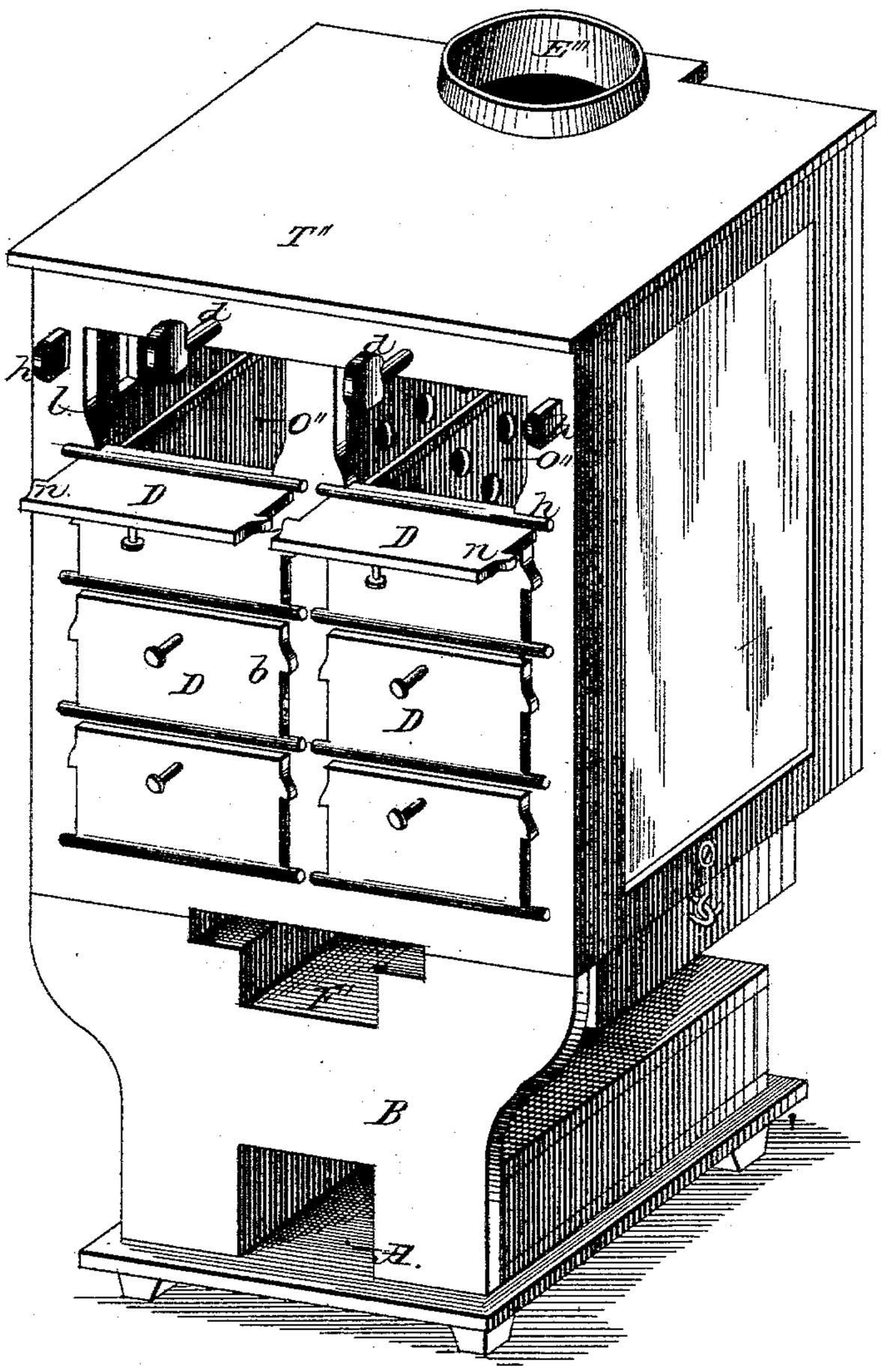


Fig. 3.

