April 26, 1932. F. M. HARMON 1,856,059

BOILER CLEANING APPARATUS

Filed Aug. 1, 1929

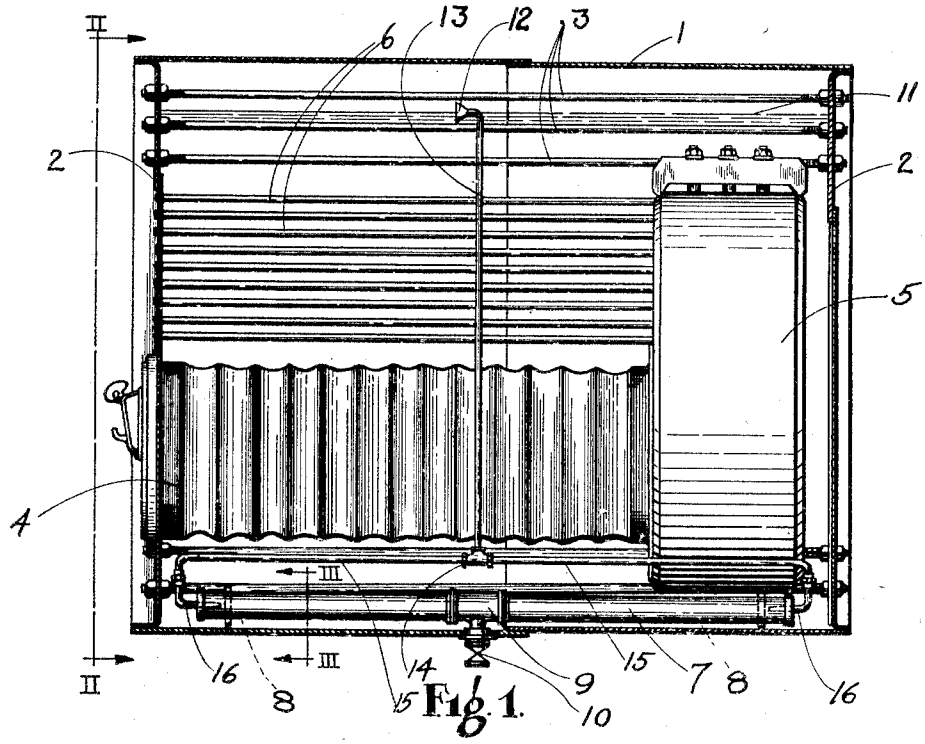

Fig. 1.

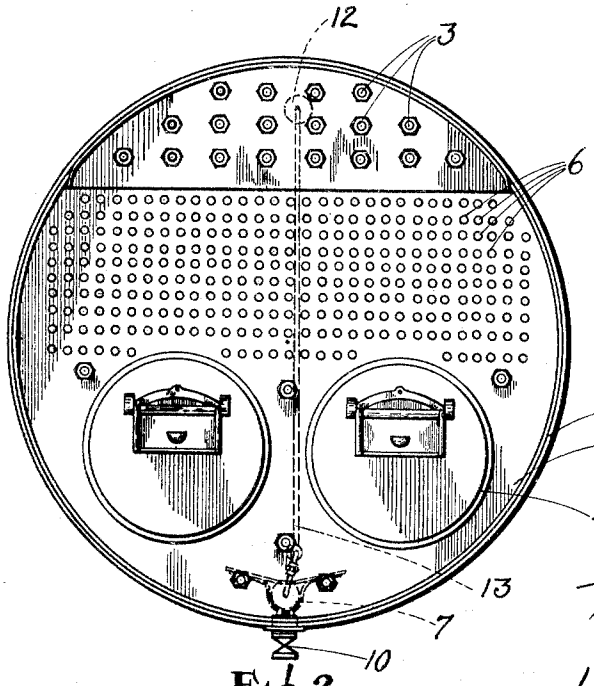

Fig. 2.

