2 Sheets—Sheet 1.

C. L. PIERCE & H. A. PINKHAM.

HOT-AIR FURNACE.

No. 169,729. Patented Nov. 9, 1875.

Fig. 1.

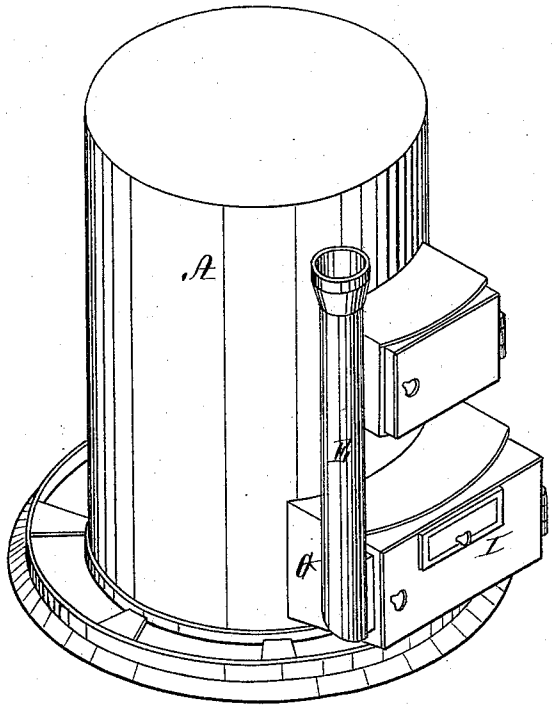
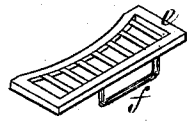


Fig. 4.



Witnesses,
W. J. Cambridge
Chas. E. Griffin

Inventors,
Charles L. Pierce
Horace A. Pinkham
per Taschenmacher & Stearns

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

C. L. PIERCE & H. A. PINKHAM.

HOT-AIR FURNACE.

No. 169,729. Patented Nov. 9, 1875.

Fig. 2.

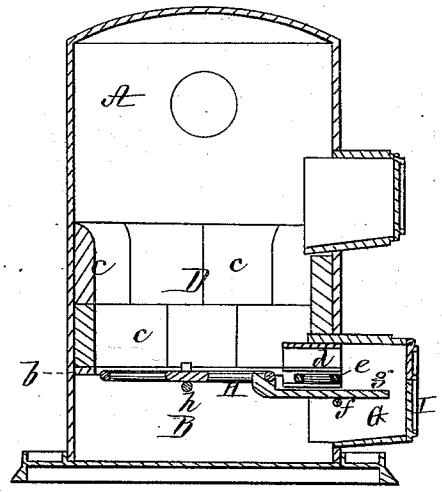


Fig. 5.

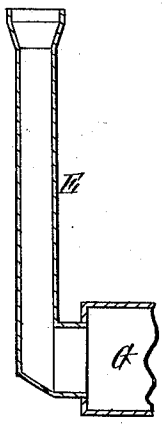
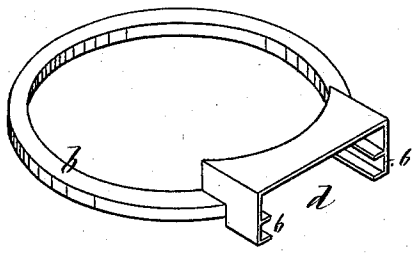


Fig. 3.



Witnesses,
W. J. Cambridge
Chas. E. Griffin

Inventors,
Charles L. Pierce
Horace A. Pinkham
per Teschemacher & Stearns
Attys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE

CHARLES L. PIERCE AND HORACE A. PINKHAM, OF BOSTON, MASSACHUSETTS, ASSIGNORS TO GEORGE F. PINKHAM, OF SAME PLACE.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **169,729**, dated November 9, 1875; application filed June 23, 1875.

