2 Sheets—Sheet 1.

H. POE.

Steam-Boiler Cleaner.

No. 218,771. **Patented Aug. 19, 1879.**

FIG. 1.

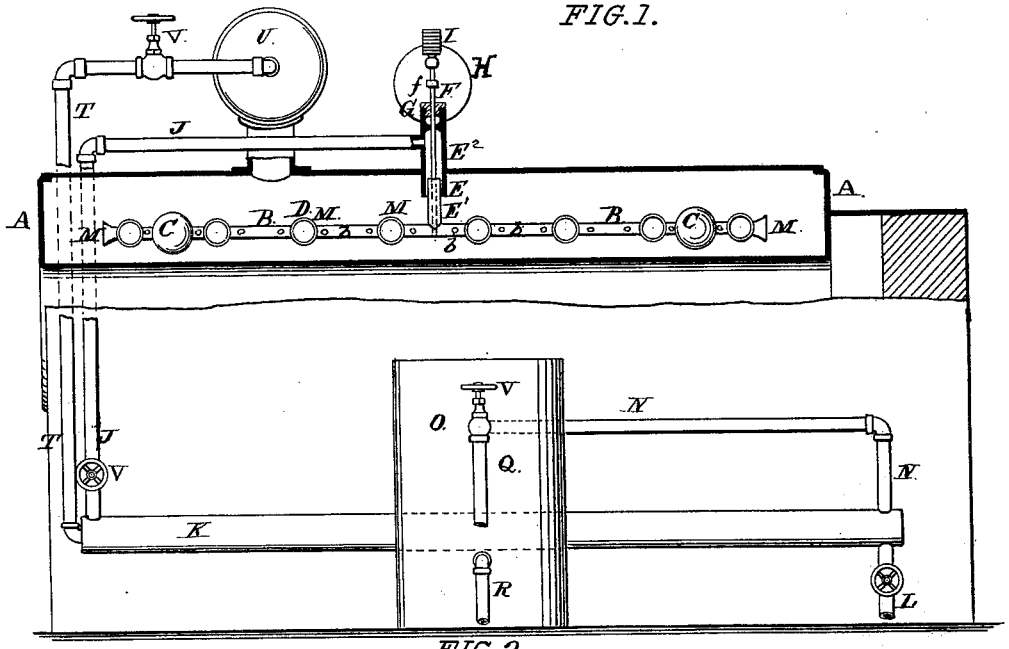
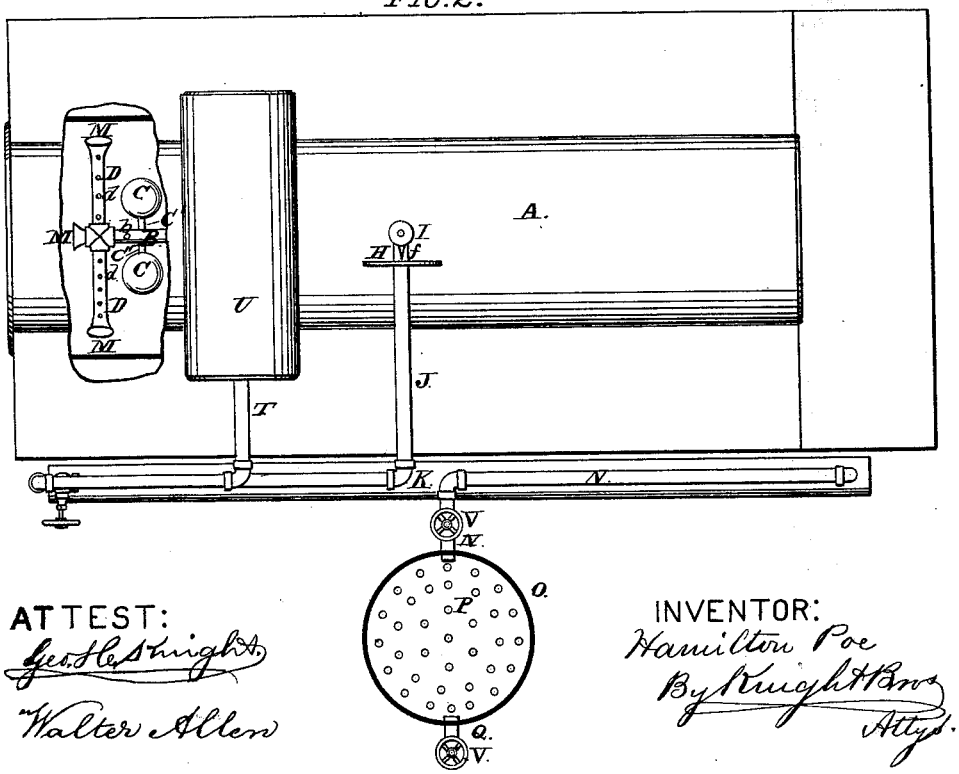


FIG. 2.



