J. C. LONGLAND.

DOOR-FRAMES AND JAMB-PLATES FOR FURNACES.

No. 173,028. Patented Feb. 1, 1876.

Fig. 1.

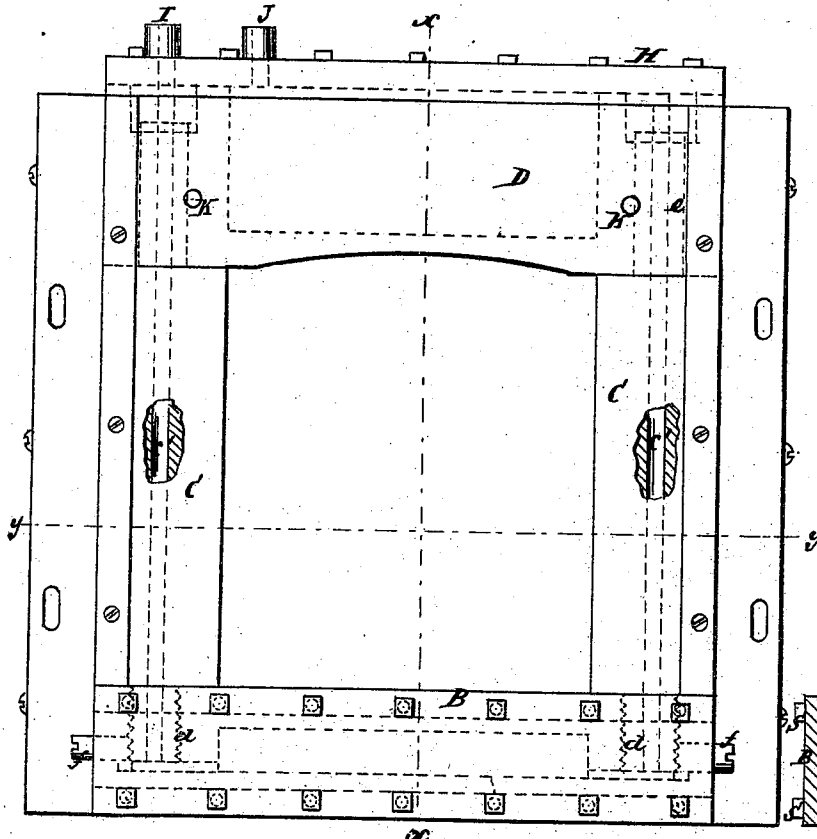


Fig. 2.

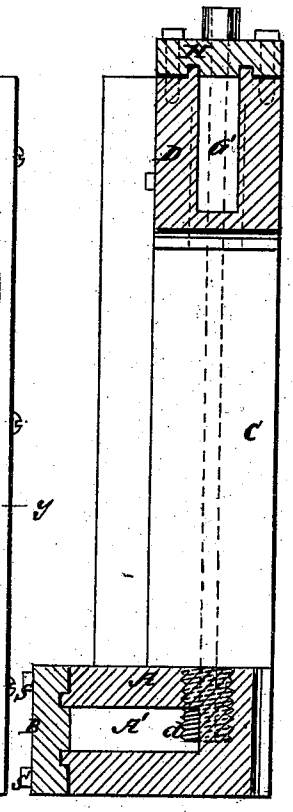


Fig. 3.

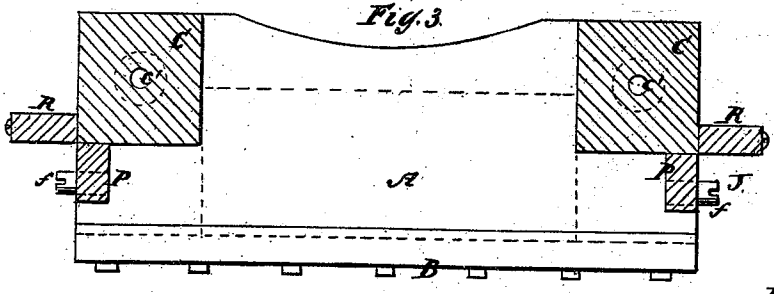


Fig. 4.

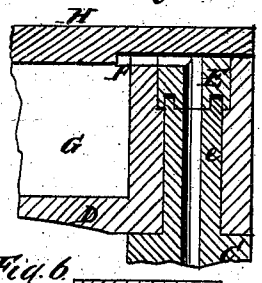


Fig. 5.

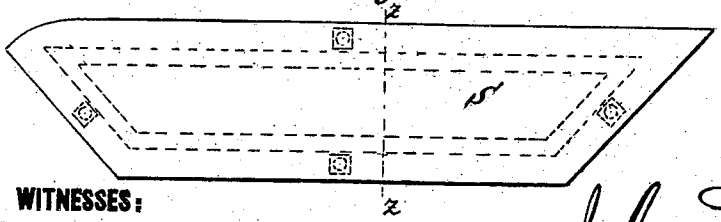
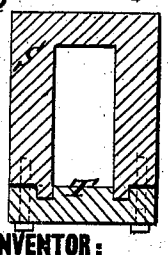


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES C. LONGLAND, OF ROME, NEW YORK.

