(No Model.)

W. POLLEY.

BOILER CLEANER.

No. 457,749. Patented Aug. 11, 1891.

Fig 1

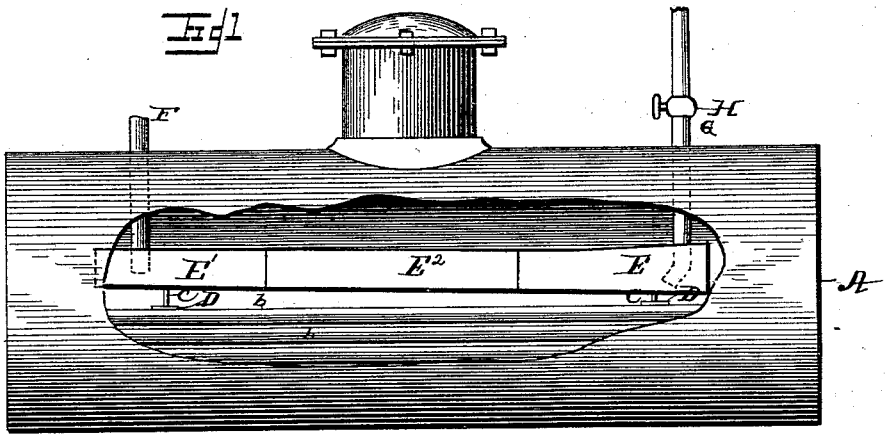


Fig 2

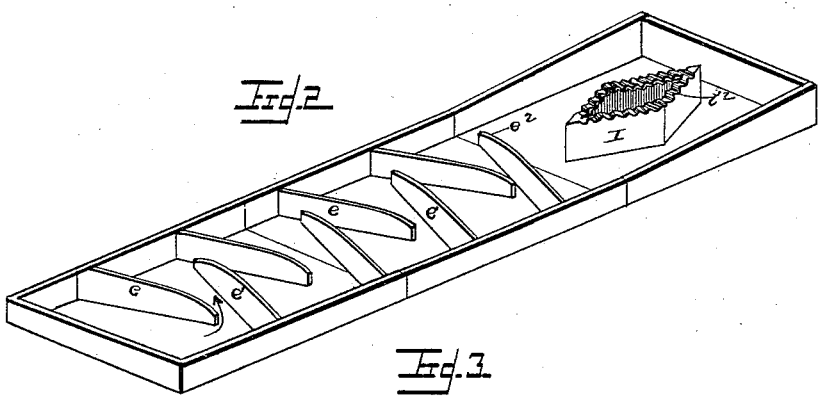


Fig 3

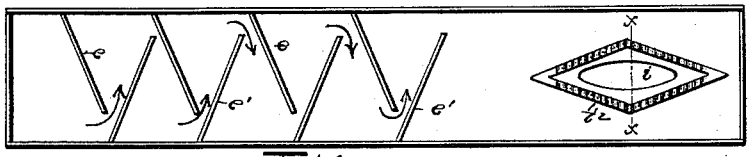
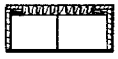


Fig 4



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM POLLEY, OF CORTLAND, NEW YORK, ASSIGNOR OF ONE-HALF TO ALEXANDER M. DUFFY, OF SAME PLACE.

BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 457,749, dated August 11, 1891.

Application filed May 2, 1891. Serial No. 391,384. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM POLLEY, a citizen of the United States, residing at Cortland, in the county of Cortland and State of New York, have invented certain new and useful Improvements in Boiler-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in boiler-cleaners; and it has for its object to free the feed-water before entering the boiler from all impurities—such as lime, magnesia, &c.—and thereby prevent scale or incrustation of the boiler. This object is accomplished by the mechanism illustrated in the accompanying drawings, which forms a part of this specification; and it consists of a series of open pans (three or more in number) situated in the upper part or steam-space of the boiler, one end pan being provided with a feed-water pipe and the other end pan with a blow-off pipe, as will be hereinafter more fully described, and specifically set forth in the claims.

In the drawings, Figure 1 represents a side elevation of a boiler, partly broken away to show the location of my improved device; Fig. 2, a perspective view of the pans; Fig. 3, a top plan view of the same, and Fig. 4 a cross-section on line $x\ x$ of Fig. 3.

Similar letters of reference indicate like parts throughout the several views.