To all whom it may concern:

Be it known that we, CHARLES L. PIERCE and HORACE A. PINKHAM, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Hot-Air Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a wrought-iron furnace constructed in accordance with our invention, the outer casing being removed. Fig. 2 is a vertical section through the center of the same; Figs. 3, 4, and 5, details.

In wrought-iron furnaces, as heretofore constructed, the wrought-iron cylinder or "dome" has been made to extend down only as far as the level of the grate, at which point it was united to a base of cast-iron or brick-work, which formed the walls of the ash-pit, this construction necessitating a joint, through which the gas and dust were liable to pass into the hot-air chamber. Furthermore, this cast-iron or brick base, being of considerable thickness, interfered with the transmission of heat to the hot-air chamber.

The first part of our invention has for its object to obviate these difficulties; and consists in extending the wrought-iron cylinder or dome down below the level of the grate, so that its lower portion will form the walls of the ash-pit, thus dispensing with the cast-iron or brick base hitherto used, and avoiding the joint above referred to, and the consequent passage of gas and dust into the hot-air chamber at this point, while the walls or sides of the ash-pit, being of thin wrought-iron, allow of the transmission of a much greater amount of heat therefrom to the hot-air chamber than heretofore, the flange or ring which supports the lining of the furnace being secured directly to the inside of the wrought-iron cylinder. Our invention also consists in the employment of a removable plate, provided with a loop for supporting the handle or shank of the grate, the plate being so arranged in connection with the ring or flange which supports the lining as to leave a space through which "clinkers" can be withdrawn without tipping over the grate. Our invention also consists in supplying the air for combustion through a pipe leading from a room above to the ash-pit, whereby the draft may be controlled by a register or other device without the necessity of descending to the cellar, while, at the same time, the pipe affords a means of ventilation for the room from which it leads.

To enable others skilled in the art to understand and use our invention we will proceed to describe the manner in which we have carried it out.

In the said drawings, A represents the cylinder or dome of a hot-air furnace, which is formed of wrought-iron, and extends down to the bottom of the ash-pit B; the cast-iron or brick base, and the joint formed between it and the wrought-iron cylinder, as in this class of furnaces as heretofore constructed, being thus dispensed with, whereby the passage of gas and dust into the hot-air chamber at this point is entirely avoided, while the thin walls of the ash-pit facilitate the transmission of heat therefrom to the hot-air chamber. Within the cylinder A is secured, by rivets or otherwise, an annular ring, *b*, which serves to support the lining *c* of the fire-pot D. This ring *b* is of the form seen in Fig. 3, the center of the front portion projecting up above the level of the remaining portion, leaving a space, *d*, through which the clinkers may be withdrawn without the necessity of tipping over the grate. At the opposite sides of the space *d* are grooves or guides 6, within which fit the ends of a removable plate or shelf, *e*, which extends across the bottom of the space, and serves to prevent the fuel from dropping out. The under side of this plate *e* is provided with a loop, *f*, through which passes the handle or shank *g* of the grate H, and by which its front end is upheld, the center of the grate being supported by a horizontal arm, *h*, in the usual manner. The plate *e* is made removable, so as to allow of the grate being readily inserted or taken out. The air for combustion is supplied through a pipe, E, which communicates with the mouth-piece G of the ash-pit, (closed tightly by the door I,) and extends

up into a room above, the admission of air to this pipe E being controlled by a register or other device, so that the draft can be regulated without the necessity of descending to the cellar. Furthermore, the pipe E affords a convenient means of ventilating the room from which it leads, the foul air which settles near the floor being drawn down and carried through the fire into the chimney, from which it escapes.

What we claim as our invention, and desire to secure by Letters Patent, is—

The removable plate *e*, provided with a loop, *f*, for supporting the handle of the grate, in combination with the ring *b*, constructed to form a space, *d*, between them, through which the clinkers can be withdrawn, substantially as set forth.

Witness our hands this 16th day of June, A. D. 1875.

CHARLES L. PIERCE.
HORACE A. PINKHAM.

In presence of—
P. E. TESCHEMACHER,
N. W. STEARNS.