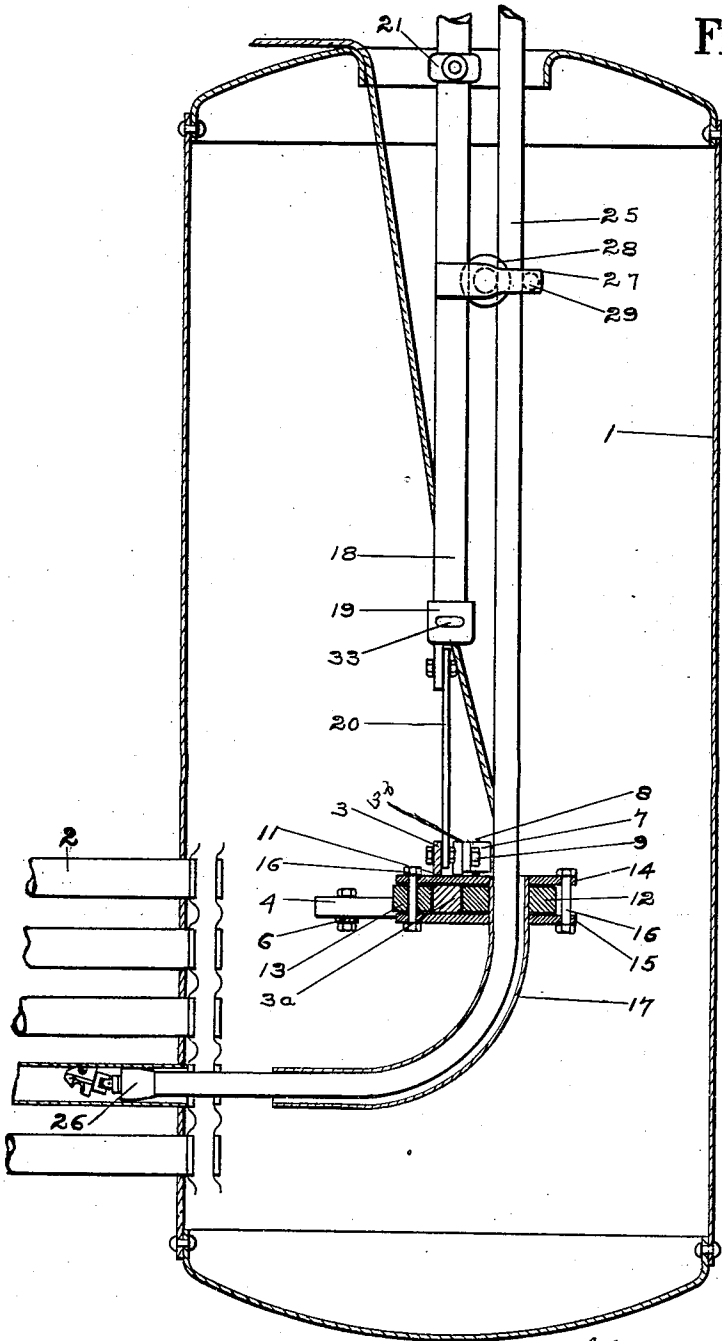


C. ROBINETT & J. P. REID.
TUBE CLEANING APPARATUS.
APPLICATION FILED SEPT. 21, 1908.

977,223.

Patented Nov. 29, 1910.

3 SHEETS—SHEET 1.



Witnesses

N. J. Hamilton
Grover D. Lyon

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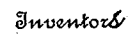
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3 SHEETS—SHEET 2.



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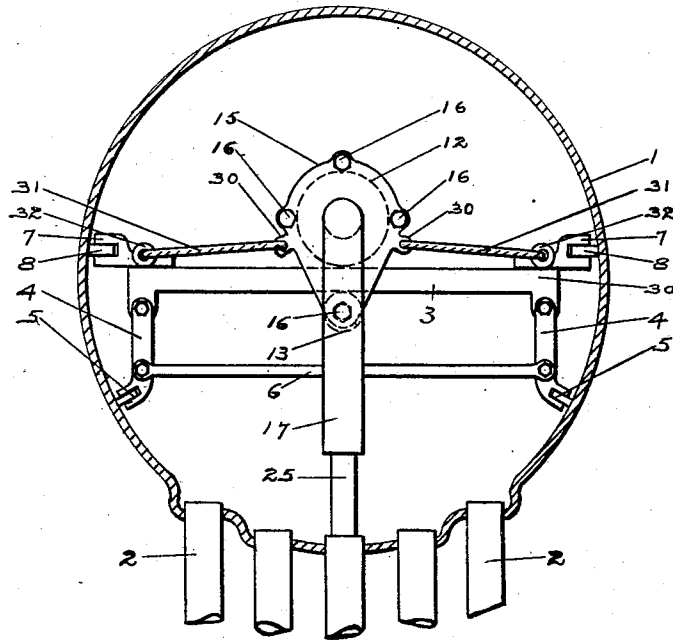
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3 SHEETS—SHEET 3.

