E. L. Horton,

Flue and Tubular Boiler.

No. 906. Patented Sep. 5, 1838.

Fig 1.

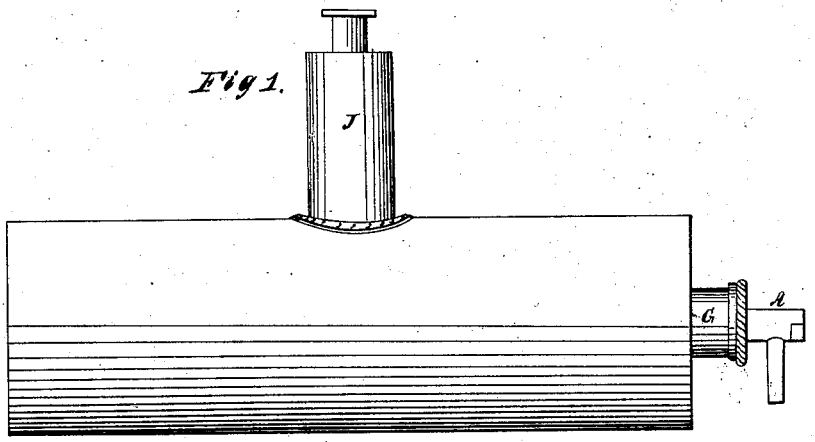


Fig 2.

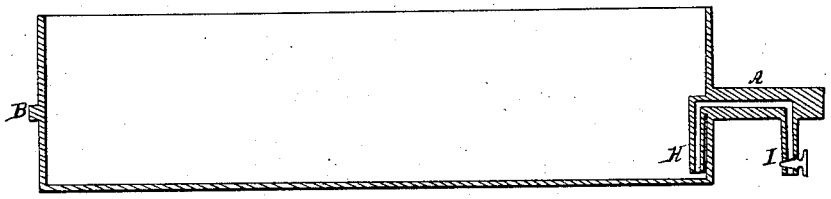


Fig 4.

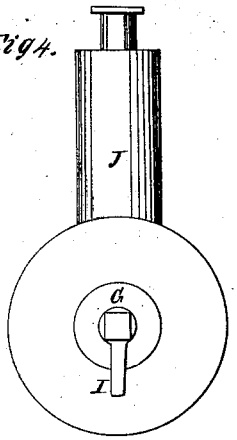


Fig 5.

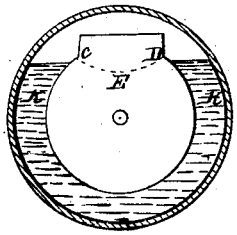
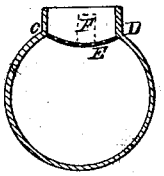


Fig 3.



UNITED STATES PATENT OFFICE.

ELLIS L. HORTON, OF HARTFORD, CONNECTICUT.

STEAM-BOILER.

Specification of Letters Patent No. 906, dated September 5, 1838.

To all whom it may concern:

Be it known that I, ELLIS L. HORTON, of Hartford, in the county of Hartford and State of Connecticut, have invented certain Improvements in the Manner of Constructing Boilers for Generating Steam; and I do hereby declare that the following is a full and exact description thereof.

The exterior form of my boiler is that of the ordinary cylinder, but within this I place what I denominate a movable steam reservoir, or chamber, which occupies a large portion of the space within the cylinder, but between which and the cylinder there is to be a stratum of water of three or four inches, more or less, which is exposed to the direct action of the fire upon the outer case, or cylinder; by which means, as experience has shown, the generation of steam is augmented, while the quantity of water to be carried is much diminished.

In the accompanying drawing Figure 1, shows the exterior of the boiler, Fig. 2, a side view of the reservoir, Fig. 3, an end view of the same, Fig. 4, an end view of the boiler, and of the reservoir within it.

The reservoir is suspended centrically within the cylindrical case, or boiler, by the shafts, or pivots A, and B. The main body of it is cylindrical, as shown in the section Fig. 3, and in Fig. 5. On its upper side it is open from C, to D, which opening extends its whole length, and is of sufficient width to allow a man to pass into it, from the manhole in the boiler, for the purpose of cleaning or repairing either the boiler or reservoir; there are projecting sides along the opening, as shown in the figures, and these are to rise so as nearly to touch the inside of the boiler. A concave lid, shown by the dotted lines E, is hung on centers on one side, as at C; this is made of the same curvature with the reservoir, in order that it may be folded back within it, and occupy but little room. When raised up, it forms a channel to carry off any water which may foam over the sides of, and would otherwise pass into, the reservoir.

A pipe rises from the lid E, and is shown by the dotted lines F; this prevents the running of water into the boiler through the opening, or openings, which must necessarily be left in it for the passage of steam. In boilers where the water does not foam, the lid E, may be omitted.

The shaft A, of the reservoir is hollow, and passes through a stuffing box G, in the boiler head. It is made square at its outer end, where the requisite power may be applied, to turn it around when required. A tube, or pipe, H, I, passes through the hollow shaft, and is bent twice at right angles, as shown in the drawing; it reaches down nearly to the bottom of the reservoir at H, and has a stop cock at I, by which it may be opened or closed at pleasure; by means of this device an opportunity is afforded of blowing off any water which may accumulate in the reservoir from the condensation of steam, or from any other cause.

J, is the steam drum, and K, K, the water space between the reservoir and the boiler.

In each of these figures, like parts are designated by the same letters of reference.

It will be seen that the close approach of the sides of the open part of the reservoir, to the cylindrical boiler (Fig. 5,) will tend to prevent the passing of water into it, even where the foaming is considerable. I will remark, however, that if it is at any time preferred to use this boiler, without employing the reservoir as a steam chamber, it may be advantageously done, water being allowed to rise in the reservoir to the ordinary water line of a boiler; and I have found that when so used steam is still generated with greater rapidity than in cylindrical boilers without such an appendage. When thus used the pipe H, I, may be employed as a supply pipe, and the water injected through it will have much less effect in checking the supply of steam, than when injected directly into the boiler.

Having thus fully made known the manner in which I construct my improved cylindrical steam boiler, I now declare that what I claim as my invention, and wish to secure by Letters Patent is—

The construction and use of the movable reservoir, suspended upon pivots, or gudgeons, and made, and operating, substantially in the manner herein set forth.

ELLIS L. NORTON.

Witnesses:

JOHN B. SNOW,

WALTER S. BURGES.