The letter A indicates the boiler, and $b\ b$ the tubes thereof. Mounted in the upper part of the boiler upon supports C C, resting upon cross-pieces D D, secured to the upper row of tubes, are three pans E E′ E², connected together and extending lengthwise the boiler. For convenience sake, in future reference to these pans the pan E² will be designated as the "precipitate-pan" and the pans E E′ as the "retarder-pans." The retarder-pans are provided with a series of retarder-wings $e\ e\ e'\ e'$, which extend at an angle of about eighty degrees nearly across the width of the pans and from opposite sides thereof. The top edge of each wing curves downward toward its free end, as shown at e^2, and the series on one side alternates with that on the other side, so that the flow of water will be around the free end of a wing on one side and then around the free end of a wing on the opposite side, as indicated by the arrows in Fig. 3.

F indicates a feed-water pipe, which, entering from the outside of the boiler, passes down into the end retarder-pan to within a short distance of its bottom.

G is a "blow-off" pipe, its inner end being slightly curved and in close proximity to the bottom of the precipitate-pan. Its outer end is provided with a blow-off valve H.

The precipitate-pan is provided with an "overflow" I, which is constructed as follows: In the bottom of the precipitate-pan is made an opening i of any desired shape, said opening being surrounded by a wall or lining i', provided with a corrugated cap i^2, which projects slightly inward to prevent the water in overflowing from running down the side of the wall or lining. The object of the overflow is twofold. It serves as an outlet for the water into the water-space of the boiler and to give a greater amount of heating-surface to the water.

It will be noticed that the end of the precipitate-pan is somewhat higher than the end and sides of the retarder-pans, and the sides incline downward until they are of the same height as the sides of the retarder-pans. This gradually-increased height of the sides and end of the precipitate-pan prevents the water overflowing at said sides and end, which it would do if the sides and ends of all the pans were of the same height, and the series of pans are set slightly inclined toward one end.

Various modifications or changes may be made in the practice of my invention. For instance, instead of providing both retarder-pans with wings but one may be so provided and good results obtained.

The operation is as follows: The rush of the water through the feed-pipe keeps the water in the retarder-pan E in constant commotion, thereby preventing any settling of the foreign substances to the bottom of said pan, and creates a current sufficiently strong to cause the water to flow around the free ends of each alternate wing, though in a somewhat retarded manner. When the water reaches the precipitate-pan, its motion is more quiet

and its temperature so high that the precipitation at once takes place, freeing the water of all impurities. The water thus freed flows through the corrugations in the cap of the overflow and down into the water-space of the boiler. By opening the valve in the blow-off pipe the collected impurities may be from time to time blown off through said pipe.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a boiler-cleaner, the combination, with the boiler and feed-water pipe, of a series of pans comprising one or more retarder-pans and a precipitate-pan continuously connected together, one or more of said retarder-pans provided with oppositely-extending wings, and the precipitate-pan provided with a blow-off pipe and having located in its bottom an overflow, substantially as specified.

2. In a boiler-cleaner, the combination, with the boiler and feed-water pipe, of a series of pans comprising one or more retarder-pans and a precipitate-pan continuously connected together, one or more of said retarder-pans provided with oppositely-extending wings, and the precipitate-pan provided with a blow-off pipe and having a walled opening in the bottom thereof, which serves as an overflow for the water, substantially as specified.

3. In a boiler-cleaner, the combination, with the boiler and feed-water pipe, of a series of pans comprising one or more retarder-pans and a precipitate-pan continuously connected together, one or more of said retarder-pans provided with oppositely-extending wings, and the precipitate-pan provided with a blow-off pipe and having a walled opening in the bottom thereof, the wall being provided with an inwardly-extending cap-piece, whereby the overflow of water is prevented from flowing down the sides of said wall, substantially as specified.

4. In a boiler-cleaner, the combination, with a feed-water pipe and a blow-off pipe, of a series of pans continuously connected together, one or more of said pans provided with oppositely-extending wings, and one of said pans with a walled opening in the bottom thereof, the wall being provided with an inwardly-extending corrugated cap-piece, whereby the water will be caused to flow through the channel portions of said cap and into the water-space of the boiler without coming in contact with the sides of the wall, substantially as specified.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM POLLEY.

Witnesses:
JOHN W. SUGGETT,
A. M. DUFFY.