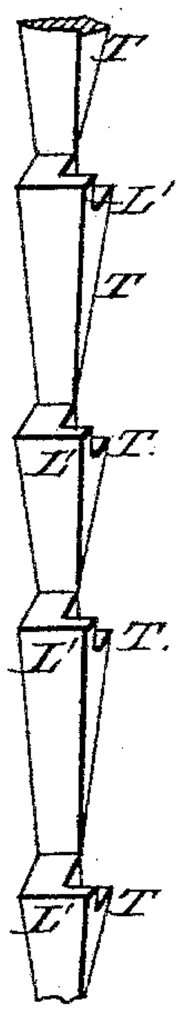
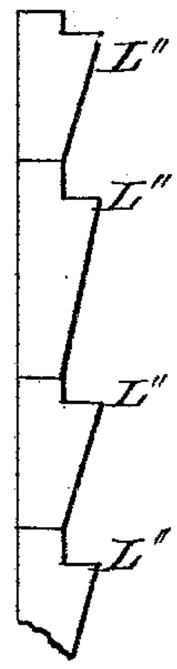


Fig. 4.



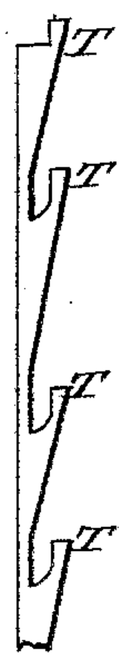
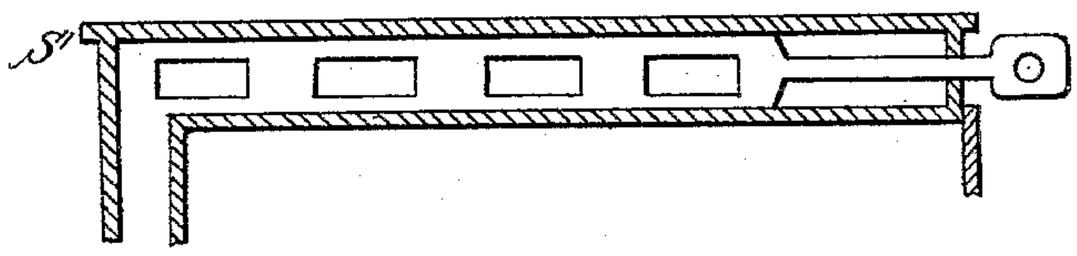


Fig 5.



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his attorney.

3 Sheets—Sheet 2.

M. J. MOSHER.

Bake-Oven.

No. 210,871. Patented Dec. 17, 1878.

Fig. 6.

