HENRY HUMPHREVILLE & THOMAS HUMPHREVILLE.

Combined Portable Furnace and Wash-Boiler.

No. 127,977. Patented June 18, 1872.

Fig. 1.

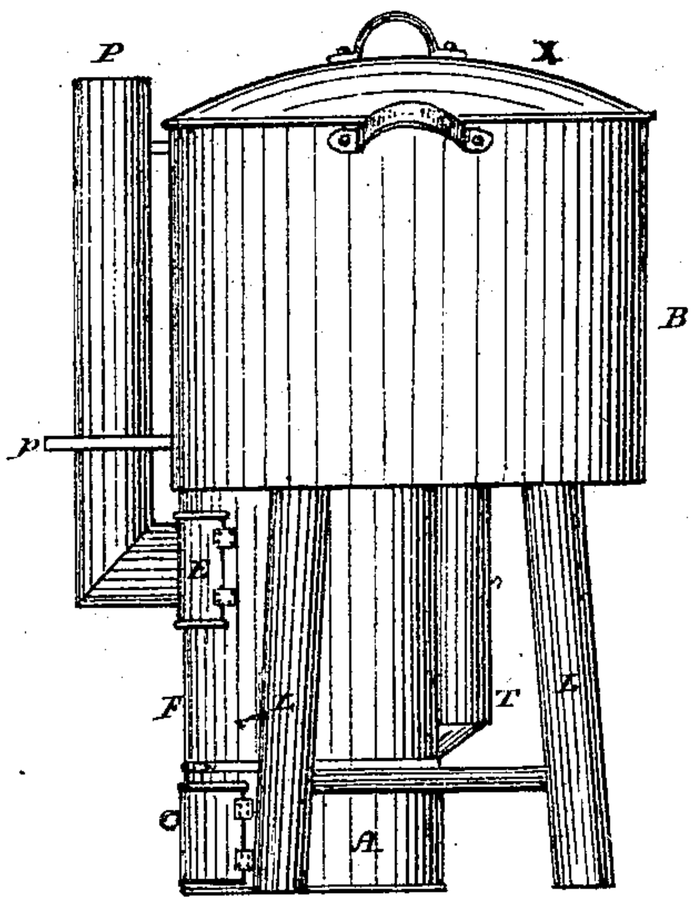
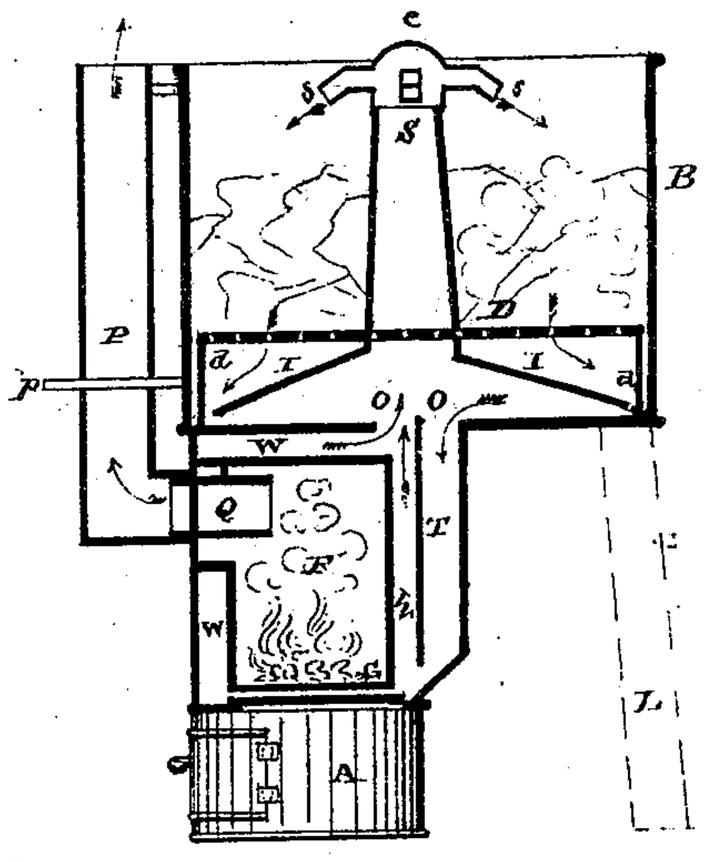


Fig. 2.



