T. CRANEY.

DEVICE FOR EXTRACTING MUD FROM STEAM-BOILERS.

No. 191,939. Patented June 12, 1877.

Fig. 1.

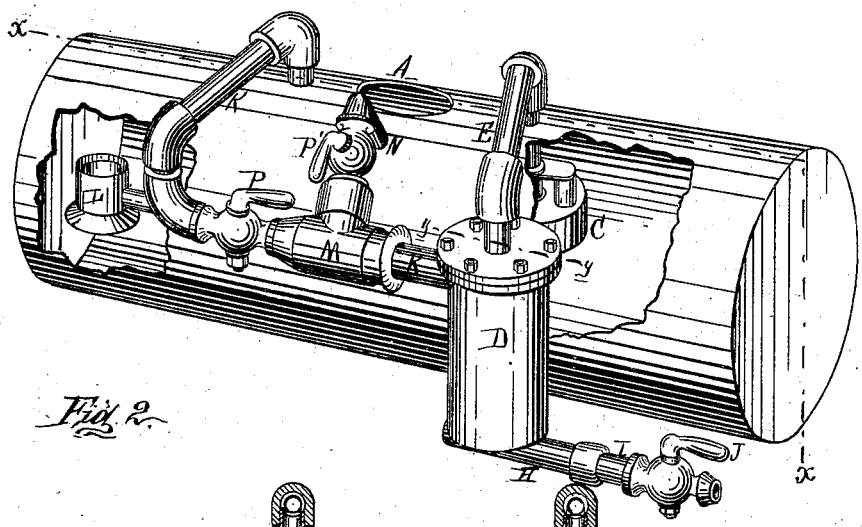


Fig. 2.

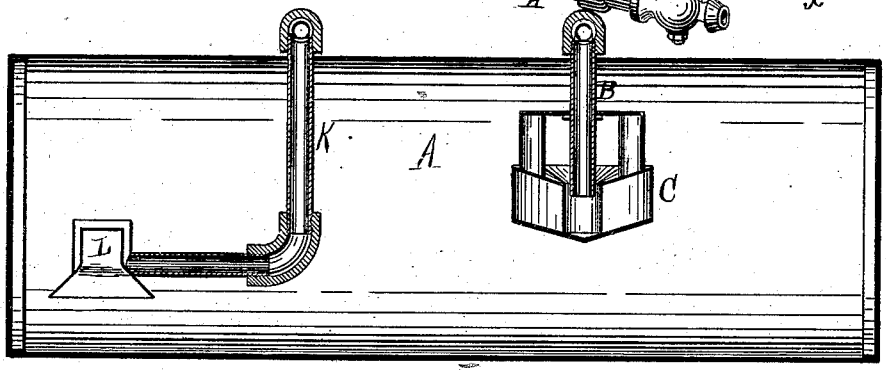
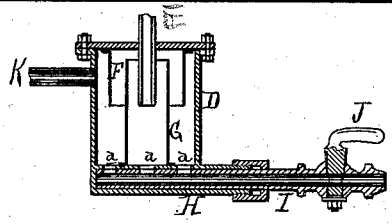


Fig. 3.



Attest:
Edward Barthel
Rudolf Sahr.

Inventor:
Thos. Craney
By Atty
Thos. S. Sprague.

UNITED STATES PATENT OFFICE.

THOMAS CRANEY, OF BAY CITY, MICHIGAN.

IMPROVEMENT IN DEVICES FOR EXTRACTING MUD FROM STEAM-BOILERS.

Specification forming part of Letters Patent No. **191,939**, dated June 12, 1877; application filed February 19, 1877.

To all whom it may concern:

Be it known that I, THOMAS CRANEY, of Bay City, in the county of Bay and State of Michigan, have invented a new and useful Improvement in Mud-Extractors for Steam-Generators; and do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and being a part of this specification.

Figure 1 is a perspective view, with the shell of the boiler partially broken away. Fig. 2 is a vertical longitudinal section on the line *x x*. Fig. 3 is a similar view through the settling-chamber at *y y*.

The nature of my invention relates to the construction of an apparatus through which the impurities are removed from the water in a steam-generator; and it consists in the arrangement of certain pipes and a cup-shaped float, by means of which the floating impurities are conveyed into a proper receptacle, from which they may be blown off, as is more fully hereinafter set forth.

In the drawing, A represents a steam-generator.

B is a pipe, tapped through the top of the boiler A, having at its inner end a cup-shaped float, C, which is of such weight that its upper edge will at all times be just below the surface of the water, regulating itself by sliding up or down on the pipe B, as the water in the boiler is raised or lowered.

The upper end of the pipe B is connected with a settling-chamber, D, by means of the pipe E, which extends about half-way down into the settler.

The head of this settler D has an annular ring, F, secured to the inner face thereof, its length being about one-half of said settler. G is a similar ring, secured to the bottom of the settler D, which extends upward nearly the entire length of the chamber. These rings divide the settler into three chambers or compartments, as shown.

Secured to the bottom of the settler D is a pipe, H, in which operates a plug, I, provided with a stop-cock, J, communication being had with the interior of the settler through the openings *a*.

Leading into the boiler from the settler is a pipe, K, whose inner end is carried below the surface of the water, and is provided with an inverted funnel, L, which has a discharge around the spout for the water issuing from the pipe K.

M is an injector, placed in the pipe K, and forming part thereof, said injector being connected with the boiler by a steam-pipe, N.

P P′ are stop-cocks in the pipes K and N, by means of which their communication with the boiler is cut off when desired.

The operation of this apparatus is as follows:

As steam is generated in the boiler the impurities in the water are separated therefrom and float upon the surface. The stop-cock P being open, this matter is drawn into the cup-shaped float C, from whence it passes through the pipe B into the settler, falling to the bottom thereof within the compartment formed by the ring G until said compartment is full. From thence it passes into the compartment formed by the ring F, when it again falls to the bottom of the settler, filling the same till it escapes through the pipe K on its way back to the boiler. The circulation of the water through the pipes and settler is somewhat accelerated by the steam generating beneath the inverted funnel, through the spout of which it passes, thus forming, to all intents and purposes, a siphon.

When a greater or faster circulation is desired, the stop-cock P′ is opened, which allows steam to pass to the injector M, which acts upon the water flowing toward the boiler substantially as a vacuum-pump.

When it is desired to blow off the sedimental deposits in the settler D, the stop-cocks P P′ are first closed, the plug I is then turned till its openings are coincident with the openings in the bottom of the settler, the cock J is then opened, giving a direct passage from the boiler through the settler and blow-off pipe.

What I claim as my invention is—

1. In combination with a steam-generator, A, the cup-shaped float C, supported by and sliding on the pipe B, as and for the purposes described.

2. In combination with a steam-generator, A, the pipe B, cup-shaped float C, settling-chamber D, and return-pipe K, substantially as described.

THOMAS CRANEY.

Witnesses:

T. S. SPRAGUE,

R. H. COMBS.