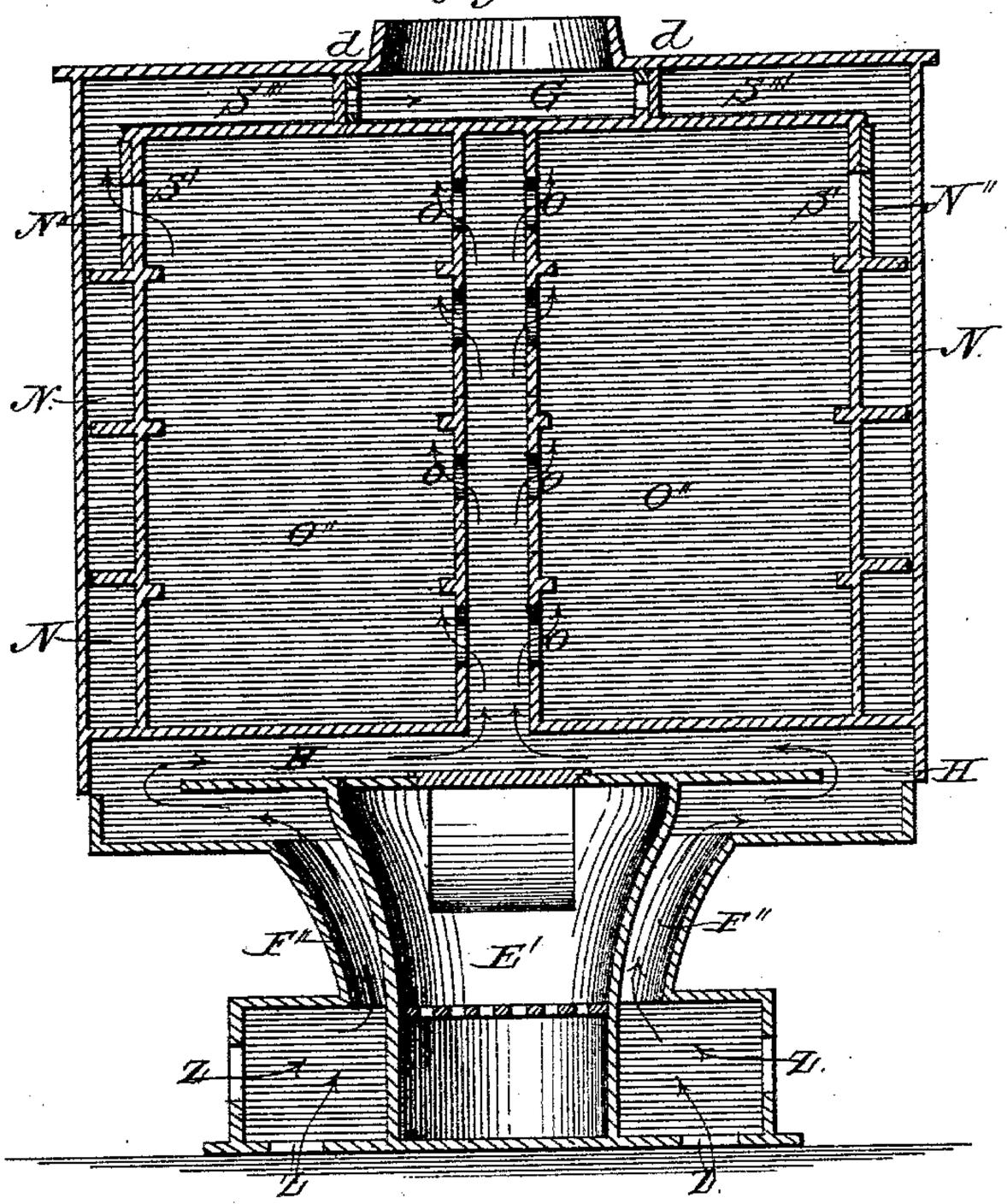
