

BIBB & KLOTZ.

Base Burning Fire Place Heater.

No. 99,525.

Patented Feb. 8, 1870.

Fig. 1.

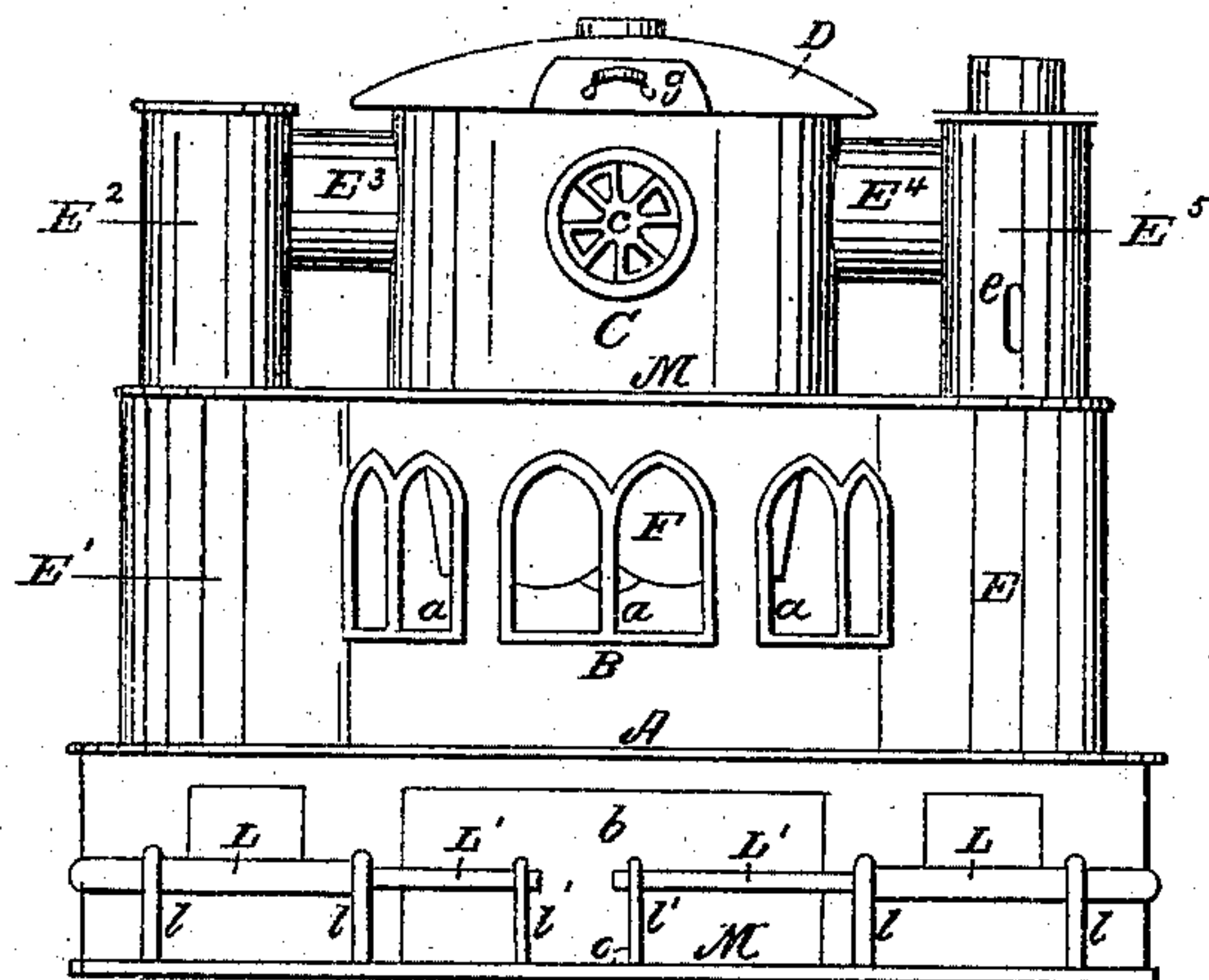


Fig. 2.

