(No Model.) 2 Sheets—Sheet 1.

# J. A. RONEY.

## FURNACE DOOR.

No. 338,616. Patented Mar. 23, 1886.

Fig. 1

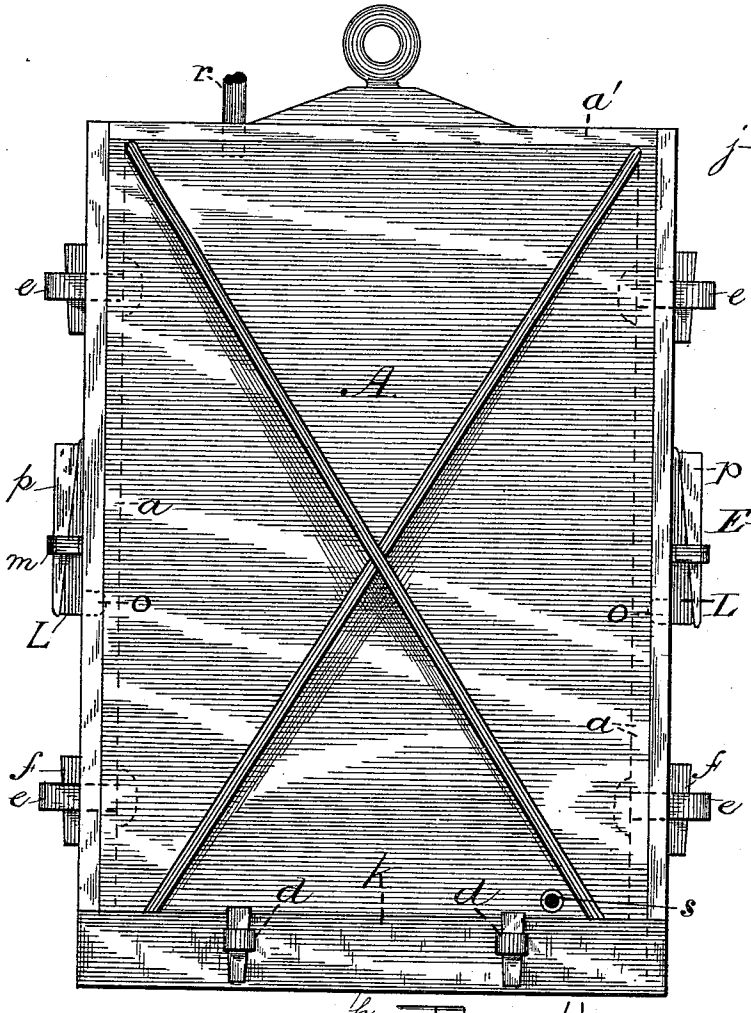



Fig. 2.

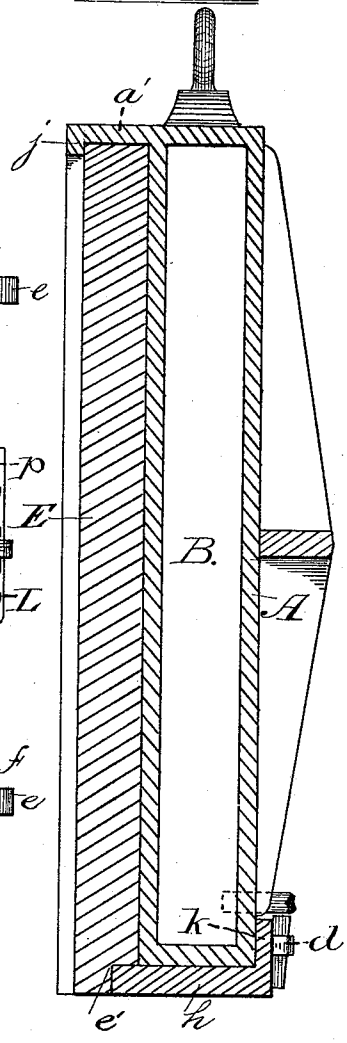
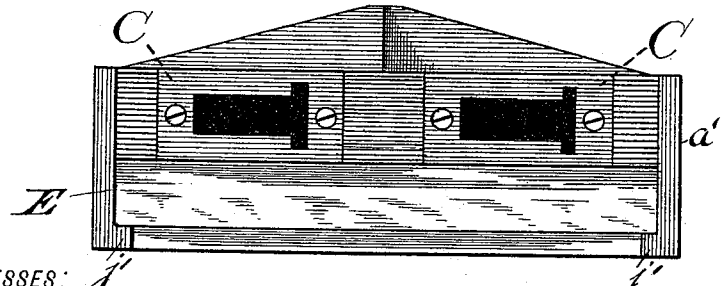



Fig. 4.




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(No Model.) 2 Sheets—Sheet 2.

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## FURNACE DOOR.

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Fig. 3.

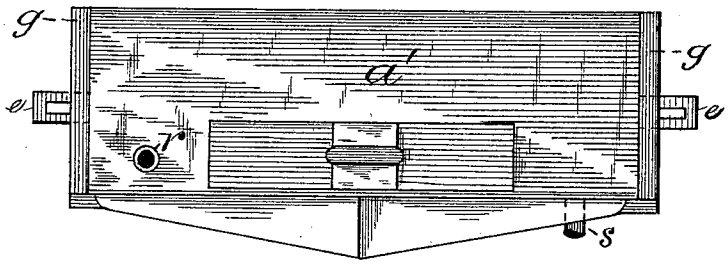



Fig. 5.