ATTEST:
Geo. H. Knight
Walter Allen

INVENTOR:
Hamilton Poe
By Knight Bros
Attys.

2 Sheets—Sheet 2.

H. POE.

Steam-Boiler Cleaner.

No. 218,771. **Patented Aug. 19, 1879.**

FIG. 3.

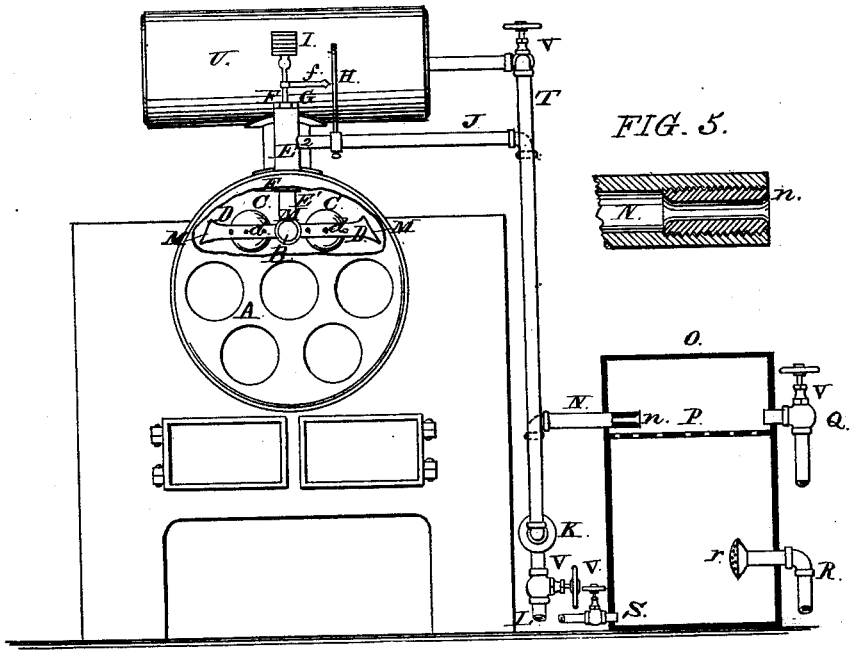
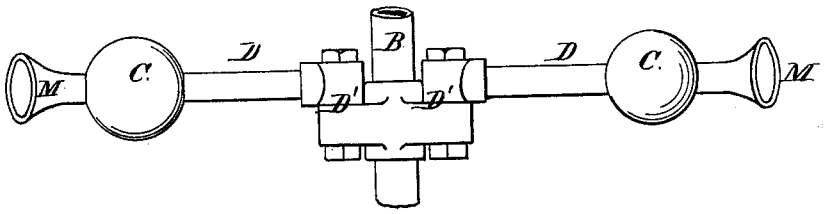


FIG. 5.

FIG. 4.



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INVENTOR:

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UNITED STATES PATENT OFFICE.

HAMILTON POE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN STEAM-BOILER CLEANERS.

Specification forming part of Letters Patent No. **218,771**, dated August 19, 1879; application filed May 26, 1879.

To all whom it may concern:

Be it known that I, HAMILTON POE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Steam-Boiler Cleaners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My improvement relates to the class of devices for the removal of scum from the surface of the water in the boiler.

My improvement consists in the combination, with a scum-receiving pipe perforated on its upper and side faces, and having at each end mouths or orifices extending outwardly therefrom in a horizontal direction, of floats or buoys, so arranged as to support the pipe and its mouths on the surface of the water.

My invention also consists in the combination, with the said receiver, of settling-chamber and other described apparatus to separate the water from the scum, to allow the latter to be blown off and the former to be returned to the boiler.

In the drawings, Figure 1 is a side elevation, partly in section. Fig. 2 is a top view with part of the boiler-shell broken away and the water-receiver in horizontal section above the perforated diaphragm or strainer. Fig. 3 is a front elevation with part of the front sheet of the boiler broken away and with the water-receiver in section. Fig. 4 shows, by a top view, a modification of part of the branch pipes and their connection with the main scum-pipe. Fig. 5 is an enlarged axial view of the steel nozzle.

A is an ordinary steam-boiler. B is the main scum-pipe, sustained at the surface of the water by floats or buoys C. D are branch pipes extending from the sides of the main pipe, having open mouths M to receive the scum. The pipe B is provided with a mouth, M, at each end for the entrance of scum. *b* and *d* are holes in the pipes B and D for the entrance of scum into the pipes. At the top of the scum-pipe B is a short upwardly-extending pipe, E^1, forming one member of the sliding joint E. The other member, E^2, of the sliding joint consists of a vertical pipe fixed in the top of the boiler, and within which the pipe E^1 works as the pipe B rises and falls with the surface of the water. This slip-joint is so constructed as to allow the pipe B to be raised up sufficiently to allow a person to pass between it and the flues.