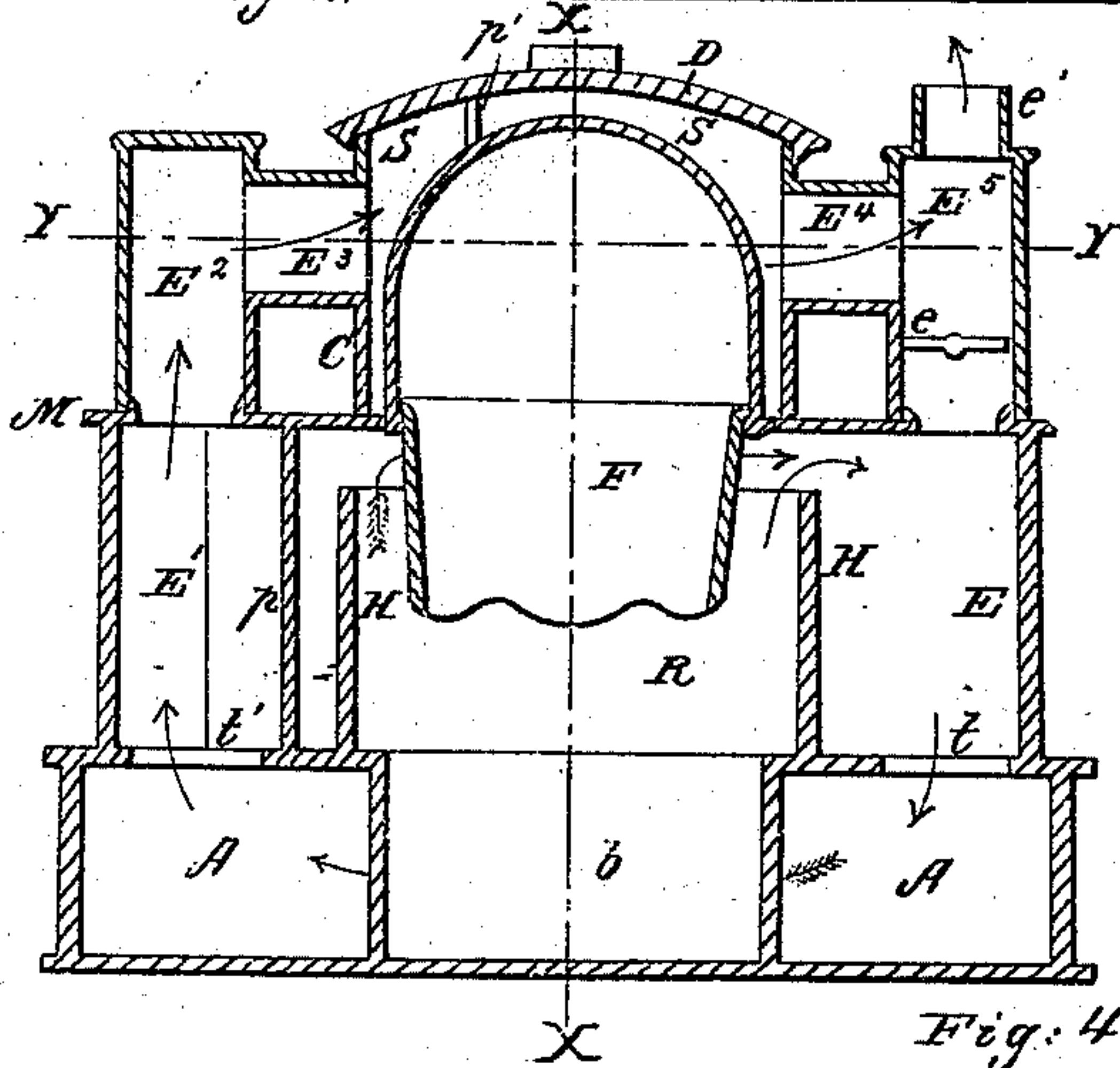


Fig. 3.

