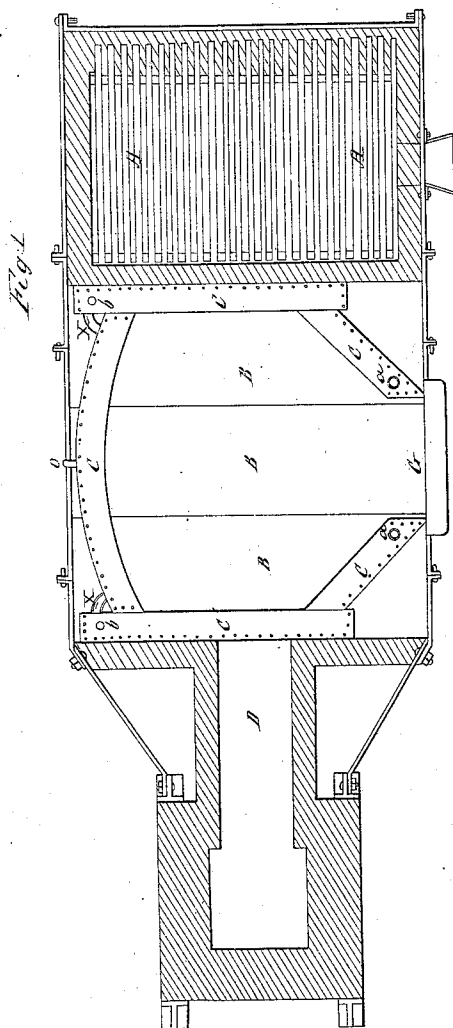


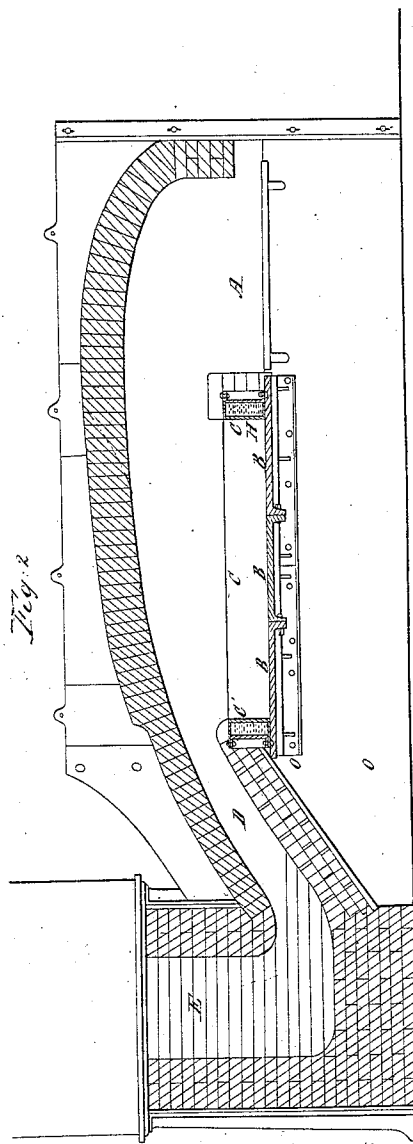
Vinton & John, Protecting Furnaces,

N^o 25,694.

Patented Oct. 4. 1859.



Witnesses
H. E. Pugh
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Inventor
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UNITED STATES PATENT OFFICE.

JOHN J. VINTON AND EDWARD JOHN, OF IRONTON, OHIO.

IMPROVEMENT IN FURNACES.

Specification forming part of Letters Patent No. 25,694, dated October 4, 1859.

To all whom it may concern:

Be it known that we, JOHN J. VINTON and EDWARD JOHN, of the town of Ironton, Lawrence county, and State of Ohio, have invented a new and Improved Water-Liner for the Hearths or Working-Bottoms of Boiling and Puddling Furnaces; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of our invention consists in making or constructing the liners of wrought or malleable iron.

To enable others skilled in the art to make and use our invention, we will proceed to describe the same.

Figure 1 of the accompanying drawings is a horizontal section of the furnace, and Fig. 2 a vertical section of the same.

A A are the fire-bars. B B B is the hearth or working-bottom on which the iron is boiled or puddled, and C C C' C' C' are the water-liners, of wrought-iron, (boiler-plate,) firmly riveted together with rivets of wrought-iron, as in boiler-making, and connected together, so that a constant stream of water entering the liners by pipes fitted to the openings *a a* of the jam-liners C C may pass on to the bridge-liners C' C', thence through the bent pipes X X to the back-liners C'', and out by the pipe O at the back of the furnace. The openings *b b* are for the introduction of pipes to carry off the steam that may be formed within the liners.

The ordinary way of constructing and using the "water-bosh," so styled, has been to make it of cast-iron, and they have only been used on the sides of the hearth, and known as the "fire-bridge" and "flue-bridge," and not on the back or front, as in our plan, which encircles the whole hearth or material to be melted, except the space occupied by the door.

The cast-iron bridge has been found impracticable on account of its liability to break and let the water into the melted mass, and thereby chilling the whole, and often requiring the front or back of the furnace to be pulled down in order to clear the mass out and replace the bosh, causing great loss, while the wrought-iron (or malleable) material is not so liable to give way, and in the end becomes much the cheapest material to use for a water-liner, and by using the cinders against the inside of the liner, as indicated by the letter H, the liner is protected from the fire and melted matter. To a hearth four by five feet the water-liner may be eight inches in height and three inches in thickness, all in the clear, and of good boiler-iron, and the water and escape steam pipes may be about one inch diameter.

In the vertical section of our drawings the front wall is not shown; hence the precise position of the bottom plate, B, resting on the wall, is not shown, nor does the ash-pit appear in its proper place under the grate-bars A A. In practice this wall is continued from E to F, and would show the charging-door G, Fig. 2, where the metal is thrown in to be melted, and the back wall would be carried up same height as the front—about (5) five feet—as indicated by 3 and 4, Fig. 2.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The employment, in reverberatory furnaces, of the water-liners of wrought metal, as herein described, when constructed and fitted in place in the manner set forth.

JOHN J. VINTON.
EDWARD JOHN.

Witnesses:

HUGH BROOKS,
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