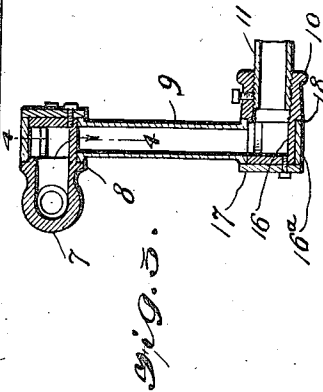
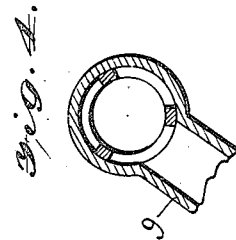
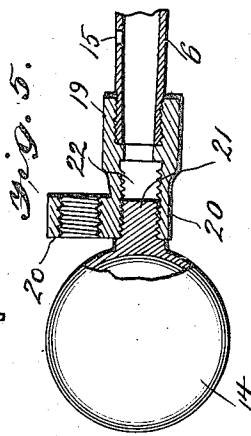
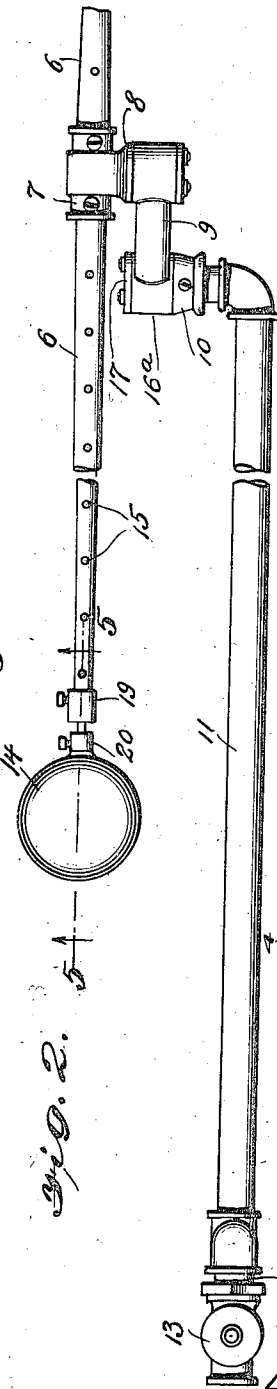
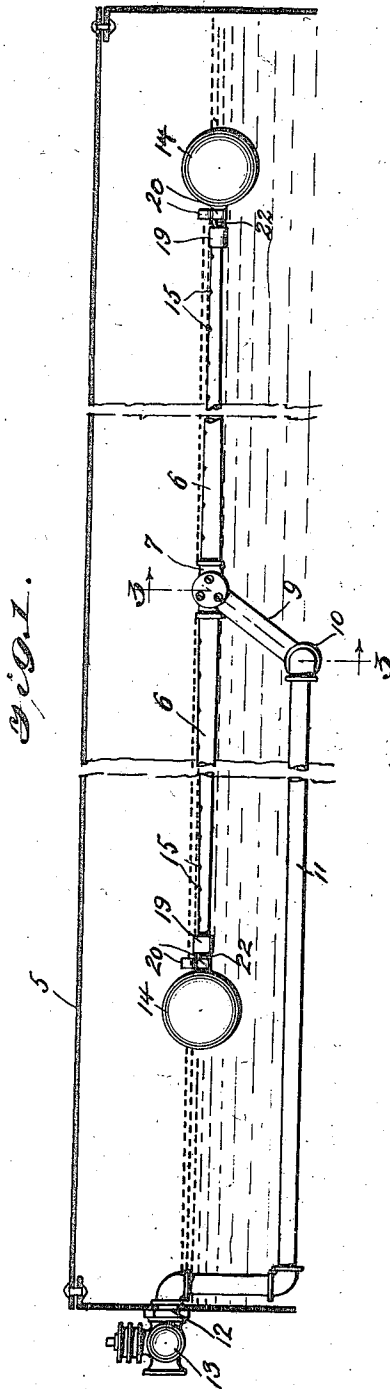


E. RANKIN.  
BOILER CLEANER.

APPLICATION FILED JULY 26, 1915.

1,153,953.

Patented Sept. 21, 1915.



Inventor  
EDMUND RANKIN

By

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# UNITED STATES PATENT OFFICE.

EDMUND RANKIN, OF LINCOLN, ILLINOIS.

## BOILER-CLEANER.

1,153,953.

Specification of Letters Patent.

Patented Sept. 21, 1915.

Application filed July 26, 1915. Serial No. 42,082.

*To all whom it may concern:*

Be it known that I, EDMUND RANKIN, a citizen of the United States, residing at Lincoln, in the county of Logan and State of Illinois, have invented certain new and useful Improvements in Boiler-Cleaners, of which the following is a specification.

This invention relates to devices for blowing off scum, dirt, foam, etc., which rises to the surface of the water in steam boilers, and its object is to provide a novel and improved float-controlled device of this kind which has a large effective working area, and which is so mounted that it remains perfectly level with the surface of the water in all positions of the boiler.

With the herein stated object in view, the invention consists in a combination and arrangement of parts to be hereinafter described and claimed, reference being had to the accompanying drawing, in which—

Figure 1 is a longitudinal section of a fragment of a steam boiler showing the device in operative position therein; Fig. 2 is a plan view of the device; Fig. 3 is a section on the line 3—3 of Fig. 1; Fig. 4 is a sectional detail on the line 4—4 of Fig. 3, and Fig. 5 is a section on the line 5—5 of Fig. 2.