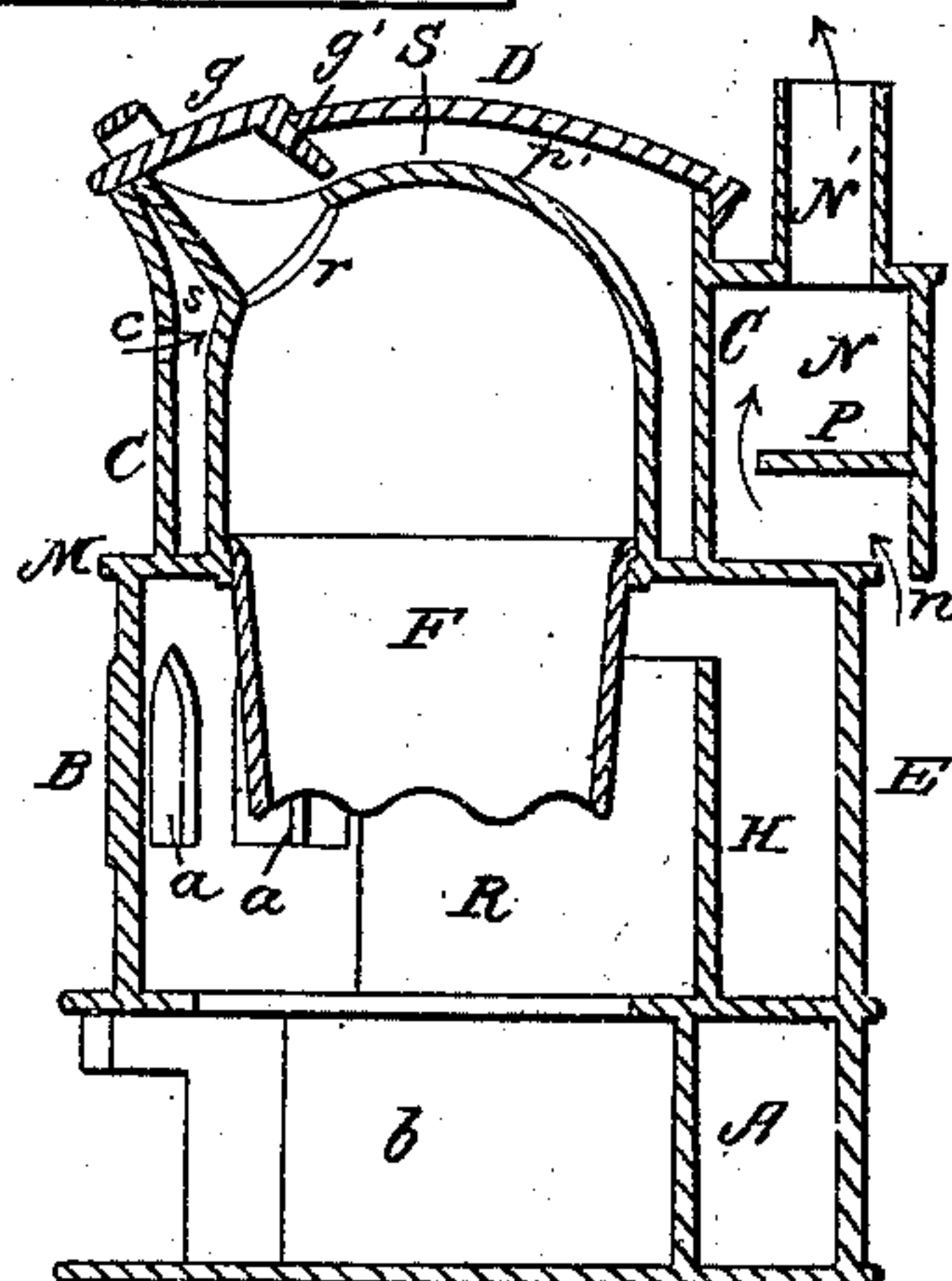
