R. Poole,

Steam-Boiler Condenser.

No. 47,499. Patented Apr. 25, 1865.

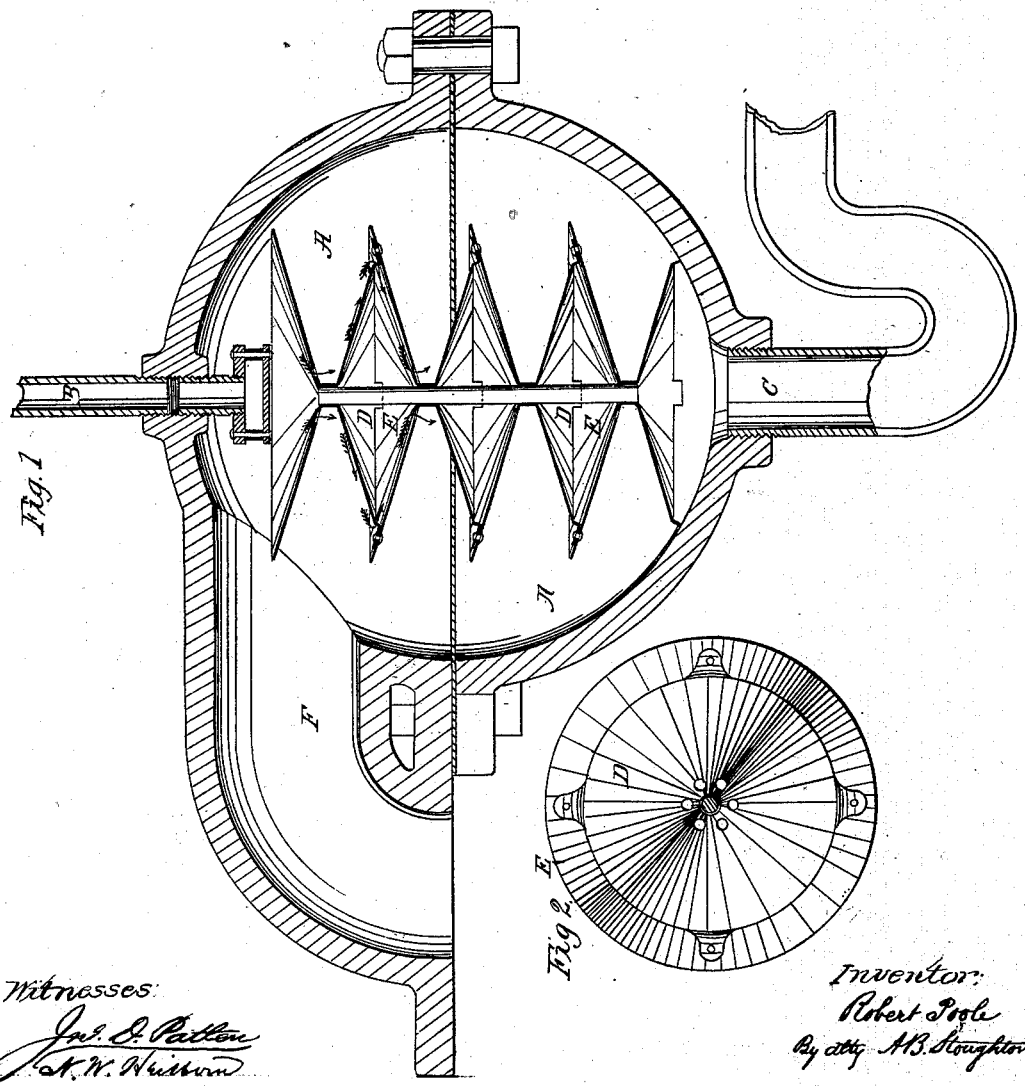

Fig. 1

Fig. 2

Witnesses:
Jas. D. Patten
A. W. Hutchinson

Inventor:
Robert Poole
By atty M. B. Stoughton

UNITED STATES PATENT OFFICE.