FIG. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

CLINTON ROBINETT AND JOHN PATRICK REID, OF DAYTON, OHIO, ASSIGNORS TO THE LAGONDA MANUFACTURING COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

TUBE-CLEANING APPARATUS.

977,223.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed September 21, 1908. Serial No. 454,094.

To all whom it may concern:

Be it known that we, CLINTON ROBINETT and JOHN PATRICK REID, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Tube-Cleaning Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a tube cleaning apparatus and more particularly to an apparatus for cleaning the tubes in a water tube boiler.

In boilers of this class the heat and limited area of the drum make it very difficult and exhausting to enter and work in the drum for the purpose of cleaning the tubes; and the object of our invention is to provide means for handling and operating the tube cleaner from a position outside the drum. This we accomplish by employing means in the drum of the boiler whereby the cleaner can be advanced from outside the drum in the direction of its length and guided into the tubes and auxiliary devices adapted to be operated from outside the drum to move the cleaner at right angles to its line of advancement whereby the cleaner can be positioned over any one of the tubes and guided therein.

With these and other objects in view our invention consists of the constructions and combinations hereinafter described and set forth in the claims.

In the accompanying drawings Figure 1 is a side elevation partly in section of a tube cleaning apparatus embodying our invention, Fig. 2 is a plan view and Fig. 3 is an end elevation of same.

Like numerals represent the same parts in the several views.

In the drawings 1 represents the casing of a steam drum of a vertical water tube boiler and 2 the tubes in said boiler. A cross piece 3 which forms the support for a carriage to be hereinafter described is provided with legs 4 each pivoted at one end to the cross piece and provided with a roller 5 at the other end that rests against the inner wall of the casing 1, a removable cross bar 6 bolted to the legs holding same in place; and extensions 7 with rollers 8 adjustable on the cross piece by tightening the nuts 9 on

bolts that extend through slots 10 of the extensions 7 and are fixed in ears 3^b that project from the portion 3^a of the cross piece form the means of adjusting the support to the casing 1; and the rollers 5 and 8 on the legs and extensions form a carriage to permit the easy movement of the support longitudinally in the drum. The cross piece 3 is provided with a slot 11 and the portion 3^a of said cross piece is enlarged in cross section to form a track or railway for a carriage to move thereon as particularly shown in Fig. 1.

A carriage comprising rollers 12 and 13 engaging opposite sides of the portion 3^a of the cross piece and a frame having the side plates 14 and 15 secured together by bolts 16 is movable on the support, the plate 14 passing through the slot 11 of the cross piece. A guide pipe 17 is secured within an opening through the plates 14 and 15 and forms a journal on which the large roller 12 rotates and the small roller is journaled on one of the bolts 16.

A pipe 18 having a coupling 19 is removably secured to the cross piece 3 by the bars 20 with bolts as shown. Said pipe is supported at its outer end in a box 21 through which it can be moved longitudinally and said box may be held in any suitable manner. We have shown it supported by means of oppositely extending spindles 22 secured thereto, the outer ends of which rest against the flange 23 of an opening through the casing 1, one of said spindles being in two parts screw threaded and provided with a turn buckle 24 as shown to tighten the box in a fixed position.

A feed hose 25 having a rotary cleaner 26 on the end thereof is introduced through the opening in the drum casing and into the guide pipe 17 extending over the tubes. The feed hose may be supported in any suitable manner on the pipe 18; but we have shown a frame 27 secured to the pipe with grooved rollers 28 and 29 through the oppositely disposed grooves of which the hose is adapted to pass.

To eyelets 30 on opposite sides of the carriage we attach ropes 31 of suitable material, which are carried through eyelets 32 on opposite ends of the portion of the cross piece 3^a, thence through eyelets 33 on the coupling 19 and through the opening in the

steam drum so that they can be manually operated from outside the drum to move the carriage.