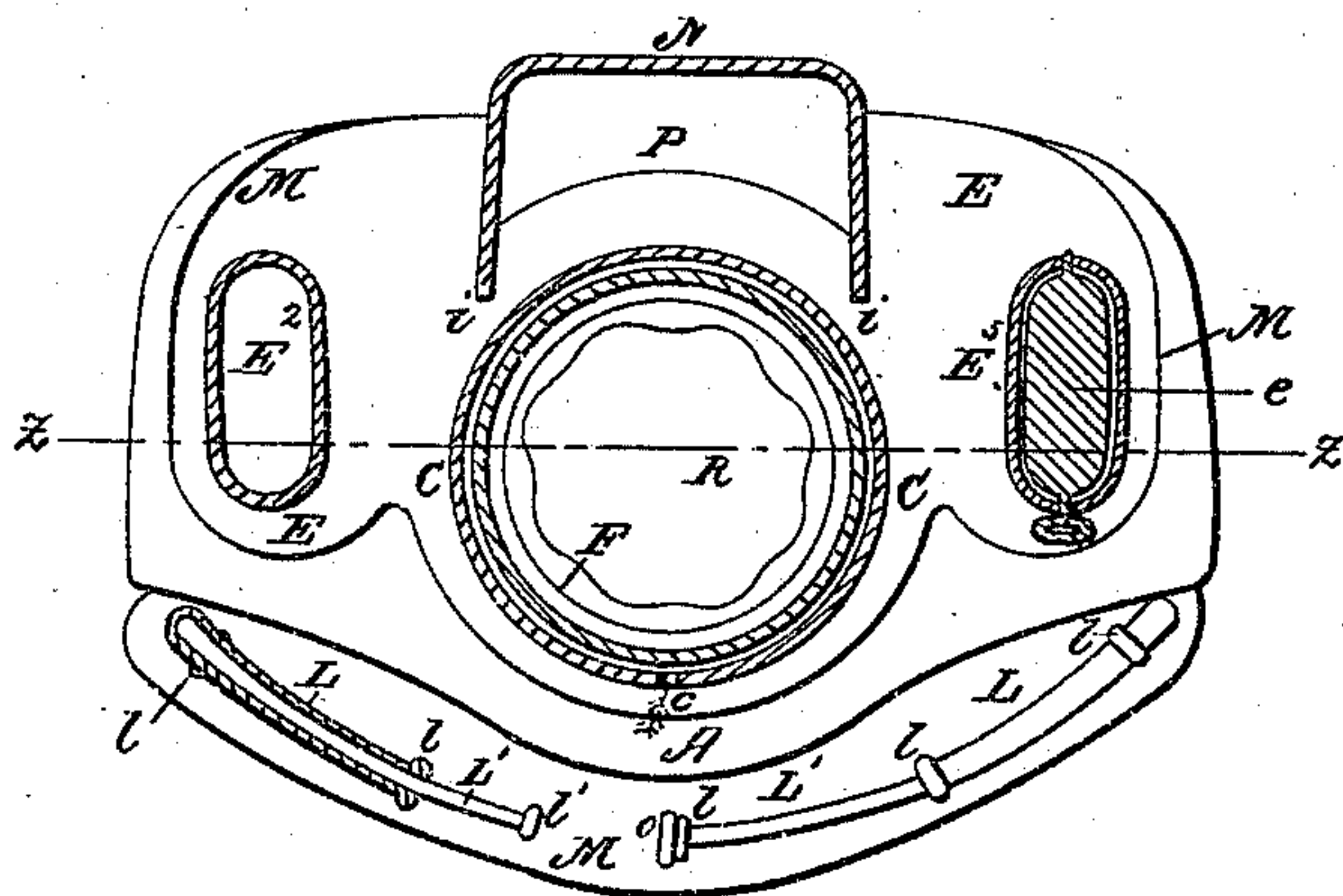


