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BOILER-FURNACE.

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To all whom it may concern:

Be it known that I, GEORGE WASHINGTON PARKETON, a citizen of the United States, and a resident of Laurens, in the county of Laurens and State of South Carolina, have invented certain new and useful Improvements in Boiler-Furnaces; and I do 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a vertical longitudinal section of a boiler, showing my improved furnace. Fig. 2 is a transverse section. Fig. 3 is a bottom view of my improved furnace. Fig. 4 is a detail top view of grate-bars.

The invention relates to improvements in boiler-furnaces, the object being to prevent the rusting or destruction of the grate-bars, and to provide means for heating the feed-water; and it consists in the construction and novel combination of parts, as hereinafter described, and pointed out in the claims.

Referring to the drawings by letter, A designates the fire-box of a boiler, having double walls and the parallel tube-bars B, partially forming its base. The said tube-bars are connected at their alternate ends by the cross-tubes c, d, so that a continuous flow of water through the system of pipes can be established.

Rising from the tubes B, at equal distances apart, are the rectangular water-boxes C, which are of equal size, preferably, and which form the top portion of the grate for the fire-box.

The manner of attaching the boxes C to the tubes B, as shown in the drawings, is as follows: Vertical tubular openings e extend from the tubes B and communicate with the interior thereof. The boxes C are placed on the upper ends of said tubes e, so that the openings f in the bottom of the boxes communicate with the openings e and the tubes B. The boxes are secured in place by the depending bolts k, passing through the openings in the lugs k', outstanding from the tubes B.

F is an inlet water-tube attached to and communicating with a tube, B, on one side, and delivering water from a tank or other source of supply into the boiler at Z. 55

F is a rectangular frame, the bars of which intersect and extend between the chambers C. This frame can be raised and lowered by means hereinafter described.

G and H are two transverse shafts oscillating in bearings secured to the bottom of the fire-box, and provided, respectively, with the depending arms g and h, connected by the link-rod I. The shaft G has on its end, extended outside of a bearing, the detachable handle J, 64 and the two shafts G and H are respectively provided with the inwardly-standing shafts K and L, which have their ends pivoted upon the rectangular frame F, so that by vibrating said handle the said frame will be raised and lowered. The frame F thus constitutes a part of the grate of the device, and when lowered to its normal position has its upper edge below the tops of the rectangular water-chambers C, so that it is not liable to be burned. In this position it rests upon the tube-bars B. When the frame F is turned up by means of the handle, it rises above the chambers C and stirs up the fuel and loosens the same, so that combustion is accelerated. The water which is fed through the tube-bars into the boiler becomes heated in its passage, and steam is therefore more quickly generated in the boiler proper, while the expenditure of fuel is less. The grate thus has its bars tubular and flooded internally with water, so that they cannot corrode or rust out, or be burned by the action of the fire.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with a double-wall boiler-furnace, the hollow grate-bars closed at their outer ends and connected by transverse tubes, and having the inlet-pipe for the feed-water and the tube connecting the grate with the boiler, substantially as specified.

2. In a fire-box, the combination, with the tube-bars forming part of the grate, of the water-boxes rising from and communicating with said tube-bars and forming the upper surface of the grate, substantially as specified.

3. In a fire-box, the combination of the wa-
ter-tube forming part of the grate, the rectangular water-chambers rising from and communicating with said tube and forming the upper surface of the grate, and the shaking frame having its bars between the sides of said chamber and moved upward and downward by means substantially as specified.

4. In a boiler-furnace, the combination, with the tube-bars B, connected at their alternate ends by the transverse tubes b and having the water-boxes c, forming the upper surface of the grate, of the shaking frame F, having intersecting bars and devices for operating the same, substantially as specified.

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

GEORGE WASHINGTON PABKTON.

Witnesses:

O. J. HUNT,
J. W. SHELL.