T. O. KEMP.

Boiler-Cleaner.

No. 166,782. Patented Aug. 17, 1875.

Fig. 1

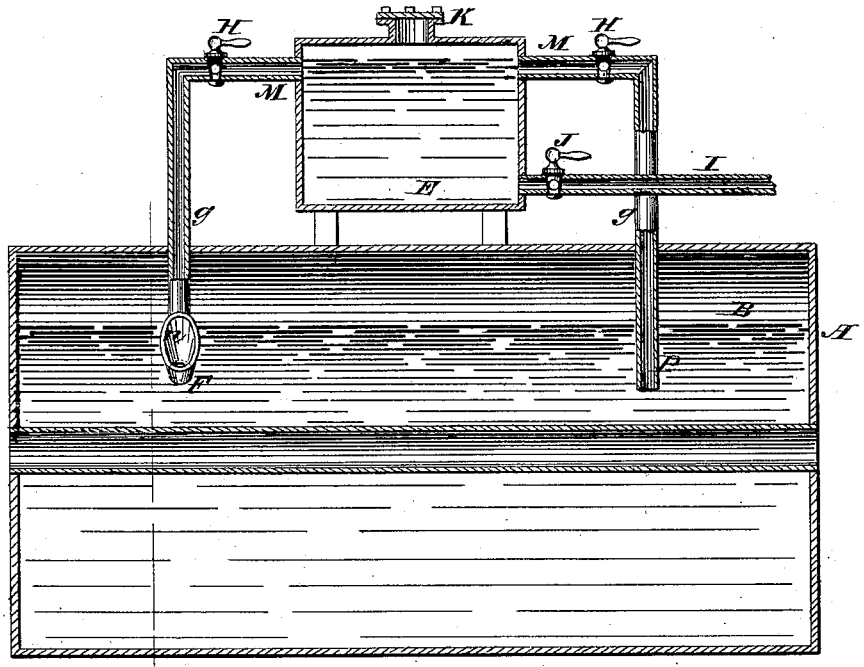
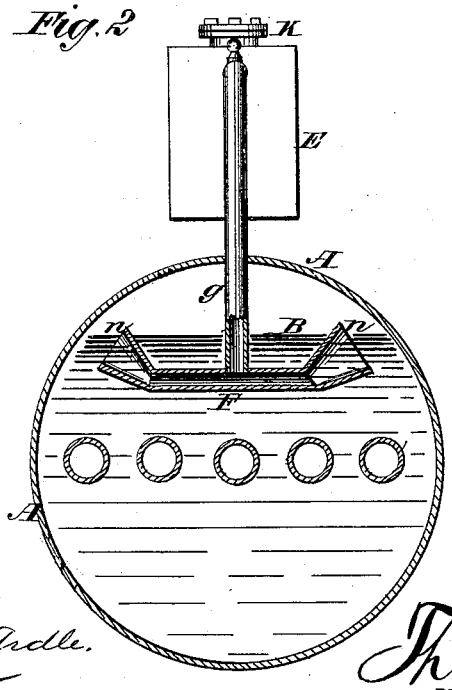


Fig. 2



WITNESSES:

Francis McArdle.

A. F. Terry

INVENTOR:

Thos. O. Kemp

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS O. KEMP, OF BEAMSVILLE, CANADA.

IMPROVEMENT IN BOILER-CLEANERS.

Specification forming part of Letters Patent No. **166,782**, dated August 17, 1875; application filed June 5, 1875.

To all whom it may concern:

Be it known that I, THOMAS O. KEMP, of Beamsville, in the county of Lincoln, province of Ontario and Dominion of Canada, have invented a new and Improved Boiler-Cleaner, of which the following is a specification:

The invention consists in causing boiler-water to circulate on the siphon principle through a superposed reservoir wherein the sediment is deposited.

Figure 1 is a longitudinal sectional elevation of a boiler having my improved cleaning attachment applied; and Fig. 2 is a transverse section.

Similar letters of reference indicate corresponding parts.

Through the shell of the boiler A, at the top, or anywhere convenient above the water-surface B, are permanently inserted two pipes, *g g*, the one terminating in the horizontal T-shaped pipe F, the other extending a little below the water-surface, being merely a straight pipe, as shown by the termination P. These pipes *g g* extend outside the boiler, and are attached to an exterior elevated metallic steam-tight reservoir, E, at different places near the top, as shown at M M. The horizontal T-pipe E F lies just below the water-surface in the boiler, and is full of water. The other pipe, *g*, at the termination P, is a little lower than the horizontal pipe F. By this arrangement there is an entire chamber of water in the pipes and reservoir, the cocks H H in the pipes *g g* being open.

Now, when the boiler is in use, the water in it is hotter than that in the exterior reservoir E, and as it is the tendency of hot water to rise and cold to fall when they come in contact, the hot water in the boiler will ascend through one of the pipes *g g* and drive that which is cooler out of the reservoir E down into the boiler through the other pipe *g*, thereby establishing a current through the reservoir E, which is so constructed as to allow the current to expand and become weaker while passing through it, and retain all the impurities, as they drop from the current in its weakened condition, that are carried from the boiler into the reservoir by it. The pipes *g g* are attached to the boiler in such positions as to secure the upward current from the boiler to the reservoir through the horizontal pipe F. To each end of the horizontal pipe F is attached an enlargement, N N, so constructed that the water-level in the boiler may rise or fall to any ordinary extent and the water-surface still be in the mouths of these enlargements, and yet not admit the steam in the horizontal pipe F, and as ebullition in the boiler drives all the impurities to the water-surface they are drawn into these mouths by the current and deposited in the reservoir E.

In order to empty the reservoir the blow-off pipe I is attached near the bottom, and by opening the cock J the pressure from the boiler will do all that is required in that line in a minute's time; or the cover K, which is fastened on the top by bolts, may be taken off and the deposit taken out in that way. By the cocks H H in pipes *g g* the communication may be shut off between boiler and reservoir when required.

The advantages of the enlarged mouths on the horizontal T-pipe F are these: The water-level may vary to any ordinary extent and the desired effect still be maintained—viz., a current drawing from the surface of the water. Again, the first direction of the current is downward to a certain extent, thereby making an easier and better retreat than a mouth of uniform size with the pipe would afford, for the suspended impurities which would naturally settle were it not for the agitation of the water by ebullition.

I am aware that it is not new in boilers to make the water circulate from boiler to mud-drum and water-leg about furnace; but

What I claim is—

The combination, with boiler and superposed reservoir, of pipes *g g*, provided with stop-cocks, one having mouths *n n* at surface of boiler-water, and the other more deeply down into said water, as and for the purpose specified.

THOMAS OXBORROW KEMP.

Witnesses:

DIXUS WATSON,

GODWIN CAMPAIGNE.