J. G. HABERFIELD.

# Doors and Bits of Puddling and Boiling Furnaces.

No. 139,244. Patented May 27, 1873.

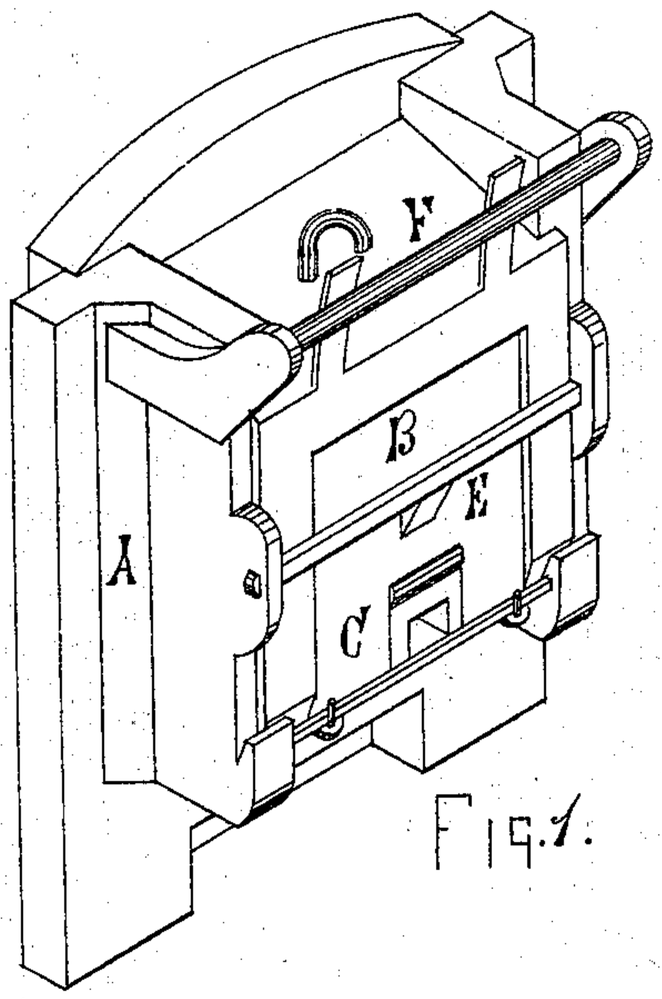



Fig. 1.

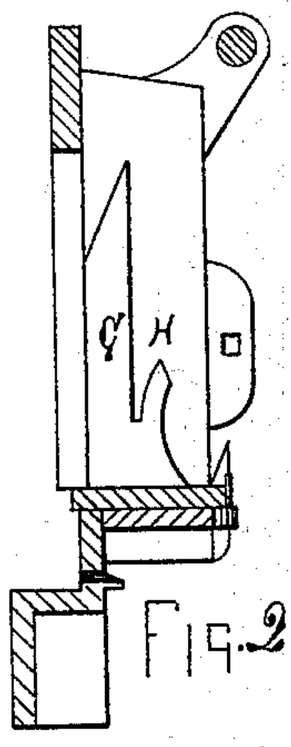



Fig. 2.

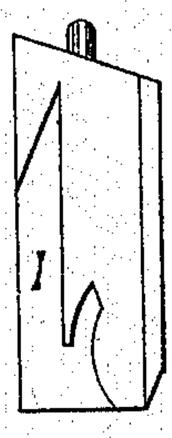



Fig. 3.

Fig. 4.

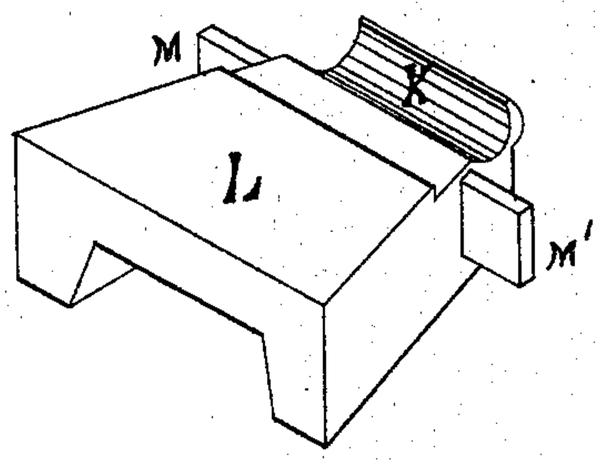
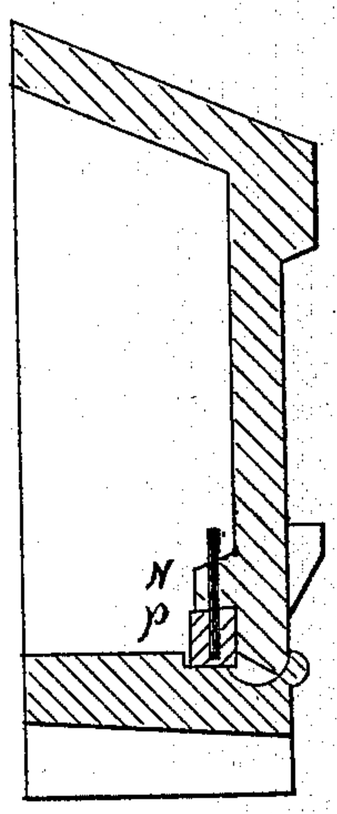



Fig. 5.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN G. HABERFIELD, OF WHEELING, WEST VIRGINIA.