Fig. 4.



Witnesses:

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*Letters Patent No. 99,525, dated February 8, 1870.*

## BASE-BURNING FIRE-PLACE HEATER.

The Schedule referred to in these Letters Patent and making part of the same

*To all whom it may concern :*

Be it known that we, BENTLEY C. BIBB and PHILIP KLOTZ, of Baltimore, in the county of Baltimore, and State of Maryland, have invented certain new and useful Improvements on Fire-Place Heaters; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of the improved fire-place heater.

Figure 2 is a section through the heater, taken in the vertical plane indicated by line *z z* in fig. 4.

Figure 3 is a section through the heater, taken in the vertical plane indicated by line *x x* in fig. 2.

Figure 4 is a section taken through the heater, in the horizontal plane indicated by line *y y* in fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on fire-place fuel-magazine heaters; and

It consists—

First, in so constructing such a heater, that when the direct draught is closed, the products of combustion rising from the fire-chamber, beneath the fuel-magazine, shall circulate in an enlarged heat-radiating chamber, formed by a portion of the wall of the illuminated section, and then dive down into and circulate through the hollow base-section, thence rise and circulate through the flues, which are arranged above the said illuminated section, thereby causing the lower portion of the heater to receive the products of combustion, while they are in the most highly-heated state, as will be hereinafter explained.

Secondly, in partly enclosing the fire-wall of the fire-chamber, by a chamber, within which the products of combustion are allowed freedom to pass off laterally as they rise from said fire-chamber, and from which the products can be caused either to descend into the base of the heater, on their way to the upper flues, or to rise and pass directly into the escape-flue, as will be hereinafter explained.

Thirdly, in partially dividing the flue-space in the upper section of the heater, by a vertical deflecting-plate, arranged so as to direct the products toward the front of this section, between it and the fuel-magazine, on their way to the escape-flue, as will be hereinafter explained.

Fourthly, in an air-heating box, having a deflector in it, arranged at the back of the upper section of the heater, and adapted for more effectually warming air, to be conducted into upper apartments, as will be hereinafter explained.

Fifthly, of a fender-base plate, in combination with a fender-rail, composed of fixed portions, and an intermediate portion or portions, permanently connected

to, but movable on the stationary portion or portions, substantially as described hereafter, so that the ash-pan can be removed without the necessity of removing the fender from its place.

To enable others skilled in the art to understand our invention, we will describe its construction and operation.

We shall describe our improved fire-place heater as consisting of three principal sections, to wit, a base-section, an intermediate section, and a top section.

The base-section A is hollow, and encloses a flue-space, through which the products of combustion pass when the damper *e* is shut, as shown in fig. 2. In this section, and centrally arranged, is the ash-box *b*, which is separated from the flue-space by a division-plate, in the usual well-known manner.

The intermediate section consists of two chambers E E', formed by a wall, which extends from the front wall B entirely around the fire-chamber R, and which is vertically divided by a partition, *p*, to form the small flue-chamber E', on one side of the fire-chamber.

The wall enclosing chambers E E' is a continuation of, and may be cast or otherwise made to form part of the said front wall B. This front wall B may be made semicircular, or of any other suitable form, and it is provided with mica windows *a a*, for illumination. It forms the front wall of the fire-chamber or pot R, the back wall H of which is enclosed within the chamber E, and rises nearly to the top plate M of the intermediate section, as shown in figs. 2 and 3.

The chamber E communicates with the flue-space in base-section A, through a passage, *t*, and the chamber E' communicates with said flue-space through passage *t'*, shown in fig. 2.

The top section of the heater consists of a cylinder, C, rising from the top plate M of the intermediate section, and closed on top by a cap, D. This section C encloses the main portion of the fuel-magazine F, which is closed on top, and extended down through the plate M, into the fire-pot or chamber R, below the upper edge of the back wall H. This fuel-magazine is supported upon or by the plate M, and has a flue-space, *s*, between it and the cylinder C, which space is closed at bottom by said plate.

The space *s* communicates with short columns E<sup>2</sup> E<sup>5</sup>, which rise from plate M, by means of horizontal flues E<sup>3</sup> E', and the column E' communicates with the chamber E<sup>2</sup>, while column E<sup>5</sup> communicates with chamber E, when the damper *e* in this column is open. This latter column E<sup>5</sup> terminates, at its upper end, in an escape-pipe, *e'*, leading into the chimney.

On one side of the centre of the flue-space *s*, a partition-plate, *p'*, extends from front to rear, across the top and down the back of the fuel-magazine, leaving a front passage beneath it, and between the magazine and cylinder C, for the products of combustion to pass



from flue  $E^3$  to flue  $E^4$ , and directing the products against the front part of cylinder C.

The partition-plate  $p'$  also forms one side of a chute or passage,  $r$ , leading through the top plate D, and through the crown of the fuel-magazine, for supplying this magazine with fuel. It is beneath this chute that the front passage, above referred to, is made for the products of combustion.

In rear of the cylinder C, a chest or box, N, is applied, having a deflecting-plate arranged horizontally in it, and extended from the back of this box nearly to the cylinder C. The sides of the box N are open at  $i$ , and its bottom is open at  $n$ . From its top, a pipe,  $N'$ , rises, which may be carried up through the chimney into apartments above that in which the heater is arranged.