Referring specifically to the drawing, 5 denotes an ordinary steam boiler in which the device is mounted, the same comprising two pipes 6 arranged in alinement and connected at their inner ends to the opposite branches of a T-coupling 7. The side branch 8 of the coupling has a swiveling connection with a hollow arm 9, and the latter is swiveled to a coupling member 10 to which is connected an outlet pipe 11. On a suitable place on the boiler wall is mounted a nipple 12 to which is connected, outside the boiler, a blow off valve 13. Inside the boiler the pipe 11 is connected to the nipple 12.

The connection between the coupling member 10 and the arm 9 is such that the latter is free to swing in a vertical plane. The parts 6 form a skimmer pipe pivotally connected midway between its ends to the outer end of the arm 9 by the coupling 7, the pivotal axis being horizontal and parallel to the pivotal axis of the connection between the member 10 and the arm 9. It will therefore be evident that a flexible joint is provided for the skimmer pipe, which allows said pipe to rise and fall bodily without tilting from the horizontal, as the water level in the boiler changes. The skim-

mer pipe is float-supported, the floats 14 being connected to the outer ends of the sections 6 of said pipe. The pivotal connection between the skimmer pipe and the arm 9 also allows said pipe to tilt endwise in either direction, which is very essential in connection with locomotive and marine boilers, in order to hold the skimmer pipe level with the surface of the water in the boiler when the boiler tilts in the direction of its length, or when there is a rush of water when starting or stopping.

The inlets to the skimmer pipe are apertures 15 in the top thereof, and the floats 14 are designed to hold the pipe submerged in the water a sufficient distance to take in the scum, dirt, foam, etc., without the escape of steam. The skimmer pipe adjusts itself instantly to changes in the water level, and floats easy, the floats 14 on each end acting to balance the same. As only two floats are necessary, the device takes up very little space in the boiler.

The sections 6 of the skimmer pipe taper in the direction of their outer ends, the larger ends being therefore at their connection with the coupling 7. The diameter of the outlet through the arm 9 and flexible joints is also greater than the diameter of the large ends of the skimmer pipe sections, and the diameter of the outlet pipe 11 is greater than that of the arm and the flexible joints. This arrangement gives an outlet of progressively increasing area, resulting in a free and unobstructed flow, and a less weight to be borne by the floats.

The swivel or pivot joint between the member 10 and the arm 9 is made by forming said member with a cylindrical cage 16 at one end which seats loosely in a cylindrical end portion 16<sup>a</sup> of the arm. The outer end of the cage carries a disk 17 between which latter and a shoulder 18 on the member 10, the arm is held and prevented from slipping off the cage. The arm swings freely on the cage.

The joint between the arm 9 and the coupling 7 is the same as that between said arm and the member 10 just described.

The outer end of each skimmer pipe section 6 carries a cap 19 having two sockets 20 into either one of which is screwed a short stem 21 on the float 14, whereby the latter is connected to the skimmer pipe section. Two sockets are provided in order that the float may be set to obtain the required sub-

mergence. The sockets are located alongside each other, and one of them is at the outer end of the cap and has side openings 22. The outer end of the skimmer pipe is not closed by the cap, which, with the openings 22, prevents clogging.

By providing the skimmer pipe with an outlet connection midway between its ends instead of at one end, greater efficiency is obtained, as the suction distance is only one-half as far, and the inlets throughout the entire length of the pipe are in action. In a skimmer pipe of a length to reach a suitable distance through the boiler, and provided with an end outlet, the suction is not strong enough to reach throughout the entire length of the pipe, and hence a skimming action is obtained for a relatively short distance from the outlet only, leaving the remaining length of the pipe useless. This objection is entirely obviated by having the outlet midway between the ends of the pipe, this arrangement permitting the use of a maximum length of pipe and resulting in a maximum suction distance.

The pipe 11 may be mounted at any convenient place on the boiler wall, and if placed down near the flues it will take the place of a settling tank. The device may be mounted with the pipe 11 below the skimmer pipe as shown in the drawing, or above the same, or at the same level.

I claim:

1. A boiler cleaner comprising a skimmer pipe, a vertically swinging support for said pipe, and a pivotal connection between the support and the pipe intermediate the ends

of the latter, and floats connected to the skimmer pipe.

2. A boiler cleaner comprising a vertically swinging support, and a float-balanced skimmer pipe pivotally connected intermediate its ends to the support.

3. A boiler cleaner comprising an outlet pipe, a hollow arm pivotally coupled to said pipe to swing in a vertical plane, a skimmer pipe pivotally coupled intermediate its ends to the outer end of the hollow arm to swing in a vertical plane, and floats connected to the skimmer pipe.

4. A boiler cleaner comprising an outlet pipe, a hollow arm pivotally coupled to said pipe to swing in a vertical plane, a T-coupling swivelingly connected to the outer end of the hollow arm, a skimmer pipe composed of alined sections connected at their inner ends to the T-coupling and extending in opposite directions therefrom, and floats connected to said sections.

5. A boiler cleaner comprising a skimmer pipe, a vertically swinging support for said pipe, and a pivotal connection between the support and the pipe intermediate the ends of the latter, caps mounted on the outer ends of the skimmer pipe, said ends being open and the caps having sockets at their outer ends provided with side openings, and floats connected to the sockets.

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

EDMUND RANKIN.

Witnesses:

HARRY A. YOCOM,  
JOHN W. RANKIN.