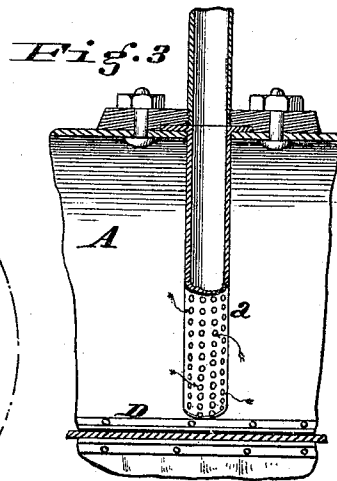
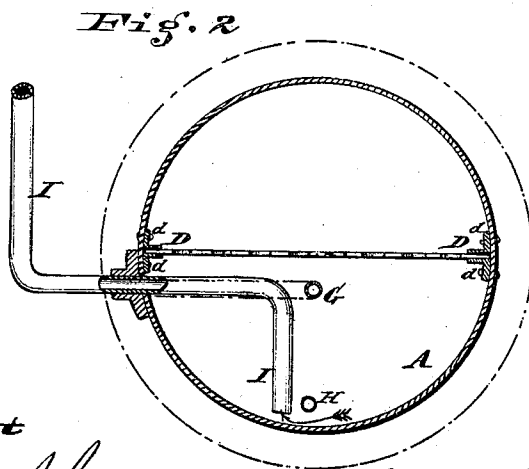
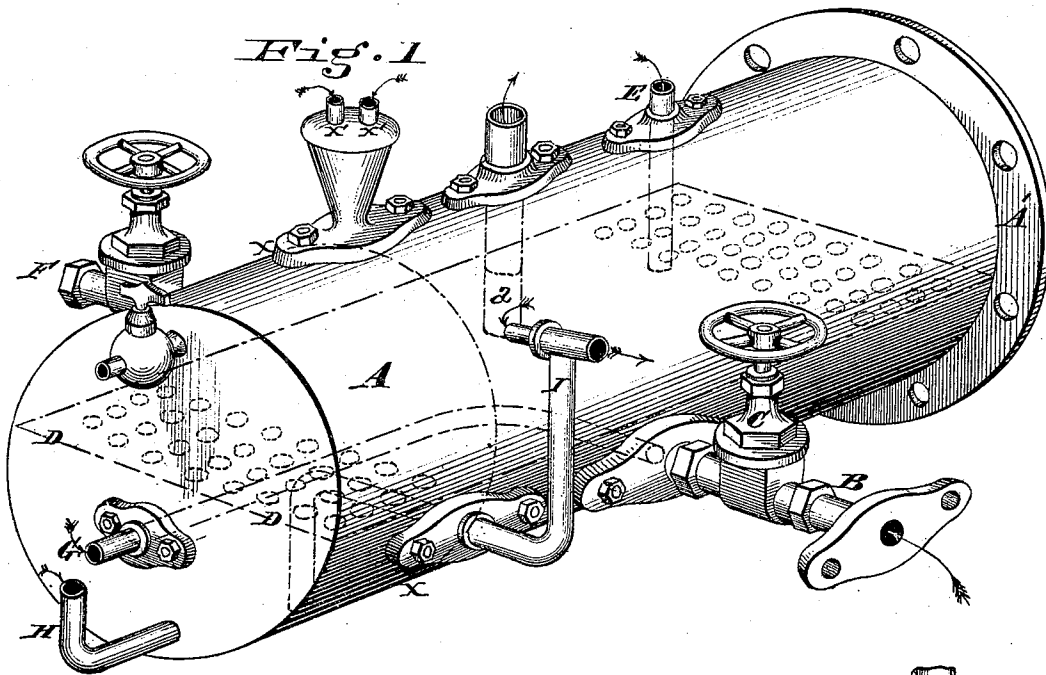


J. L. WINSTON.

FEED-WATER HEATER AND PURIFIER.

No. 175,402.

Patented March 28, 1876.



Attest

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UNITED STATES PATENT OFFICE.

JOHN L. WINSTON, OF NEWPORT, KENTUCKY.

IMPROVEMENT IN FEED-WATER HEATERS AND PURIFIERS.

Specification forming part of Letters Patent No. **175,402**, dated March 28, 1876; application filed September 22, 1875.

To all whom it may concern :

Be it known that I, JOHN L. WINSTON, of Newport, Campbell county, State of Kentucky, have invented an Improvement in Feed-Water Heaters and Purifiers for Steam-Boilers, of which the following is a specification:

My invention is designed to be used principally upon steamboats having the customary feed-water heaters heated by exhaust steam, and is intended to be introduced between this heater and the river, and is so constructed and so attached as to effect the settling of the water, the collection of mud, and the heating of the water by the overflow from the ordinary heater before it reaches the latter on its way to the boiler.

Figure 1 is a perspective view of my device. Fig. 2 is a cross-section of the same on plane *x x*, and Fig. 3 a partial section longitudinally.

In steamboat machinery as ordinarily constructed heaters are placed above the "doctors," the latter having pumps to supply the heaters directly from the river, and pumps to feed the boilers from the heater, the latter having an excess overflow discharging into the river.

I introduce between the river and the suction-pipe *a* of the doctor which feeds the ordinary heater a drum or chamber, A, the supply-pipe B of which is below the surface of the water in the river, so that the water can flow directly into chamber A, being governed only by the valve C. The chamber is preferably divided by a perforated plate, D, which is confined between angle-iron flanges *d*, so that after the removal of the drum-head at A' it may be removed, if desirable. Its function, when in use, is to prevent the too rapid mixing of the cold water received from the river with the water above it heated by the heater-overflow, and its efficiency in this respect is more appreciable in winter than in summer. The end of suction-pipe *a* of the doctor is located above the plate D, so that its operation is mainly confined to the water above this plate, the water below not being agitated by its operation, but made to flow easily through the perforations in the end surfaces of the plate.

This absence of agitation enables me to heat the water above the plate without mate-

rially raising the temperature of that below it, and permits the mud and other foreign substances in the water below the plate to settle quietly at the bottom, to be blown off.

The overflow-water from the ordinary heater is introduced through the pipe E, ending above the plate D. A pipe, F, opposite pipe B, may connect this vessel with a similar one on the other side of the boat. G is a pipe to convey steam from the boiler to a point opposite pipe B, so that steam may be used when necessary to clear out any accidental stoppage of pipe B, and H is another steam-pipe provided to introduce a jet of steam for the purpose of so agitating and loosening the mud in the drum as that the steam siphon-pump I may be enabled to do all the necessary blowing off of the mud.

The pet-cocks on the cylinder of the engine may be introduced into the drum at X' X', to drown the noise of the same in starting the engine, and to utilize the heated water from such discharges.

Although my improvement is specially adapted for use on steamboats, it is obviously applicable to boiler-feeding apparatus for other purposes.

I claim—

1. The chamber A, located between the ordinary heater of a steamboat-boiler and the river, and so connected as to receive cold water from the river at pipe B, hot water from the overflow of the ordinary heater at pipe E, and to deliver its water from an elevated point in the chamber through pipe *a*, substantially as and for the purpose specified.

2. The chamber A, having its pipes connected and operating as described, in combination with the perforated dividing-plate D.

3. In combination with the supply-pipe B, the steam-jet G, operating substantially as and for the purpose specified.

4. The combination of steam-jet H and blow-off siphon-pump I, operating substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JOHN L. WINSTON.

Witnesses:

JOHN E. JONES,
J. L. WARTMANN.