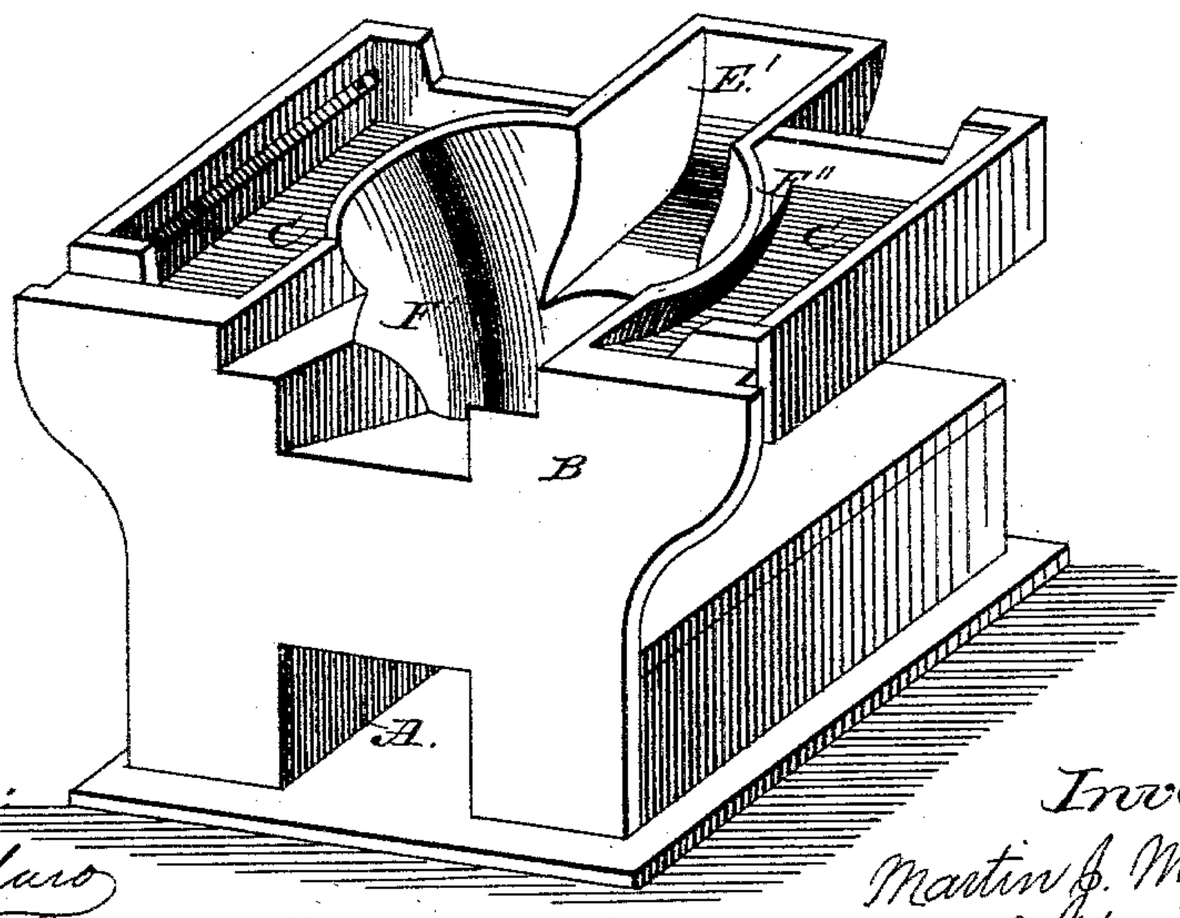