IMPROVEMENT IN DOOR-FRAMES AND JAMB-PLATES FOR FURNACES.

Specification forming part of Letters Patent No. **173,028**, dated February 1, 1876; application filed June 26, 1875.

To all whom it may concern:

Be it known that I, JAMES C. LONGLAND, of Rome, in the county of Oneida and State of New York, have invented a new and Improved Wrought-Iron Water Door-Frame and Jamb-Plate, of which the following is a specification:

The invention will first be described in connection with drawing, and then pointed out in the claims.

Hitherto door-frames and jamb-plates for furnaces have been, and they are still, made of cast-iron, the door-frames having a small pipe cast into them, for the passage of water for cooling purposes; but the intense heat of the furnaces acting on the inside of the door-frame, and the outer side being kept much cooler by the action of the water, causes an irregular expansion of the cast-iron, and, consequently, breakage, after which the water must be stopped, and the door-frame soon burns out and must be replaced with a new one. This breakage and burning out often occur within a week, and the cast-iron door-frame seldom lasts more than six weeks or two months; hence the necessity for improvement in the material used.

Jamb-plates are usually made of cast-iron and cooled by the action of blast supplied by a blower. Plates thus constructed and cooled are of short duration, and when once burnt out are a cause of great expense, as the brick jamb of the furnace is supported by the jamb-plate, and when once the jamb-plate is destroyed the brick jamb loses its foundation and falls into the furnace, causing a great outlay of time and material, which, by my wrought-iron water-jamb, will be saved.

Figure 1 is a front elevation of my improved door-frame. Fig. 2 is a sectional elevation on line *x x* of Fig. 1. Fig. 3 is a horizontal section on line *y y*. Fig. 4 is a vertical section through one of the packing-joints for the water-passage. Fig. 5 is a top view of the jamb-plate. Fig. 6 is a transverse section of Fig. 5 on line *z z*.

Similar letters of reference indicate corresponding parts.

A is the bottom plate, of wrought-iron, being forged into one solid piece, having a chamber, A′, cut out from the outer or front edge, for water-passage. B shows the front plate or cover to said water-passage, secured to the plate A by screw-bolts, and being tongued and grooved to make water-tight joints, as described in my Patent No. 161,135, for water-boshes. C C show the side posts or door-jambs, which are made of one solid piece of wrought-iron, through which a hole, C′, is drilled lengthwise, and which are connected with and fastened to the plate A by a screw-thread, *d*, cut upon the end thereof, closely fitting a corresponding thread cut into said plate A, to make water-tight joints. The lower and upper ends are to be, in practice, jointed by groove and tongue, for packing. The upper ends of posts have close-fitting tenons *e*, without screws, which enter sockets formed in top plate D, and to be packed, as shown in Fig. 4. D shows the top plate, also of solid wrought-iron, into which is cut a chamber or water-reservoir, G, which is connected with one of the posts by a passage, F, thereby causing a constant circulation of water. E E show the form of socket for receiving the end of posts at top and bottom thereof, in order to secure water-tight joints. H is the cover of reservoir, which is secured to the plate D by screw-bolts, and tongues and grooves formed on the inner edge of the reservoir, so as not to be cut by the bolts. Through this cover passes the inlet-pipe J, and the outlet-pipe I. K K represent keys, which pass in at one side of plate D, into seats in the posts C C, thence into the opposite side of plate D, thereby securely joining plate D to posts C C. P P represent guards to keep the door of the furnace in its place. R R represent outside flanges, by means of which the door-frame is fastened to furnace. *f* represents screw-plugs, stopping holes through which the water is drawn to clean out; also to prevent freezing, when furnace is not working in cold weather. The jamb-plate S is also made of solid wrought-iron, and is cut out from the bottom up to make a water-chamber, and made to be water-tight, with a bottom plate, T, by means of tongues and grooves, same as the plates A and D of door-frame.

The ends of jamb-plate are beveled, so as to make them fit, the one to the side of fur-

nace and door-frame, and the other to my water-bridge bosh, thereby forming a complete water circulation all around the furnace.

The passage of the water is as follows: Entering in at the pipe J into the reservoir G, it goes down the right-hand post C into and through the plate A, up the other post C, going through the sockets E, and discharging through the outlet-pipe I; thence into my bridge-bosh, forming a complete circulation of the furnace, and finally discharging itself into the tool-bosh, for the purpose of cooling puddlers' tools.

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

1. The combination of hollow plate A, front plate B, screw and tenon posts C C, having hole C′, and the covered plate D, having the passage F, as and for the purpose specified.

2. The top and bottom plates having water-chambers G A, inclosed water-tight by cap-plates, tongued, grooved, and packed and bolted on, substantially as specified.

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Witnesses:

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