ROBERT POOLE, OF BALTIMORE, MARYLAND, ASSIGNOR TO HIMSELF AND GERMAN H. HUNT, OF SAME PLACE.

IMPROVEMENT IN FEED-WATER HEATERS.

Specification forming part of Letters Patent No. **47,499**, dated April 25, 1865.

To all whom it may concern:

Be it known that I, ROBERT POOLE, of Baltimore, in the State of Maryland, have invented certain new and useful improvements in apparatus for heating feed or other water by the waste steam from the engine or boiler; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a section through the tank or heater and through the pipes communicating with the interior thereof. Fig. 2 represents a top plan of a spreader, which I have used inside of the tank to throw the water passing through it into a thin strata, so as to expose it more thoroughly to the steam.

I am aware that the waste steam from an engine or boiler has been used for heating the feed-water for the boiler, and to this I of course lay no claim independent of the manner in which I combine and arrange the apparatus by which I effect this object.

My invention consists in the manner in which I connect a tank or heater with the water-supply or inlet, the pump, and the steam-exhaust, so that the steam will pass into the tank without throttling or forcing it and without interfering with its other free escape through the exhaust-pipe.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a tank, of any suitable size, form, or shape, to the upper portion of which the pipe B, leading to or connected with the supply-water pipe or tank, is attached or introduced. From the lower portion of the tank or heater A another pipe, C, leads to or is connected with the pump, which forces the water into the boiler when the water is used for this purpose, or from which portion or pipe the water may be drawn when used for any other purpose, as in tanneries, laundries, or elsewhere, where hot water is used and where a steam-engine is employed.

Inside of the tank or heater A, I use a scatterer, for the purpose of throwing the water into a thin sheet or spray, in which form it comes into more ready contact with the steam introduced therein for the purpose of heating it by the waste or exhaust steam. This scatterer may be a nozzle, perforated with holes or slotted, or it may be a simple plate, against which the water falls, and by which it is scattered or thrown into a thin sheet, jets, or spray, or the scatterer may be composed of a series of convex and concave plates, D E, on, over, or against which the inlet water may flow, so as to extend the surface and expose the water longer to the steam, as shown by the arrows in the Fig 1.

To the ordinary exhaust-pipe or waste-pipe of an engine or boiler I connect a branch pipe, F, which leads directly into the tank or heater A, and I do not propose to force the steam through this branch pipe by checking its free escape through the ordinary escape-pipes, but I use so much of the waste steam as will freely or of its own accord flow or pass into the tank, aided, it is true, by the partial vacuum created inside of the tank by the sudden condensation of the steam, and by the action of the pump, when a pump is used for drawing the heated water from the tank.

To force the waste steam into the tank or heater by checking the free escape through the ordinary exhaust or escape pipe would be at the expense of the engine, and while such a procedure would increase the temperature of the water in the tank, it would be of doubtful economy, inasmuch as it would detract from the capacity of the engine. I therefore prefer to allow a free escape to the waste steam, and only take into the tank such quantity or portion as will freely pass into it without checking said free escape, but leading or superinducing its entrance by partial vacuum and the suction of the pump, as above mentioned.

The pipe C, through which the heated water is drawn or taken, may have a trap or "goose-neck" attached to it, which will assist in maintaining the vacuum in the tank.

Having thus fully described my invention and shown how it operates in practice, what I claim therein as new, and desire to secure by Letters Patent, is—

The manner in which I have arranged and combined the tank A with regard to the inlet and outlet water-pipes connected with it, the scatterer, and the branch pipe leading from the ordinary exhaust or waste pipe to its interior, for the purpose of heating the water passing through said tank without interfering with the free escape of the steam through said exhaust or waste pipe, substantially as herein described.

ROBT. POOLE.

Witnesses:
LEWIS B. TEBBETTS,
GEO. SIMPSON.