Fig. 2.



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3 Sheets—Sheet 3.

M. J. MOSHER.

Bake-Oven.

No. 210,871. Patented Dec. 17, 1878.

Fig. 8.

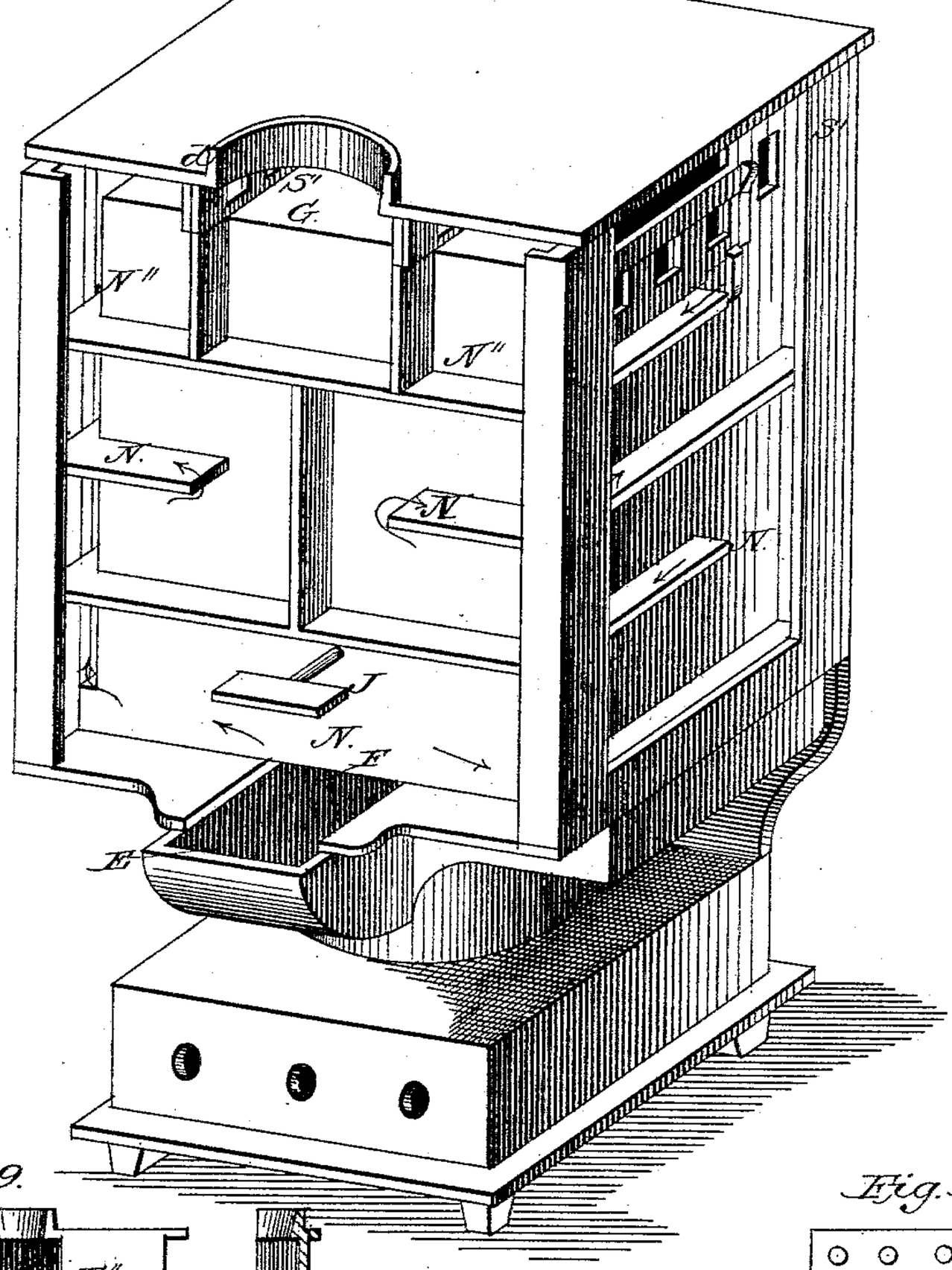
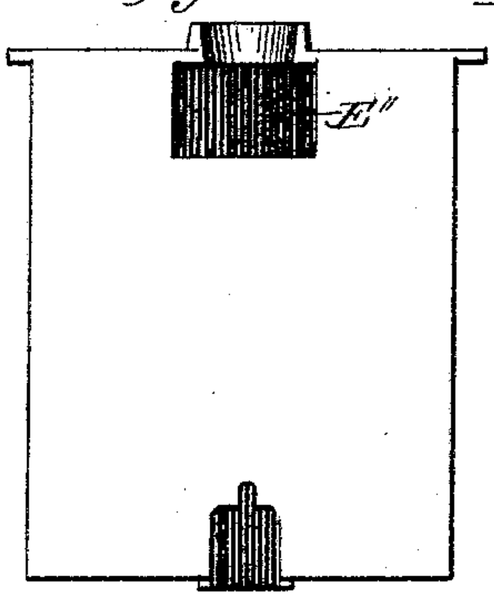


Fig. 9.



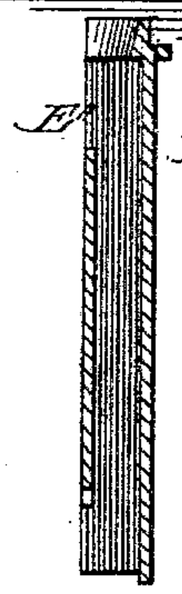


Fig. 10.

Fig. 11.

Fig. 13.

