T. J. FALES.

Bottoms for Steam-Engine Boilers.

No. 221,452. Patented Nov. 11, 1879.

Fig. 1.

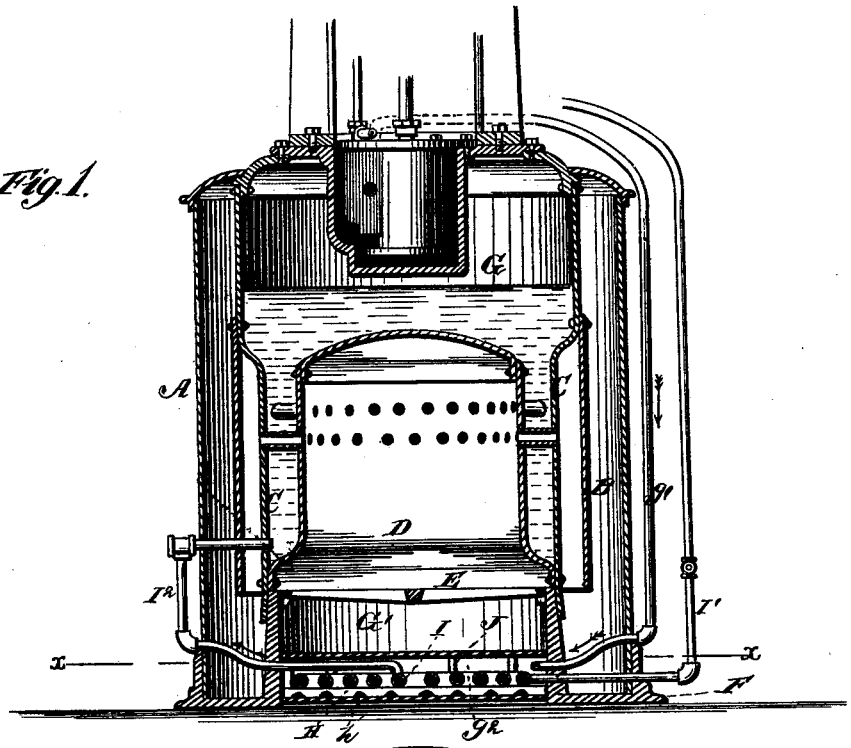


Fig. 2.

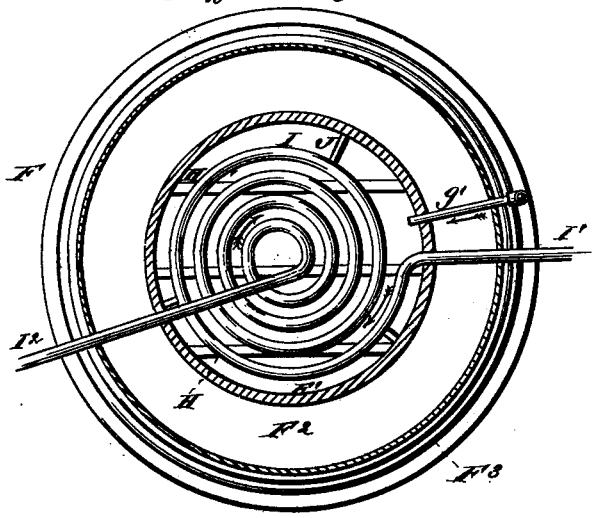
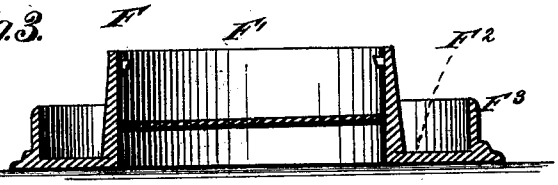


Fig. 3.



WITNESSES

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IMPROVEMENT IN BOTTOMS FOR STEAM-ENGINE BOILERS.

Specification forming part of Letters Patent No. **221,452**, dated November 11, 1879; application filed September 4, 1879.

