2 Sheets—Sheet 1.

T. C. PURVES.

Apparatus for Removing Sediment from Steam Boilers

No. 201,446. **Patented March 19, 1878.**

Fig. 1.

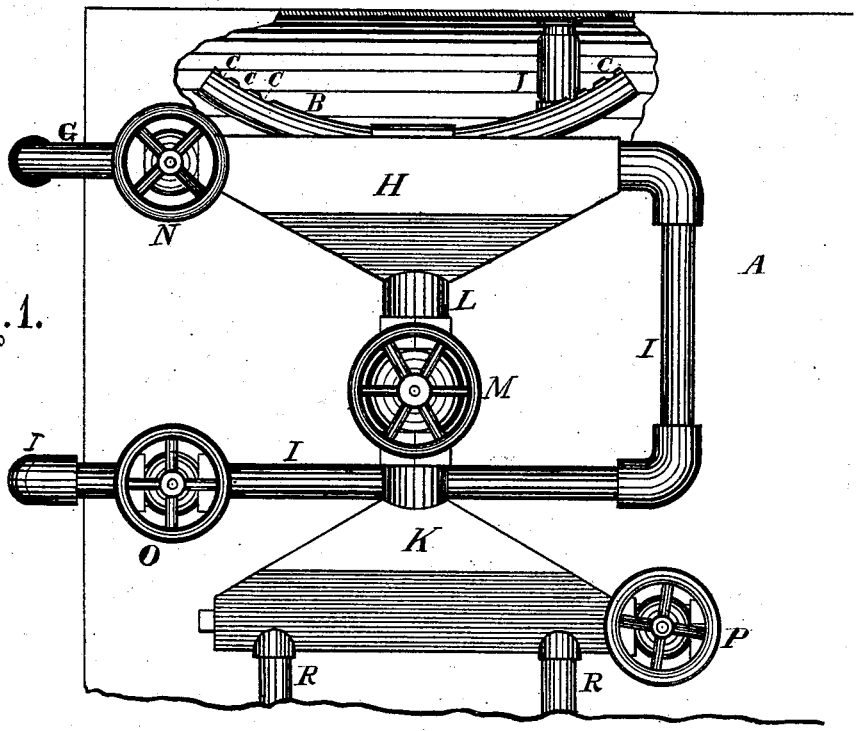
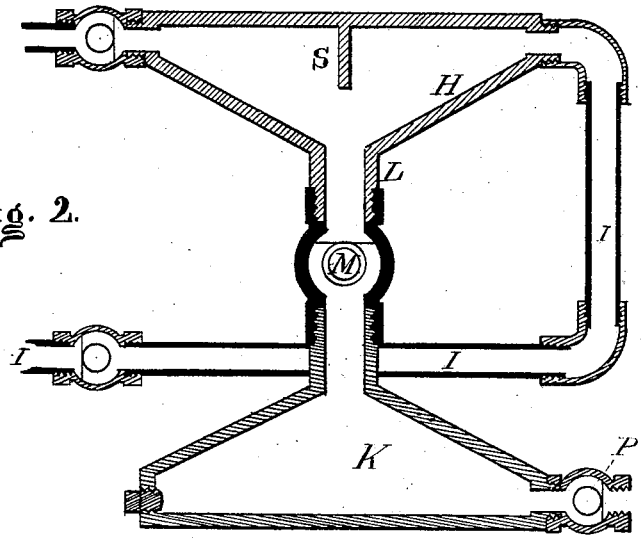


Fig. 2.



WITNESSES

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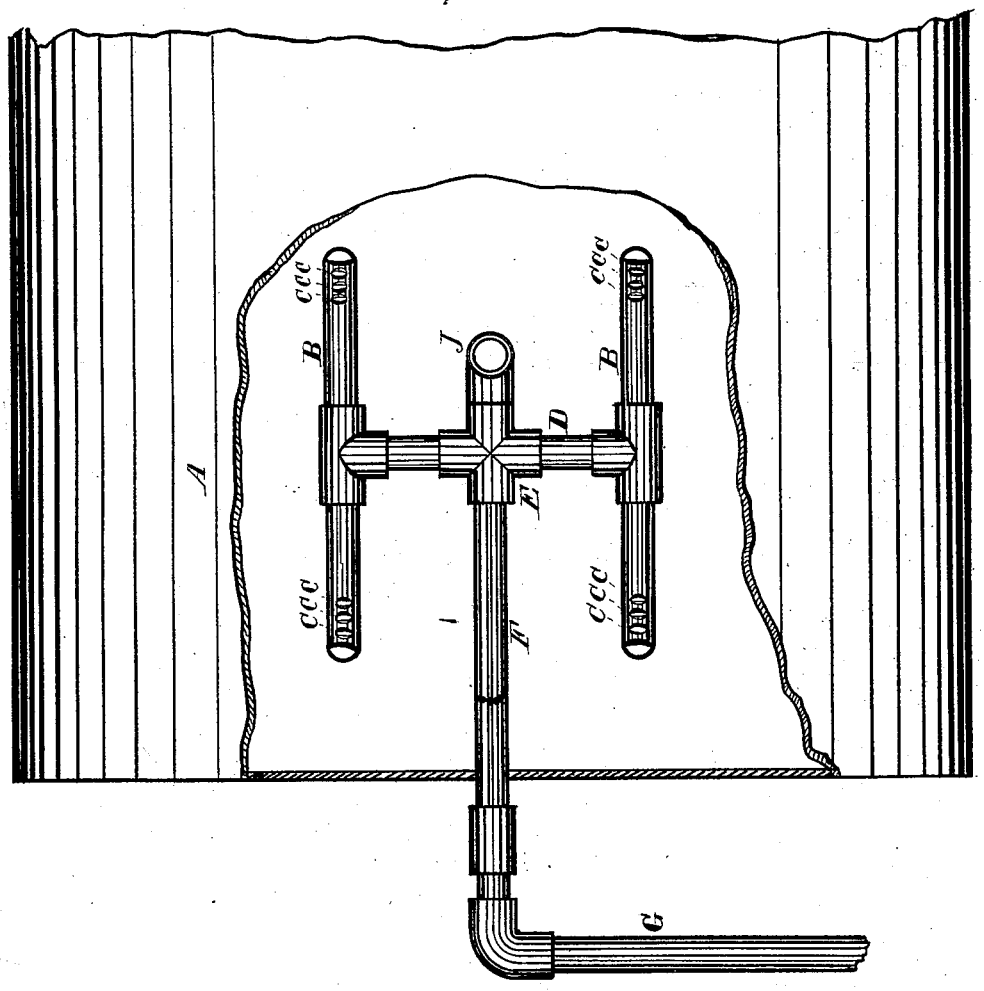
2 Sheets—Sheet 2.