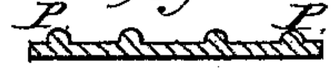
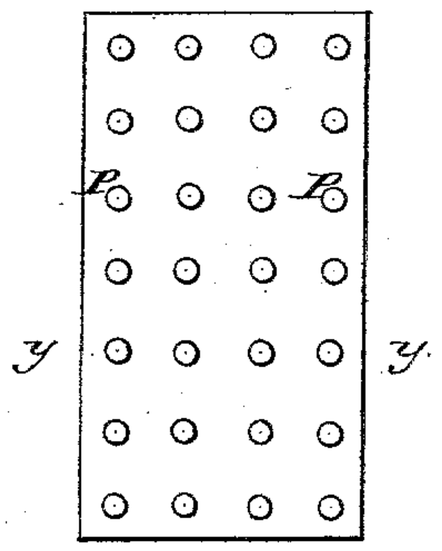


Fig. 12.



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UNITED STATES PATENT OFFICE

MARTIN J. MOSHER, OF TROY, NEW YORK.

IMPROVEMENT IN BAKE-OVENS.

Specification forming part of Letters Patent No. **210,871**, dated December 17, 1878; application filed November 12, 1877.

To all whom it may concern:

Be it known that I, MARTIN J. MOSHER, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and Improved Bake-Oven, of which the following is a specification:

The nature of my invention relates to that kind of culinary devices known as "bake-ovens," and which are designed, principally, for baking or roasting; and it consists—

First, in surrounding the oven-inclosure at the sides, back, bottom, and top with a series of connected flues, through which are passed, for heating the oven, the hot air and gases escaping from the fire and on their way to the exit under the draft impulse of the chimney.

Second. My invention also consists in means of heating the interior of the oven by a current of hot air passed through the same, separate and distinct from the heat and gases escaping from the fire directly, with the current of air entering the base and heated by passing around the fire-pot and adjoining heated surfaces before entering the oven.

Third. Another feature of my invention consists in the manner of arranging and constructing the fire-pot and hot-air-circulating base, as combined and connected with the oven.

Fourth. My invention also consists in the manner of constructing and arranging the fire-pot, direct-draft flue, and flue-dampers, combined with and connected with the flues in the oven exterior case.

Fifth. My invention further consists in the manner of constructing the oven-shelves in open-work, and with projecting points for the utensil to rest upon in which cooking is to be done, so that there shall be a free space between the shelf and the bottom of the utensil for the hot air to circulate.

Upon the three sheets of drawings connected herewith there are thirteen illustrations of my invention, in all of which like letters are used to designate like parts.

Figure 1 shows a view, in perspective, of my improved bake-oven, with two of the oven-doors open, and the side strips, in which are formed the door trunnion-boxes and latches, removed, for the purpose of enlarging the strips, so that they may be more clearly shown. Fig. 2 designates the base-section in perspective, with the oven removed, showing the fire-cylinder, ash-pit flue, connecting with the exterior oven-case flues, also the hot-air passages for heating the air to be passed into the oven. Fig. 3 shows, in perspective, one of the strips removed from the front, and in which are formed the bearings for the oven-door trunnions and the catches for the oven-door latches. This figure shows the parts specified on a larger scale in proportion to the other illustrations, to make the same appear more distinct. Fig. 4 illustrates a vertical section of the side of the oven-door area, upon which stops are arranged to hold the door when open in a horizontal position. Fig. 5 shows a vertical section of the side strips shown in Fig. 3, taken at right angles to the front, illustrating the trunnion boxes or bearings for the oven-doors. Fig. 6 illustrates a vertical section of the bake-oven and base, taken parallel to the front and through the center on the line *p p* of Fig. 1, showing the fire-pot, entering air-openings, flues in the oven exterior case, the hot-air flues around the fire-cylinder, their connection with the oven-bottom flue, and the center distributing hot-air chamber formed in the oven, with apertures opening from the same, also the dampers controlling the circulation through the oven and to the exit, as shown by arrows. Fig. 7 shows the damper arranged to regulate the hot-air current through the oven, taken on the line *l l*, Fig. 1, there being two of these dampers connecting the oven with the flue in the exterior case, near the exit, and upon the side of the flue leading to the exit. Fig. 8 illustrates, in perspective, a view of the bake-oven back and sides, with the exterior walls removed, to show the horizontal flues formed in the case, their connection with each other at the sides and back, and also with the rear flue, leading from the fire-cylinder. It also shows the location of the damper placed in the rear ascending flue, used to divert the heat from the direct flue to the flues in the exterior case. This illustration also shows the dampers connecting the oven with the exterior-case flues, and the exterior-case flues with the exit. Fig. 9 shows a back view of the exterior oven-wall and the direct-draft flue. Fig. 10 illustrates a vertical section of the rear ascending direct-draft flue, taken through the

