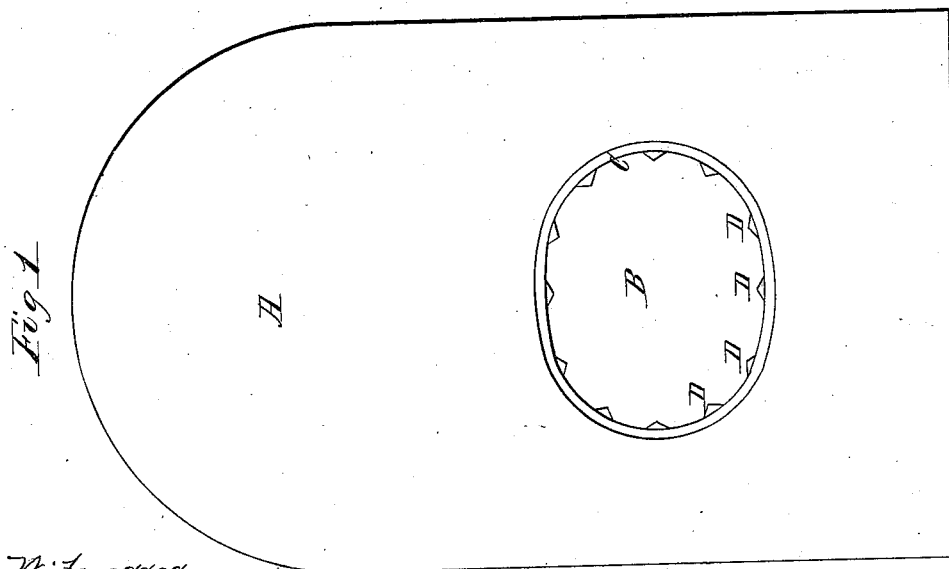
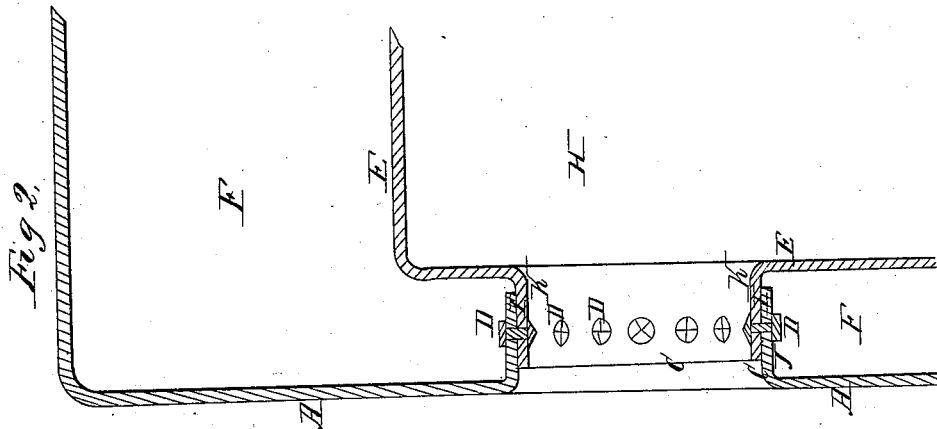


J. Penketh,
Steam-Boiler Attachment.
No 46,423. Patented Feb. 14, 1865.



Witnesses,
O. Camm.
C. W. Reed

Inventor,
J. James Penketh
By Osburn & Mans attys

UNITED STATES PATENT OFFICE.

JAMES PENKETH, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND JOHN E. EASTMAN, OF SAME PLACE.

IMPROVEMENT IN FURNACE-DOORS FOR BOILERS.

Specification forming part of Letters Patent No. **46,423**, dated February 14, 1865.

To all whom it may concern:

Be it known that I, JAMES PENKETH, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Furnace-Doors for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 represents a front elevation of the boiler; Fig. 2, a central sectional view of the front part of the boiler.

The nature of my invention consists in a novel method of joining together the plate that forms the furnace and the outside plate of the boiler around the aperture or door for admission of fuel to the furnace.

To enable those skilled in the art to manufacture and use my invention, I will proceed to describe the same with particularity.

The same letters of reference refer to the corresponding parts in the different figures.

A represents the outside plate of a steam-boiler, showing the edge around the door of the furnace turned in, as shown at J J.

E is the plate that contains the fire of the furnace, and has its edges around said door turned out, as shown at K K.

H represents the space inside the furnace for the fire, and F the space for the water between the two plates. The door-space B, formed by the lip J of the boiler-plate A, and also the one formed by the lip K of the furnace-plate E, are of such sizes comparatively that the lip on one plate will fit tightly within the lip of the other plate, so that when the boiler is put together one shall lap over the other, as shown at I I.

D represents the rivets by which the lips are firmly bolted together; and C represents the edge of the lip K, which is represented in the drawings to be inside of the lip J.

The usual method of constructing the said aperture or door of the furnace is to have a separate metallic ring or hoop of suitable size for the door, to which the lips of the plates A and E are riveted.

The ring, in order to be sufficiently strong

to stand the pressure of water from within and the wear and tear of putting in fuel, &c., from without, must be constructed much thicker than the plates that are fastened to it. This occasions great strain on the bolts which fasten the plates to the ring whenever the furnace is heated, from the fact that the plates will expand from the effect of the heat much quicker than the thick ring, and in a short time there is leakage around said bolts, which necessitates frequent repairs.

My method does away with the metallic ring, thereby diminishing the first cost, and at the same time avoiding all the inconvenience of leakage and repairs.

The boiler is put together by bringing the fire-box E up to the proper position, as shown, before the rear plate of the boiler is put in, when the rivets are put in by a person outside of the fire-box and between the same and the outside of the boiler, who, with a suitable iron bar, holds the bolts or rivets in place, while another person inside the fire-box heads down the rivets, as shown.

Although the space between the ends of the boiler and fire-box is too narrow to allow one to get into said space, yet by means of a curved bar the workman may readily reach down and hold the rivets in place while the same are being headed down; but even if the space between the top of the fire-box and the top of the boiler were too narrow to allow a person to occupy the same, then the riveting and heading process could be performed before the front end of the boiler was riveted to the cylindrical part thereof.

Having thus fully described the construction of my improved furnace-door, what I claim as my invention, and desire to secure by Letters Patent, is—

Constructing the furnace-doors of steam-boilers by turning the boiler-plate inward and the furnace-plate outward and lapping and riveting said plates together, substantially in the manner and for the purpose herein specified and shown.

JAMES PENKETH.

Witnesses:

LEWIS L. COBURN,
W. E. MAUS.