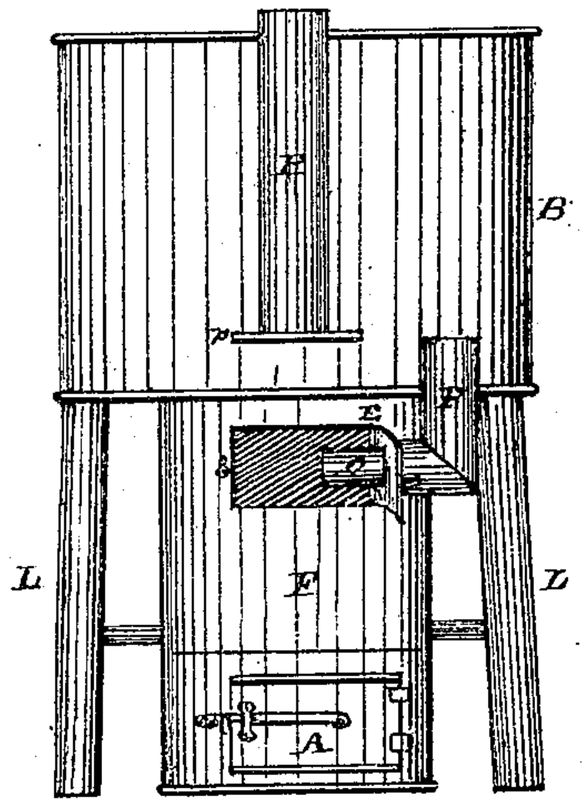


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY HUMPHREVILLE AND THOMAS HUMPHREVILLE, OF LANCASTER, PENNSYLVANIA.

IMPROVEMENT IN COMBINED PORTABLE FURNACES AND WASH-BOILERS.

Specification forming part of Letters Patent No. 127,977, dated June 18, 1872.

Specification describing certain Improvements in a Combined Furnace and Steam Wash-Boiler, jointly invented by HENRY HUMPHREVILLE and THOMAS HUMPHREVILLE, tin-plate workers, in the city of Lancaster, in the State of Pennsylvania.

The first part of our invention relates to the furnace, surrounded by a water-chamber, and effectually closing the top of the furnace or fire-chamber, passing the smoke through a pipe in the furnace-door, and in the use of tubular grate-bars connecting with the water-chamber. The second part relates to the boiler, open centrally over the rear of the water-chamber of the furnace, by which the steam generated passes up a central spout, connected with a perforated bottom with a flange and an inclined bottom, open around the flange in such a manner that the condensed steam finds its way to the rear portion of the opening in the bottom of the boiler, which leads it down through a tube or pipe to the bottom of the water-chamber around the furnace, thereby returning the condensed steam or water back to the generator of the same in a continuous circulation.

Figure 1 shows a side elevation of the combined furnace and boiler; Fig. 2, a sectional plan view, shown vertically. Fig. 3 is a front view with the fire-door open, to show the disconnection of the smoke-pipe.

The boiler B with its lid X, of any desired size, presents no novelty. This contains a central spout, S, with a removable cap, C. This cap has four pipes, *s*, at the cardinal points, bent downward. The bottom of the spout S is surrounded by a perforated horizontal bottom, D, with a flange, *d*, around its circumference, which flange rests upon the bottom of the boiler around its inner circumference. There is also an inclined bottom, I, attached to the base of of the spout S, open on its outer edge, which conducts the water from the condensed steam to the bottom of the boiler. This bottom has a central opening, where it connects with the water-chamber W, on one side or half its diameter; the other or rear half opens into the return or feed-pipe T, attached to the rear of the furnace, and opening to the base or tubular grate-bars G of the furnace F, which furnace or fire-chamber is surrounded by a water-chamber, through which the fire-door E opens, said opening being surrounded by said water-chamber W. The top of the fire-chamber being closed to have the full benefit of the heat, we pass the smoke and product of combustion through a smoke-pipe, P, made in the fire-door. The outer elbow-piece attached to the door has an inner adjusting-piece, Q, to draw in or out. There is a bearing, *p*, above and below, which supports a vertical pipe, P, attached to the boiler in such a manner that when the fire-door E is shut the pipe connected with it fits directly under the vertical portion, allowing free passage for the smoke.

There are several important advantages gained by this arrangement. The heat given out is more effectually appropriated to the generation of the steam. The steam itself escaping over the heated top is partially superheated. This, being forced up directly into the central tube S, is discharged at four or more points directly upon the clothing packed around the spout. The cap C can be removed when inserting the goods to be washed, and set upon the tube or spout after being duly adjusted, and the lid put on to confine the steam, which, becoming condensed, passes through the perforated bottom D onto the inclined bottom I, down to the outer circumference of the same, within the boiler. The steam issuing on one side of the opening of the bottom in a continuous stream upward, forces the water to descend through the feed-pipe T, and find its way to the bottom of the water-chamber surrounding the furnace. Thus expelled as steam, condensed by its passage through the clothing, it is again returned as water, soiled by the dirt removed from the goods, and, purified as steam, again sent out to perform its purifying office, leaving no muddy water to be circulated from the bottom of the boiler.

This arrangement is well adapted for outdoor use during the summer, and experience has proved it a perfect success when other devices failed.

We are aware that furnaces have been connected with boilers before, but we are not aware that the combination and arrangement of any one is substantially the same.

What we claim in a furnace, surrounded by a water-chamber, is—

1. The adjustable smoke-flue P Q in the fire-door E, substantially in the manner and for the purpose specified.

2. We claim the boiler B with its appliances, described and shown, when united with and making an integral part of the said stove or furnace.

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