center and at right angles to the back. Fig. 11 shows a cross-section of the back and rear direct-draft flue, taken horizontally through the same. Fig. 12 illustrates a top view of an oven-shelf with the projecting points; and Fig. 13 shows a section of the same taken on the line *y y* of Fig. 12, where the elevation of the points are shown, and upon which the utensils containing material to be cooked are placed.

As arranged, the operation of the bake-oven is as follows: Fire being kindled in the fire-cylinder F′ of the base B, as shown in Figs. 1, 2, 6, and 8, the heated gases arising from the fire pass through the flue E′, and thence directly upward, at the back to the flue G, formed in the top over the oven, and which connects with the pipe-collar E‴.

When it is desired to heat the oven O″ by means of the flues in the exterior case, the damper J in the direct-draft flue is closed, and the heated gases arising from the fire are compelled to pass into and through the flues N N N N. These flues are arranged horizontally in the exterior oven-case at the sides and back, with the flue-strips breaking joints at the corners in alternation for flue-connection. At N″ N″ these flues in the case connect with the flues S‴ S‴, formed in the top upon each side of the central top flue, G.

Between the top flue, G, and the flues S‴ S‴ are arranged the slide-dampers *d d*, as shown in Figs. 6 and 8. These dampers are employed to regulate the amount of heat passing through the exterior-case flues. The direction of the gases and heat passing through the flues is indicated by arrows. This manner of constructing and arranging the flues in the exterior case of a bake-oven constitutes a leading feature of my invention, and may be combined with other forms of fire-cylinder than the one shown, and produce the same result.

The oven O″ is also heated by the introduction of a current of hot air brought in at the base through the openings Z Z Z Z, as shown in Fig. 6. This current of air passes around the fire-pot F′, through the flue F″, as shown by arrows, to the bottom flue, H H, and thence up into the heat-distributing chamber M, from which it passes through apertures into the oven O″ O″, and from thence through the damper-passages S′ S′ to the exterior-case top flues, S‴, as shown by direction-arrows.

At S′ S′ are shown dampers on each side to open and close the passages, so as to control the passage of the heated air through the oven. This chamber M may have grated openings, or the same may be made round and answer the same purpose, the object of them being to distribute the heat equally between the oven-shelves. The slide-damper employed is shown at Fig. 7.

This manner of constructing and arranging a hot-air flue beneath the oven connected with the heat-distributing chamber M, with its apertures, and the dampered passages S′ S′, for producing a circulating current of hot air into and through the oven, constitutes a special feature of my invention when the same is connected with an entering current of hot air. I also consider it a special feature of my invention to combine the hot-air flue F″, surrounding the fire-pot F′, with the flue H H, beneath the oven O″, the heat-distributing chamber M, formed in the oven, provided with the apertures *o o o o*, and the dampered openings and dampers S′ S′, to produce and circulate a current of hot air through the oven, as a heating means separate from that passing directly from the fire to the exit.

The base is shown at B, the ash-pit at A, in Figs. 1 and 2, the fire-cylinder at F′ and at E′, the bottom of the direct-draft flue connecting with the fire-cylinder at the rear. At Figs. 9 and 10 is shown the location of the direct-draft flue as connecting the flue-opening E at the base with the direct-draft flue formed at the rear. At Fig. 8, the damper J, which controls the currents of the draft through the direct-draft flue, is shown, by which damper the current is directed from the direct-draft flue to make the circuit of the oven exterior-case flues. This feature of the construction and arrangement of the direct-draft flue and flue-damper, as combined and connected with the fire-pot and exterior oven-case flues N N N N, I consider to be a special feature of my invention.