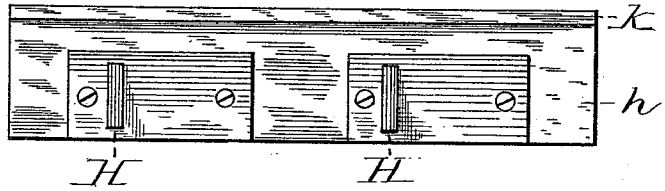



Fig. 6.

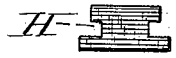
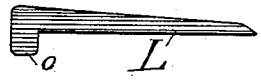



Fig. 7.




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# UNITED STATES PATENT OFFICE.

JOHN ALEXANDER RONEY, OF CORNING, NEW YORK.

## FURNACE-DOOR.

SPECIFICATION forming part of Letters Patent No. 338,616, dated March 23, 1886.

Application filed July 6, 1885. Serial No. 170,747. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ALEXANDER RONEY, a citizen of the United States, residing at Corning, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Furnace-Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the construction of furnace-doors, and has for its object the preservation of such doors from destruction by heat, especially those parts of the door which are subjected to the greatest exposure from the furnace-flames; and to this end it consists in a certain form of furnace-door, in combination with a fire-brick, liners, bottom pieces, and locking devices, as more particularly hereinafter described and claimed.

My invention is illustrated in the accompanying drawings, in which Figure 1 is a front elevation of a door with my improvements applied; Fig. 2, a vertical side sectional view of the same; Fig. 3, a top view; Fig. 4, a plan view of one end of the box-shaped furnace-door with bottom piece removed, showing sides and flanges for holding the fire-brick, and recesses for a locking device; and Figs. 5, 6, and 7, details.

In the drawings, A represents the front surface of a door, which door consists of a hollow cast-iron box, B, provided with eyes or lugs *e*, cast therewith, to accommodate keys *f*, for holding to the sides and bottom of the box the removable side and bottom pieces, *g* and *h*, as hereinafter described. The box B is provided with top and bottom pipes, *r* and *s*, whereby a stream of cold air or water may be introduced and carried through said box for cooling the same. It will be seen that the top *a'* of the box extends inwardly, and is provided with a downwardly-extending flange, *j'*; that the sides *a* of the box are also provided with flanges *j*, as shown in Fig. 4. The top *a'* of the box, and the side and bottom pieces, *g* and *h*, respectively, are thus formed to hold the fire-brick E. The fire-brick E is cut out at the bottom, forming a recess, *e'*, against which the bottom piece projects, the remaining portion of the fire-brick extending below the edge of the bottom piece, thus preventing any portion of that part of the door from being exposed to the heat.

It is well known that the greatest heat upon a furnace-door is thrown upon its lower portion when the furnace-door is open. For this reason the brick is extended, as just described, and for this reason, also, the bottom piece, *h*, is secured to the door in a somewhat different manner than the side pieces, *g*. The side pieces, or "liners," as they may be termed, are provided with holes, by which they are put over the eyes *e*. Keys *f* are then used to hold them in place.

For the purpose of holding the fire-brick tight and to keep it from slipping out when the bottom piece, *h*, is removed, as hereinafter described, there is secured upon the side of the liner *g* a staple, *m*, which receives a key, L, provided with a rounded head, *o*, extending through an aperture in the side of the liner *g*. A wedge, *p*, is driven over this key L, under the staple *m*, and presses the rounded portion *o* upon the side of the brick.

In order to prevent exposure to heat, eyes *d* are cast on the surface A, for the purpose of holding the bottom piece, *h*. This bottom piece is provided with a flange, K, extending over and upon the front surface, A, of the box B. The eyes *d* extend through the flange K, and the bottom piece, *h*, is secured as shown in Fig. 2. The bottom piece, *h*, may be removed by withdrawing the keys from the eyes *d*.

An additional device for securing the bottom consists in providing the bottom of the box with slotted T-plates C, and the upper portion of the bottom liner, *h*, with T-catches H, to engage therewith, as shown in Figs. 4 and 5. By this arrangement, also, which is not herein specifically claimed, this locking mechanism is protected from the greatest heat.

It is apparent with what ease a new fire-brick may be substituted for an old one by this arrangement, how effectually the front and bottom of the door are protected from the heat, and how easily the sides or other parts can be removed and replaced by others when worn and burned out.

I am aware that prior to my invention furnace-doors have been made hollow, or provided

with means for the admission and emission of air to keep them cool, and also provided with removable fire-brick held in place by means of flanges and bolts, for the purpose of protecting the doors from the damaging effects of overheating. Therefore I do not herein claim such a device, broadly; but

What I claim, and desire to secure by Letters Patent, is—

1. In a furnace-door, the fire-brick E, in combination with the side pieces or liners, the staple secured upon the side of the liner, and a key, L, provided with a rounded head, *o*, extending through an aperture in the side of the lining, a wedge, *p*, driven over the key L and under the staple, to press the rounded portion *o* upon the side of the brick, substantially as described.

2. A furnace-door provided with the eyes *d*, cast upon its surface, in combination with the removable bottom piece, *h*, provided with a flange, K, extending over and upon the front surface, A, the said eyes extending through the flange K, and a suitable key, whereby the joint between the bottom piece and door is protected and the said flange of the bottom piece securely held against the surface of the door, substantially as described.

3. In combination with a furnace-door consisting of a hollow cast-iron box, B, provided with top and bottom pipes for introducing a stream of cold air or water through said box, the sides and top of said box extending inwardly and provided with flanges *j*, the bottom piece, *h*, and the fire-brick E, cut out at the bottom to form a recess, *e'*, against which the said bottom piece of the box projects, and a locking device for holding said bottom piece on the door or removing it therefrom, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN ALEXANDER RONEY.

Witnesses:

MILFORD L. RICE,

CHARLES J. DOTY.