Dec. 16, 1930. T. D. EVANS 1,785,024

BOILER CLEANER

Filed March 3, 1930

Fig. 1.

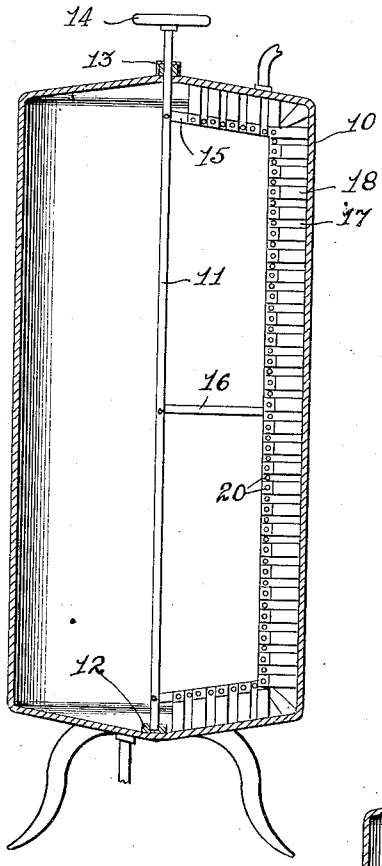


Fig. 2.

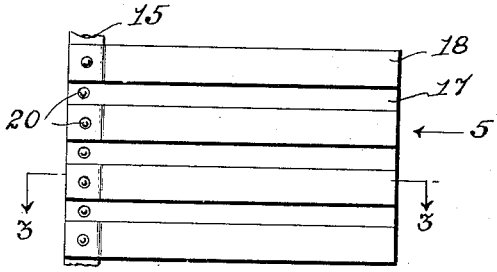
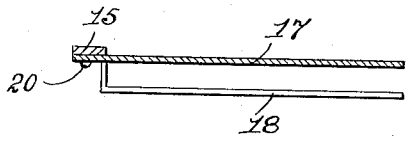


Fig. 3.



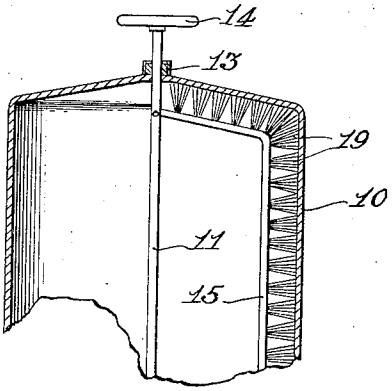
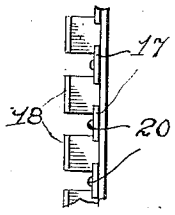


Fig. 4.

Fig. 5.



WITNESSES:

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Patented Dec. 16, 1930 1,785,024

UNITED STATES PATENT OFFICE

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BOILER CLEANER

Application filed March 3, 1930. Serial No. 432,582.

This invention relates to boiler cleaners and has for an object to provide improved means for cleaning the interior of a stand or domestic water boiler.

A further object of the invention is to provide a device permanently located within a stand boiler with manual means for actuating the same from without the boiler whereby accumulations will be removed from the interior surface of the boiler.

A further object of the invention is to provide a boiler cleaner comprising a shaft which extends axially and longitudinal of the boiler being seated in proper journals carrying thereon efficient devices permanently in engagement of the interior surface of the boiler which when rotated manually from without by turning the shaft, scrape or otherwise scrub the interior of the boiler to loosen the accumulation.

With these and other objects in view, the invention comprises certain novel parts, elements, units, constructions, mechanical movement and functions as disclosed in the drawing, together with mechanical and functional equivalents thereof, as will be hereinafter more fully described and claimed.

In the drawing:

Figure 1 is a diametrical sectional view through a conventional boiler with the cleaning organization associated therewith,

Figure 2 is an enlarged detail view of the cleaning structure,

Figure 3 is a transverse sectional view through the cleaning structure as taken along the line 3—3 of Figure 2,

Figure 4 is a longitudinal diametrical sectional view of a conventional boiler with a modified type of cleanng element, and

Figure 5 is a diagrammatic view of the arrangement of the scrapers as seen along the arrow 5, at Figure 2.

Like characters of reference indicate corresponding parts throughout the several views.