Bake-ovens being unlike the ovens of stoves or ranges in the fact that they are provided with a series of shelves, upon which it is arranged to cook at the same time articles of food requiring different periods of heat, and a single or double oven-door opening the whole of the oven-front, or a large portion of it, for removing a part of the contents of the oven, would chill that which remained and required more time. Pastry and other articles of the same kind are sensitive under such conditions, and become, as it is termed, "heavy." To avoid this difficulty I divide the oven-front area by means of a series of doors, and these may be arranged opposite each shelf, so that a portion of the oven may be opened and closed without disturbing the conditions of the remaining part of it.

The front oven-doors are shown as closed in Fig. 1 at D D D D, and at D″ D″ they are shown as opened. These doors have trunnions cast upon their lower corners, and upon their sides notches for latching purposes. To furnish bearings for the door-trunnions, and catches for the side notches to complete the latch, side strips are made separately and attached to the front. One of these is shown at Fig. 3 upon an enlarged scale and detached from the front. A vertical section of the same is shown at Fig. 5. In both illustrations the trunnion boxes or bearings are designated by the letters T T T T, and the notches at L′ L′ L′ L′ L′. The trunnions upon the doors are shown at *h h*, Fig. 1. The bottom of each door is rabbeted, as shown at *b*, Fig. 1, and this rabbet produces a striking

face for the door beneath. Upon the inside jams of the oven at the sides of the front opening for the doors are formed notches, as shown at L″ L″ L″ L″ in Fig. 4, against which the rabbeted flange on the door strikes when the door swings down, and which keeps it in horizontal position when open.

The oven-shelves are provided with projecting points upon their upper surface for cooking utensils to rest upon, so as to allow the heat to circulate between the bottom of the utensil and the top of the shelf.

The top of the shelf may be made in open lattice-work, or be grated, with the projecting points in the former at the angles and sides, and in the latter case upon the bars.

The shelf with the points upon the same is shown at Fig. 12 by the letters P P P P. A vertical section of the shelf is shown at Fig. 13, with the projecting points illustrated at P P P.

I do not desire to limit my invention as to the number of the horizontal and connected flues N N N, excepting that there shall be enough of them formed in the exterior oven-case to connect in the same manner at the back and sides by means of flue-strips breaking joints at alternating corners for flue-connection.

I do not desire to limit my invention as to the shape of the heat-distributing chamber M, formed in the oven-inclosure, excepting to this extent, that it shall be arranged centrally within the oven-inclosure, and be connected with a hot-air flue below, and be provided with apertures for distributing the heat within the oven.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bake-oven, the horizontal and connected flues N N N N, formed in the exterior oven-case at the back and sides, the damper-apertures and dampers S′ S′, the top flues, S‴ S‴, central top flue, G, and the connecting-dampers *d d*, arranged to operate as herein described and shown.

2. In a bake-oven, in combination with the fire-cylinder F′, rear flue, E′, and damper J, the horizontal and connected flues N N N N and N″ N″, formed in the exterior case, the top flues, S‴ S‴, center flue, G, and dampers *d d*, arranged to operate as herein described and shown.

3. In a bake-oven, the flue H H below the oven, connected with the hot-air-distributing chamber M, and apertures *o o o o*, with the openings and dampers S′ S′, for circulating a hot-air current into and through the oven O″ O″, and discharging the same into the flues N″ N″, as herein described and shown.

4. In a bake-oven, the entering air-passages Z Z in the base, the hot-air passages F″ F″, the bottom oven-flue, H H, the heat-distributing chamber M, apertures *o o o o o o*, and the openings and dampers S′ S′, connecting the oven interior with the exterior-case flues N″ N″, as the same is herein shown and described.

5. In an oven-shelf, the raised points P P P P, arranged upon its upper surface so as to support a cooking utensil and allow a current of hot air to circulate between the utensil and the shelf, as herein described and shown.

Signed at Troy this 10th day of November, A. D. 1877.

MARTIN J. MOSHER.

Witnesses:
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CHARLES S. BRINTNALL.