T. C. PURVES.

Apparatus for Removing Sediment from Steam Boilers.

No. 201,446. Patented March 19, 1878.

FIG. 3.



WITNESSES

Wolf Hello.

D. G. Groves

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UNITED STATES PATENT OFFICE.

THOMAS C. PURVES, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR REMOVING SEDIMENT FROM STEAM-BOILERS.

Specification forming part of Letters Patent No. **201,446**, dated March 19, 1878; application filed December 27, 1877.

To all whom it may concern:

Be it known that I, THOMAS C. PURVES, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Apparatus for Removing Sediment from Steam-Boilers, of which the following is a specification, reference being had to the accompanying drawings illustrating my improvement.

The present invention relates to an improvement in that class of sediment-removers in which exterior pipes extend into the boiler, and form a means whereby a continuous current of water from a pipe or pipes in the boiler passes through the exterior pipe, and after depositing the sediment in a trap passes in the boiler. This operation is on the well-known principle that as the water is hottest at the upper surface, and to that place the sediment is carried, the object being to remove the sediment at the water's surface before it descends and forms a scale by the cooling of the water.

The nature of the present invention consists in forming a connection between the exit-pipe from the boiler and the return-pipe thereto with a sediment-receiver whose under side is formed with two inclined plates of such downward pitch as to form a considerable enlargement for the reception of deposit without contracting the interior water-current, the ends of the receiver communicating with the exit and return pipes being about the size of said pipes, whereby there are no eddies in the current of water either in entering the receiver or passing out of it. The deepest part of the receiver communicates with the lower receiver, which is inverted in form, by means of a suitable pipe and stop-cock, said lower receiver being tapped at one or both ends for the discharge of its contents. By this construction there are no sharp angles or deep recesses where sediment can lodge to form a crust and render the device inoperative, as is the case where square-box traps are used.

In the drawings, Figure 1, Sheet 1, is an elevation of an apparatus for removing sediment from a boiler and embodying my improvement. A broken elevation of a boiler shows the relation of the apparatus thereto. Fig. 2, Sheet 1, is a vertical section of the exterior trap, pipes, and receiver. Fig. 3, Sheet 2, is a plan view of the internal pipes in position relative to a boiler.

A represents, in this case, a broken elevation of boiler not arched or cased in. B B are curved pipes, provided with a series of perforations or holes, C C C, that both steam and water may have access to one or more openings in the pipes, that water containing sediment may pass in at the steam-surface. These pipes B B communicate with a transverse pipe, D, which by means of an ordinary coupling, E, communicates with a parallel pipe, F. The latter pipe passes through the boiler A, and connects with the exterior pipe G, which connects with the trap H, and by means of a continuous pipe, I I I, attached to the opposite end of the trap H, and to the boiler A, are the means, together with action of steam and water in the boiler, for causing a current of water to pass continuously through the trap H.

Placed centrally and vertically in the trap is a deflecting-plate, S, which serves the purpose of directing sediment to the bottom of the trap.

J represents a stud for securing the internal pipes to the boiler. K represents a receiving-chamber, which is placed below the trap H, and communicates with it by means of a discharge-pipe, L, in which is tapped a cock, M, which may be turned so as to close communication with the chamber K, or turned so as to draw off the contents of the trap H without waste of steam.

Other cocks are employed, as follows: A cock, N, to shut off the communication of the trap H with the boiler A; a cock, O, to stop the current of water after it is in the trap H; and a cock, P, to draw off the contents of the chamber K.

R represents supports, which, when secured to the outside of the boiler A, will sustain properly the exterior part of the apparatus.

To attach the apparatus to a boiler, arched or bricked in, the exterior pipes are to be of such length as to bring the trap outside of the brick casing, from which it may secure its support, or from the floor.

To put the apparatus in operation, open the cocks N O M to pass a current of water through trap H.

To draw off the sediment from chamber K, close cock M and open cock P.

To readjust the apparatus, open cock M and close cock P, and, the current of water continuing, sediment will fall through trap H into chamber K. From this it will be seen that the discharging of sediment from chamber K does not intercept the current of water through the trap H, and that the water is taken out of the boiler at a point above all of the apparatus, thereby having the advantage of the gravity of the sediment.

I have described and shown the mechanism to a complete working device, but the following claim will limit the novelty of my invention.

What I claim, and desire to secure by Letters Patent, is—

The receiver H, having small ends communicating with the exit and inlet pipes to the boiler, and a double inclined bottom, which, at its lower extremity, by means of pipe L, connects with the highest part of the receiver K, the said receiver being provided with cocks, as and for the purpose set forth.

THOMAS C. PURVES.

Witnesses:

A. G. MOREY,

G. L. CHAPIN.