The improved boiler cleaner which forms the subject matter of this application is adapted for co-operation with a domestic or stand boiler of the usual and ordinary type indicated at 10, it being understood that it will operate with other forms of boilers by a modification of the contours of the cleaner itself.

Mounted axially within the boiler is a shaft 11, seated at its lower end in a thrust bearing 12, and its upper end through a packing box or gland 13. A hand wheel 14 is provided upon its upper end for applying manual stress.

Within the boiler a bar 15 has its opposite ends bent for connection to the shaft 11. Its longitudinal extent as well as the bent ends are spaced a pre-determined distance away from the interior surface of the boiler. For long or tall boilers, a central brace 16 will also be employed for the purpose of strengthening the device.

Upon the bar 15 throughout its length, both the longitudinal extent and bent ends a plurality of spring scrapers are applied. These scrapers are preferably merely thin strips of sheet metal and are of two types. One type shown at 17 is merely a straight flat strip. The other type 18 forms a right angle bend at 19 and both the strips 17 and 18 are rigidly secured to the bar 15 in any improved manner; rivets 20 being indicative of such securing. It will be noted that the strips 18 are spaced apart at intervals less than the width of the strips themselves. While the strips 17 are similarly spaced so that the strips assume a staggered relation to each other indicated at Figure 5, each strip covering the space between the preceeding strips and overlapping so that while the accumulation may pass between the strips, the entire surface is perfectly and efficiently scraped.

At Figure 4, a modification of these types is shown in the fact that brushes 19, preferably of metallic wire or similar material, are attached directly upon the bar 15 and perform the same functions as the preferred type.

In operation the shaft 11, with its associated structure, is merely rotated manually whereby the strips 17 and 18 or the brush 19, scrape the interior surface of the boiler. This loosens the accumulation thereon and obviously it will be necessary to flush out

the boiler to discharge therefrom the loosened accumulation. Flushing the boiler will be an obvious operation and will continue until all the accumulation has been effectively eliminated.

My invention is hereby claimed as follows:—

1. A boiler cleaner comprising in combination with a cylindrical boiler, a shaft journaled along the axis within the boiler, arms extending radially from the shaft, a bar carried by the arms extending parallel with the sides of the boiler, continuously similar means carried by the bar and said arms for frictional engagement with the entire inner surface of the boiler, and means to rotate the shaft.

2. A boiler cleaner comprising in combination with a cylindrical boiler, a shaft journaled within the boiler and along its axis, a bar parallel with the sides of and spaced away from the boiler and having its ends bent and connected with the shaft, means carried by the bar for engagement with the sides of the boiler, said means being continuously similar throughout said bar and the bended ends, and means without the boiler for rotating the shaft.

3. A boiler cleaner comprising in combination with a cylindrical boiler, a shaft extending along the axis and journaled within the boiler, a bar spaced away from and parallel with the side wall of the boiler having its ends bent complementary to the ends of the boiler and rigidly attached to the shaft, spaced means carried throughout the length of the bar for engagement with wall surface of the boiler, and means without the boiler to apply stress to rotate the shaft.

4. A boiler cleaner comprising in combination with a cylindrical boiler, a shaft journaled axially of the boiler, a bar carried by the shaft and spaced equidistant from the side and end walls of the boiler, and a plurality of spaced spring scrapers independently attached to the bar extending into frictional engagement with the entire inner surface of the boiler, and means to rotate the shaft.

5. A boiler cleaner comprising in combination with a cylindrical boiler, a shaft journaled axially of the boiler, a bar rigidly attached to the shaft and extending toward the boiler and spaced equi-distant from the walls of the boiler at all points, spring scrapers attached to the bar and spaced apart, other spring scrapers attached to the bar and spaced away from the first mentioned scrapers and overlapping the intervals between first said mentioned scrapers, all of said scrapers having their extremities in engagement with the surface of the boiler and means without the boiler for applying power to rotate the shaft.

6. A boiler cleaner comprising in combination with a cylindrical boiler, a bar spaced equi-distant from the walls of the boiler, a series of spaced scrapers carried by the bar, a second series of similarly spaced scrapers staggered relative to the first series, all of said scrapers making scraping engagement with the walls of the boiler, and means to gyrate said bar about the axis of the boiler.

In testimony whereof I have signed my name to this specification.

THOMAS D. EVANS.