## IMPROVEMENT IN DOORS AND BITS OF PUDDLING AND BOILING FURNACES.

Specification forming part of Letters Patent No. **139,244**, dated May 27, 1873; application filed March 24, 1873.

*To all whom it may concern:*

Be it known that I, JOHN G. HABERFIELD, of Wheeling, in the county of Ohio and State of West Virginia, have made the invention hereinafter set forth, of which the following is a specification, reference being had to the accompaning drawing and the letters of reference thereon.

My invention relates to an Improvement in Doors for Boiling, Puddling, or Heating Furnaces; and consists, first, of the combination of the door-frame, provided with the door-slide plates, whether with or without the notch-catches on the latter, and the door provided with corresponding plates; second, of the combination of the door and door-bit; and, third, of the combination of the door-frame, door, and door-guide roller, each of which is hereinafter described.

In the drawing, Figure 1 is a perspective of the door-frame with the door within it. Fig. 2 is a view of the interior of one of two like sides of the door-frame, against which the door abuts when closed within the frame. Fig. 3 is a view of one of two like upright sides or edges of the door which abut, when closed, against that part of the frame shown in Fig. 2. Fig. 4 is a perspective of the door-bit, or the lining of the stoking-hole, in the door. Fig. 5 is a vertical section of the front part of the door, showing how the door-bit, shown in Fig. 4, is attached thereto.

*Particular Description of the Above Figures.*

In Fig. 1, A is the door-frame; B, the door closed within said frame; C, door-bit, or stoking-hole, within door B; E, movable bar across the door, to keep the latter down and in place; F, roller attached to the frame to keep the door within the frame while the door is being raised and lowered by means of a lever connected with it, on its top edge.

In Fig. 2, G is a door-slide plate or bar on each of the inner sides of the upright sides of the interior of the door-frame, which may be either plain or straight, or provided with one or more notch-catches, *h*. In Fig. 3 I is a slide-plate or bar upon both edges or sides of the door, made either plain or with catches, to correspond with the ones on the frame, before described. When the door is in the frame these slides or bars on the one come in contact or bear upon the slides on the other. If made plain they make the door close and prevent it from falling into the furnace, and if notched they do the same, and also further lock the door or prevent it from coming outward from out the frame. Besides, it makes unnecessary the use of the cross-bar E. Heretofore neither door nor the frame has been made with such plates or bars thereon, but the plain-edged door has abutted against a plain frame, and the door was prevented from going into the furnace by the cheeks of the frame, which latter being exposed to the heat soon burned off, allowing the door to be kept out of the furnace by the best outside means possible, and also admitting a too great flow of air into the furnace, to the injury of the metal being prepared therein. As I make my door, all of these ill consequences are prevented, or remedied in such a great degree as to make it far superior in utility.

In Fig. 4, L is the door-bit or lining of the stoking-hole, made, as shown—triangular—with beveled edges to fit to like sides and edges in the opening of the door. K is a circular groove in the bit to fit to a corresponding edge in the opening; M M′, tangs on same to help to keep it in place in the opening. When so constructed it is inserted into the stoking-hole and made fast therein, as shown in Fig. 5, in which *n* is a projection on the inside of the face of the door, and *p* is a wedge or key driven in between this projection and bit. This holds it firmly therein. When the door-bit is thus put into the door, the door is filled in in the usual manner with fire-brick, which also more securely fastens the bit within its place. Heretofore this bit has been bolted onto the door. The bolts, being exposed at one end to the intense heat of the furnace, soon burned off, to the great detriment of the operator. This annoyance I believe I have removed by constructing and affixing the bit as above described. Heretofore there has been no device, that I am aware of, for holding the door within the frame when it is being raised and lowered

therein, and that it does not always keep itself in place is well known to boilers. I so keep it within the frame by means of the roller F attached to projections on the frame, the door passing between it and the frame as it is raised or lowered.

The other parts of my door being like unto the doors in use, and familiar to all boilers and manufacturers of furnaces, I need not here describe them, having already described some of such parts most intimately connected with my improvements.

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

1. The combination, consisting of the door-frame A, provided with the door-slide plates G, whether with or without the catch *h*, and the door B provided with slide plates or bars to correspond with those on the frame, as herein specified.

2. The combination of the door B and the door-bit L, the latter constructed and adjusted to the former, as herein described.

3. The combination of the door-frame A, door B, and the roller F, as herein specified.

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Witnesses:

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