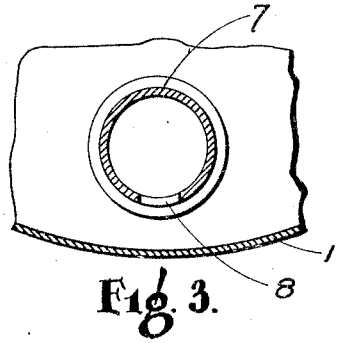

Fig. 3.

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UNITED STATES PATENT OFFICE

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BOILER CLEANING APPARATUS

Application filed August 1, 1929. Serial No. 382,617.

This invention relates to steam boilers and more particularly to means for removing dirt and sediment therefrom.

An object of the invention is to provide an improved and simple and efficient means for removing sediment and the like from the interior of a steam boiler.

Another object is to provide an improved means for removing dirt from the interior of a boiler which may be readily operated while the boiler is in operation.

Other objects will hereinafter appear.

The invention will be better understood from the description of one practical embodiment thereof, illustrated in the accompanying drawings, in which:

Figure 1 is a central longitudinal section of a Scotch marine boiler provided with cleaning apparatus embodying my invention;

Figure 2 is an end elevational view thereof; and

Figure 3 is a fragmentary cross sectional view taken on the line III—III of Figure 1, and showing the parts to an enlarged scale.

The boiler shown comprises a cylindrical shell 1 closed at the ends by heads 2 connected by stay bolts 3. Two combustion chambers are indicated each being defined by a corrugated tubular member 4. The gasses of combustion pass through the combustion spaces and the chamber 5 and thence through return tubes 6 to the flue (not shown).

The cleaning apparatus consists of a long tubular casing 7 arranged just above the lowermost part of the tubular shell and being provided throughout nearly its entire length with longitudinal slots 8 through its bottom surface, so that water and sediment may pass to its interior. Centrally the tubular member is provided with a T fitting 9 communicating with the exterior of the shell, at which point passage of fluid through the fitting is controlled by a valve 10.

At the usual water level 11 is positioned a scoop-like inlet 12 upon the upper end of a downwardly extending pipe 13 which branches at a T fitting 14 into two substantially horizontal arms 15 extending to adjacent the ends of the boiler. At these points the arms turn downwardly and then are directed into the ends of the tubular members, constituting nozzles 16.

The operation of the apparatus is as follows:—When it is desired to remove sediment from the bottom of the boiler, it is only necessary to open valve 10 and steam and water from the top of the boiler will pass downwardly through the tubes 13 and 14, carrying into the scoop 12 such scum as may have accumulated on the surface of the water. The jets produced at the ends of the tubular member 7 direct all material from the ends along the same, so that it is ejected through the valve.

As the slotted lower surface of the tubular member is closely adjacent the bottom of the boiler, much of the sediment collecting at the bottom will pass within a tubular member even when the device is not being operated. When, however, fluid is being conducted to the nozzles, the jets propel contents of the boiler member therein with such velocity as to cause a suction at the slots which draws into the tubular member sediment surrounding or below the same, very much after the manner of an injector.

While I have described the illustrated embodiment of my invention in some particularity, obviously many others will readily occur to those skilled in this art, and I do not, therefore, limit myself to the precise details shown and described, but claim as my invention all variations, modifications and embodiments thereof coming within the scope of the appended claims.

I claim:

1. A boiler cleaning device comprising a conduit arranged along the bottom of a boiler, a longitudinal slot extending along the bottom of the conduit throughout substantially its entire length and closely adjacent to the boiler bottom, an outlet from the conduit to the exterior of the boiler, a valve controlling said outlet, a nozzle extending into the end of the conduit directed toward said outlet, and conducting means conducting stream from the upper part of the boiler to the nozzle.

2. Boiler cleaning apparatus comprising a conduit arranged along the bottom of a

boiler, an outlet from an intermediate point in the conduit to the exterior of the boiler, a valve controlling the outlet, slots in the bottom of said conduit closely adjacent the boiler bottom and extending substantially throughout its entire length, inwardly directed nozzles at both ends of the conduit, and a pipe extending from said nozzles having its intake opening substantially at the normal water line of the boiler.

In testimony whereof I hereunto affix my signature this 30th day of July, 1929.

FRED M. HARMON.