The fender, which is designed for use with our fire-place heaters, is portable or removable, and consists of stationary guard-rails L L, which are made tubular, and mounted upon short standards  $l$   $l$ , and also of movable guard-rails  $L'$   $L'$ , which slide in said tubular rails L L, and are supported by short standards  $l'$   $l'$ , which move with them. The standards of the fixed and movable rails rise perpendicularly from a base, M, which is adapted to fit snugly against the front of the hollow base A. At the middle of the space, between the ends of fixed rails L L, is a stop,  $o$ , for preventing the movable rails being drawn out of their tubular supports.

The distance between the ends of the two stationary rails, should be such that when the two rails  $L'$   $L'$  are moved aside, by sliding them into these stationary rails, there will be space left for the removal of the ash-pan from the ash-box.

The operation of our improved heating-stove is as follows:

When fire is first made in the chamber or fire-pot R, the damper  $e$  is opened, and the products pass directly off, through chamber E and flue-column  $E^5$ , into the escape-pipe  $e'$ . When the damper  $e$  is shut, as shown in fig. 2, the products then rise and fill the enlarged chamber E, from the wall of which a very large amount of heat is radiated. From this chamber E the products descend, through  $t$ , into the hollow base-section  $b$ , from which a large amount of heat is also radiated. Leaving chamber A, the products rise through the flue-chamber  $E^1$ , through the flues  $E^3$   $E^3$ , and pass into the space  $s$ , on one side of the partition  $p'$ ; thence they pass around the front part of the section or cylinder C into the space  $s$ , on the opposite side of this partition  $p'$ ; thence, through flues  $E^4$   $E^5$ , into and off through the pipe  $e'$ .

The cold air enters the box N at  $n$ , strikes plate P, is deflected forward so as to impinge upon the cylinder C, is warmed, and conducted, through pipe  $N'$ , into upper apartments. A portion of the air which is warmed in box N may be conducted out into the room, by leaving the side openings  $i$   $i$ .

For checking the draught, we use one or more registers  $c$ , applied to the cylinder C, as shown in fig. 1, by means of which, cool air can be led into space  $s$ , in greater or lesser quantities, as may be required.

It will be seen, from the above description, that we provide for conducting the products, while at their highest degree of heat, into and through lower sections of the heater, and before they are conducted into the upper flues or pipes, and this we are enabled to accomplish without changing the general style or appearance of this class of fire-place heaters.

We make no claim, under this petition, to the vertical feed-passage leading through the top of the cylinder C and fuel-magazine F, as the feed-passage may be made horizontally through the sides of said cylinder and magazine, although we prefer the former plan of feeding, and have made it the subject of an application for a patent, marked "Case A."

We do not desire to claim broadly a fender-base plate, with a movable fender, or movable fender-rail, nor do we desire to limit ourselves to the two movable pieces  $L'$   $L'$ , as one connected but movable piece only may be used.

We claim—

1. A fire-place heater, which is constructed with an intermediate radiating-section, forming a descending-draught chamber, E, fire-chamber R, and ascending-draught chamber or flue  $E^1$ , substantially as described.
2. The walls surrounding the fire-chamber R, formed of a front illuminating-wall, B, and a rear wall, H, in combination with a chamber, E, a hollow base-section, A, and a direct-draught flue,  $E^5$ , arranged to operate substantially as described.
3. The chamber  $s$ , formed between the upper portion of the magazine F and the cylinder C, and communicating with the chamber E, through passages A  $E^1$   $E^2$   $E^3$ , substantially as described.
4. The combination of chambers E  $E^1$  with the hollow base-section A, and a chamber or space,  $s$ , substantially as described.
5. The division-plate  $p'$ , applied in the space  $s$ , substantially as described.
6. Air-heating box N, provided with a deflecting-plate, P, and arranged at the back of the top section or cylinder C, upon plate M, substantially as described.
7. A fender-base plate, M, in combination with a fender-rail, composed of the fixed portions L L, and intermediate portion or portions  $L'$   $L'$ , permanently connected to, but movable on the stationary portion or portions, substantially as and for the purpose set forth.

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