F is an indicator-stem fixed to the pipe B and extending up through the sliding joint and a stuffing-box, G, at the upper end of the pipe E^2. The stem F carries a pointer, *f*, moving over a scale, H, to indicate the position of pipe B, and consequently the surface-level of the water in the boiler. (I claim no novelty in this water-indicator apart from its combination with the scum-pipe B.) The stem F may carry an adjustable weight, I, to cause the depression of the pipe B to a lower level relatively to the surface of the water than it would otherwise occupy.

J is a pipe extending from the pipe E^2 to the sediment-receiver K, where the sediment subsides and is blown off from time to time through a pipe, L. The water in the top of the receiver K flows off through a pipe, M, leading from the upper part of the sediment-receiver to the upper part of the water-receiver O, where it empties in above a perforated plate, P, forming a strainer. The cold-water feed-pipe Q also empties in above the strainer P. The purpose of the strainer is to prevent solid matters getting into the pump by which water is pumped into the boiler. R is the pipe extending to this pump. This pipe has a rose-strainer, *r*, at the end. S is a pipe through which the mud is blown off from the water-receiver.

At the discharging end of the pipe N is a contracting nozzle, *n*, made of steel, preferably hardened, so as to resist the abrading action of the sediment. The chief purpose of this nozzle is to limit the amount of water flowing through the pipes from the boiler to the water-receiver O, so that it will not be necessary to limit the amount of the use of the cocks or valves V, and consequently these valves or cocks may all be wide open when the apparatus is in operation, and will not be cut away by the passage of the water. The water contains more or less abrading matter, that cuts the valves away very fast where they are partly closed, so as to limit the flow of water through them.

T is a steam-pipe leading from the steam-drum U to the sediment-receiver, to be used in blowing out the sediment from the receiver K.

I have shown the buoys or floats C attached to arms C′, extending horizontally from the pipe B, so as to prevent the turning of the pipe and the binding of the slip-joint E; but the arms C′ may be dispensed with and the floats may be secured upon the branch pipes D.

As another modification the branch pipes D may be dispensed with and the scum be all drawn off by the pipe B directly through the trumpet-mouths M at the ends and the side perforations or holes *b*.

Another modification is illustrated in Fig. 4. In this modification the pipe B may be fixed so that it has no vertical movement and no openings leading directly into the boiler, and each branch pipe D connected to the pipe B with a hinge-joint, D′, allowing the passage of liquid from the branch pipe to the main pipe in all positions of the branch. The floats or buoys in this modification are at or near the ends of the branch pipes D, so as to hold the mouth of the pipe at the surface of the water to receive the scum. With this modification the slip-joint E would be dispensed with, and the pipe B would be attached to a simple pipe, E^1 E^2, fixed in the shell of the boiler.

The operation may be briefly described as follows: The pressure within the boiler will cause a constant current from the boiler, through the pipes B E^1 E^2 J, sediment-receiver K, and pipe N, to the water-receiver O, from whence the water is pumped into the boiler. On entering the boiler the earthy matters with the lighter impurities first ascend to the surface in scum, and are carried off through the pipe B, and thus their deposit as sediment in the boiler is prevented.

By my invention the removal of the impurities (including the grease) upon their first entrance into the boiler prevents the boiler from priming and the continued formation of foam. This enables the surface-level of the water to be ascertained at all times by the try-cocks, because there is no mixed water and foam upon the surface.

I claim as my invention—

1. The pipe B, perforated on its top and sides and having at each end the horizontally-extending mouths or orifices M, in combination with the floats C, for sustaining the pipe and the scum-receiving mouths at the surface of the water, substantially as set forth.

2. The combination, with the perforated scum-receiving pipe B, having mouths M, of the floats C, slip-joint E, and indicator F *f* H, as set forth.

3. The combination of the perforated scum-receiving pipe B and branch pipes D, having mouths M at each end, slip-joint E, composed of pipe E^1, extending upwardly from the scum-pipe, and vertical pipe E^2, fixed in the top of the boiler, and the indicator F *f* H, as and for the purpose described.

4. The combination of perforated scum-pipe B, perforated branch pipes D, and floats C with pipe leading from pipe B to the outside of the boiler to carry off the scum from pipe B.

5. The combination of scum-pipe B, perforated on its top and sides, pipes E^1, E^2, and J, sediment-receiver K, water-pipe N, and blow-off L, substantially as set forth.

6. The combination of scum-pipe B, pipes E^1, E^2, and J, sediment-receiver K, pipes L and N, and water-receiver O with induction-pipes N and Q and eduction-pipes R and S.

HAMILTON POE.

Witnesses:
SAML. KNIGHT,
GEO. H. KNIGHT.