T. CRANEY.

BOILER-CLEANER.

No. 192,741. Patented July 3, 1877.

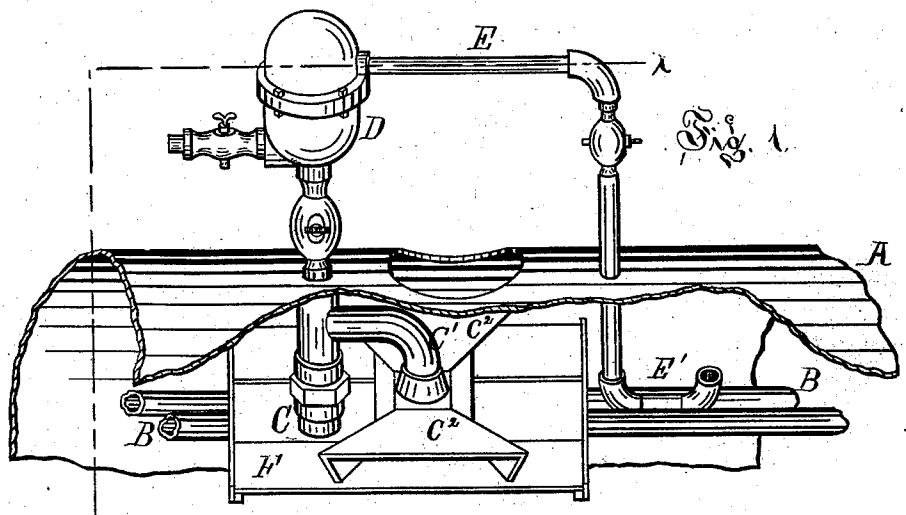


Fig. 1.

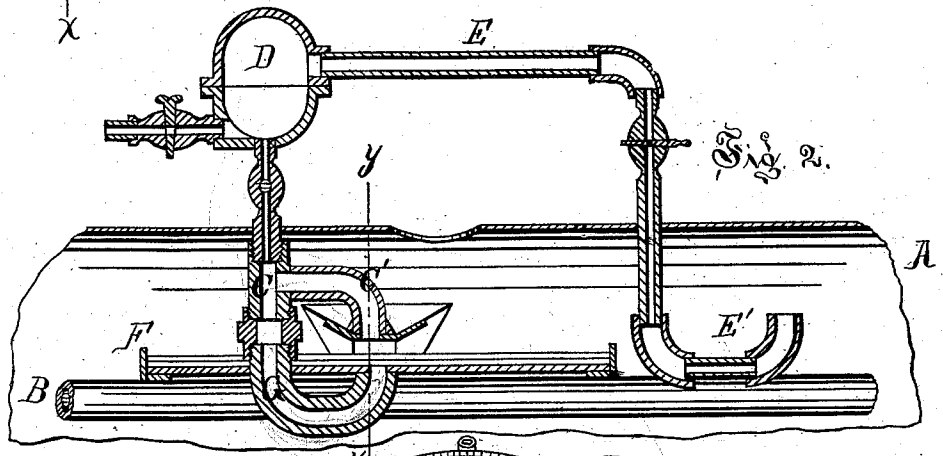


Fig. 2.

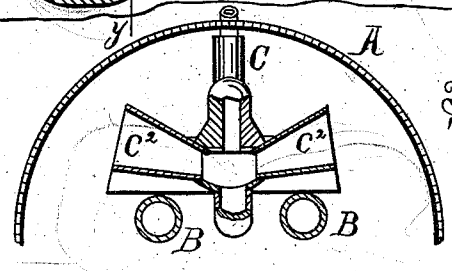


Fig. 3.

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UNITED STATES PATENT OFFICE.

THOMAS CRANEY, OF BAY CITY, MICHIGAN.

IMPROVEMENT IN BOILER-CLEANERS.

Specification forming part of Letters Patent No. **192,741**, dated July 3, 1877; application filed May 23, 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 an Improvement in Mud-Extractors, of which the following is a specification:

The nature of my invention relates to an improvement in mud-extracting attachments to steam-boilers of that class wherein the separation of the foreign matters is effected by circulating the water through depositing-chambers; and the object I have in view is to eliminate the heavier insoluble impurities from the water, as well as the lighter earthy and vegetable impurities held in suspension.

To this end my invention consists in combining with the circulating-pipe and elevated settling-chamber heretofore used a catch-plate and siphon, connected with the rising leg of the circulating-pipe, the said plate being so arranged in the boiler as to cause a rapid circulation of the water to and over its surface, upon which the heavier impurities will deposit, to be removed by the siphon-circulator into the elevated tank.

Figure 1 is a perspective view of the devices as applied to a steam-boiler, a portion of which is shown. Fig. 2 is a longitudinal vertical section at *x x*. Fig. 3 is a cross-section at *y y*.

In the drawing, A represents a portion of the shell of a steam-boiler, of which B B are flues.

C is a pipe, rising from a point below the water-line in the boiler through the top of its shell, and into an elevated tank, D, from which the return-leg E extends toward the rear end of the boiler, passing down into the same, and terminating in an upturned discharge-bend, E′, below the water-line. The end E′ is turned up to avoid opposing the upward currents of the water in the boiler.

On the flues is laid a large basin-shaped circulating-plate, F, with an opening in the middle, in which is fitted an inverted siphon, G, at the bottom of the rising leg C, above which there is a Tee, into which a pendent elbow, C^1, is tapped, which terminates in bell-mouth deflectors C^2.

As steam is generated there is an upward rush of water, which flows over the plate F′ to its middle; thence up through the ascending leg C into the elevated tank, which, being cooler than the boiler, lowers the temperature of the water, causing the precipitation of the particles held in suspension, the clear water returning to the boiler through the pipes E E′. The vegetable matters and lighter earthy impurities held in suspension float on the surface of the water, and are drawn toward and into the bell-mouth deflectors C^2, thence through the elbow C^1 into the leg C, whereupon the said impurities are eliminated, as described, and in the manner already well known.

But the heavier impurities, which would ordinarily settle and deposit as scale, are not to be removed in the above-described manner; and in the present case they are deposited on the plate F, and carried by the currents to the mouth of the inverted siphon G, whence they are taken up through the ascending leg and deposited in the elevated tank, whence they are removed by occasionally blowing off at the bottom through cock H.

It will be noticed that the pendent elbow C^1 is funnel-shaped where it passes through the connecting-plate of the deflectors C^2, which facilitates the upward flow of the water, and that said deflectors are open below, in contradistinction to the trumpet-mouths heretofore used in devices of this class for gathering the floating impurities.

What I claim as my invention is—

1. The combination, with a steam-boiler, of the large pan-shaped catch-plate F, and the inverted siphon G, opening upwardly through the said catch-plate, for conducting off the heavy particles deposited on such plate, constructed and arranged substantially as described and shown.

2. The flaring elbow C^1, deflectors C^2, and catch-plate F, in combination with the ascending leg of a water-circulating mud-extractor, substantially as and for the purpose set forth.

3. The combination, with the pipe C, of the downwardly-turned deflectors C^2, for conducting off the surface-water, the catch-plate F, below such deflectors, and the inverted siphon G, for conveying off the heavy particles not taken up by the said deflectors and deposited on the said plate, substantially as described and shown.

THOMAS CRANEY.

Witnesses:

H. F. EBERTS,

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