To all whom it may concern:

Be it known that I, THOMAS J. FALES, of the city of New York, in the county of New York, and State of New York, have invented certain new and useful Improvements in Bottoms for Steam-Engine Boilers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 of reference marked thereon, which form a part of this specification.

This invention relates to that class of steam-engines which are provided with hollow bottoms below the boiler and fire-box, for the reception and heating of the feed-water before it is supplied to the boiler. Hitherto the hollow bottom or base has usually been filled or partly filled with feed-water, which has generally been in direct communication with the water in the boiler, and therefore subject to the expansive pressure of the boiler-steam. This pressure subjects the hollow base to considerable strain, which my improvement avoids.

For this purpose I employ a feed-coil for the water to be supplied to the boiler, and locate this coil in the hollow bottom or base and discharge into the space around said coil the exhaust-steam of the engine-cylinder. This is the main feature of my invention, but I have made additional improvements in the details of construction of the base or bottom, which will be hereinafter fully set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a vertical section of a steam-engine boiler provided with my improved bottom or base. Fig. 2 represents a horizontal section through the hollow feed bottom, showing the coil in position, and Fig. 3 represents a detail plan view of the base or bottom with the pipes removed.

A designates the outer shell, and C the inner shell of a boiler; B, the depending diaphragm; D, the fire-box, and E, the grate-bars, all substantially as shown in my former patents.

F designates a casting constituting my base or bottom. This consists of a cylindrical hollow part, F′, an annular flat part, F², surrounding the base thereof, and a raised annular rim, F³, concentric with F′. The exterior face of cylindrical part F′ tapers upward and inward and receives the correspondingly-flaring lower end of boiler-shell, B. Additional fastenings may be employed for said shell B. Shell A fits tightly within rim F³, and additional fastenings may be employed for it also.

The hollow space within cylindrical part F′ is divided by a horizontal partition, *g*, into an upper chamber, G, and a lower chamber, G′. The upper chamber is immediately under the grate-bars E, and constitutes the ash-box. The lower chamber, G′, is supplied with the exhaust-steam of the cylinder through pipe *g*′, which steam passes out by a discharge-pipe, (not shown.) The bottom, *g*², of this chamber G′ is raised above the lower face of F², which constitutes the real supporting base of the machine, in order to leave space for bolt-heads. It is perforated to allow the escape of water to the discharge-pipe. On this bottom are transverse supporting-bars H, which have openings *h* for the same purpose. On these supporting-bars, which may be of any convenient number, rests a coil of pipe, I, which receives feed-water from any convenient reservoir through pipe I′, and supplies it through pipe I² to the boiler. Vertical bars J serve to hold the coil away from the sides of the casting, so that it may not be unduly cooled by conduction. The heat of the exhaust-steam in chamber G′ is increased by the effect of the fire on partition or diaphragm *g*, and it raises the temperature of the water in said coil I, so as to facilitate the vaporization of said water in the boiler. As this water has no connection with the space G′ surrounding said coil, the wall and top and bottom of said space are subject to no boiler-pressure.

The coil may be vertical instead of horizontal, and may be in one piece with its inlet and outlet pipes, though I prefer the construction shown.

I am aware that cylindrical boiler-shells have heretofore been combined with boiler bottoms, having annular raised ridges or flanges, the lower end of each shell being arrange to fit around the annular ridge or flange of its bottom.

I am also aware that it is not new to make

a boiler bottom with a raised annular central ridge tapering upward and inward. I do not claim either of the above constructions.

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

1. In combination with a vertical steam-engine boiler, and a hollow base or bottom supporting the same, a feed-water coil supported within said hollow base, and a pipe which supplies steam to the space immediately around said coil, substantially as set forth.

2. In combination with a steam-engine boiler a hollow base, a feed-coil located within said base, and supplying water to said boiler, and the exhaust-pipe of a steam-engine arranged to supply steam to the space immediately around said feed-coil, substantially as set forth.

3. In combination with coil I and the hollow boiler, bottom the supporting cross-bars H, perforated as set forth.

4. In combination with the hollow bottom or base and inclosed coil the vertical bars J, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS J. FALES.

Witnesses:

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GEORGE H. MCCOY.