It will be seen that the support with the carriage can be inserted through the opening in the drum head and moved from outside the drum so that the guide pipe will open over each successive tube longitudinally with the length of the drum and that by means of the ropes manipulated from outside the drum the carriage can be moved transversely to the length of the drum in a plane at right angles to the axes of the tubes thus giving a universal movement to position the guide pipe over any one of the tubes whereby the tube cleaner will be guided therein.

Having thus described our invention we claim:

1. The combination of a feed hose having a rotary tube cleaner on one end thereof, two supporting carriages therefor located in the steam drum of a water tube boiler, means within said drum on which said carriages are adapted to move longitudinally at an angle to each other, and separate means, each extending outside of said drum and manipulated from a position outside thereof to cause said movement of the respective carriages, substantially as described.

2. The combination of a flexible member having a tube cleaner thereon, two supporting carriages therefor located in the steam drum of a water tube boiler, means on one of said carriages on which the other is adapted to move longitudinally at an angle to the movement of both on the inner walls of said drum and separate means each extending outside said drum and manipulated from a position outside thereof to cause the respective movements of the carriages, substantially as described.

3. The combination of a feed hose having a rotary tube cleaner on one end thereof, a support therefor extending longitudinally in the drum of a boiler and having a transversely extending track or railway in said drum, a carriage movable on said track having a guide to direct said feed hose and cleaner into a tube and means manipulated from a position outside said drum to impart movement to said carriage and position said guide to direct said hose and cleaner into any one of a row of tubes, substantially as described.

4. The combination of a member having a tube cleaner thereon, a support therefor movable longitudinally in the drum of a boiler with means manipulated from a position outside the drum to impart said movement, said support having a track or railway thereon disposed at an angle to its line of advancement in the drum, a carriage movable on said track or railway having a guide to direct said member and cleaner into a tube, means

to fix said support in an adjusted position and means manipulated from a position outside the drum to impart movement to said carriage and position said guide to direct said member and cleaner into any one of a row of tubes, substantially as described.

5. The combination of a member having a tube cleaner thereon, a support therefor extending into the drum of a boiler with means on which it is adapted to move on the inner walls of said drum, said support having a track or railway thereon disposed at an angle to its line of advancement in the drum, a carriage movable on said track or railway adapted to guide and direct said member and cleaner into a tube, means to fix said support in an adjusted position and means manipulated from a position outside said drum to impart movement to said carriage, substantially as described.

6. The combination of a feed hose having a rotary tube cleaner on one end thereof, a support therefor extending longitudinally in the drum of a boiler and having a transversely extending track or railway, a carriage movable on said track or railway having a guide thereon opening onto a tube adapted to direct said hose and cleaner into the tube and means manipulated from a position outside said drum to impart movement to said carriage to position and guide said feed hose and cleaner into any one of a row of tubes, substantially as described.

7. The combination of a member having a tube cleaner thereon, a support therefor adjustable to the inner walls of the drum of a boiler and movable longitudinally on said walls by manipulation from a position outside the drum, said support having a track or railway disposed at an angle to its line of advancement in the drum, a carriage movable on said track or railway adapted to guide and direct said member and cleaner into a tube, means to fix said support in an adjusted position, said means being accessible from a position outside the drum, and means manipulated from a position outside the drum to impart movement to said carriage, substantially as described.

8. The combination of a member having a tube cleaner thereon, said member and cleaner extending into the drum of a boiler and being shiftable longitudinally therein, a support located in said drum and having a track or railway disposed transversely to the line of advancement of said member and cleaner, a carriage movable on said track or railway having a guide to direct said member and cleaner into a tube and means manipulated from a position outside the drum to move said carriage and position said guide to direct said member and cleaner into any one of a row of tubes, substantially as described.

9. The combination of a flexible member having a tube cleaner thereon and a support

and guide for the same adapted to be inserted in the drum of a boiler with means located outside said drum to shift said member and cleaner and the support and guide
5 longitudinally in the drum, the longitudinal movement of the member and cleaner being independent of the longitudinal movement of the support and guide, said guide being adapted to open into a tube and further arranged to move on said support transversely
10 to the line of its longitudinal advancement and carry said member and cleaner therewith, means manipulated from outside said

drum, independent of said support, to cause said transverse movement and position said
15 guide to direct said member and cleaner into any one of a plurality of tubes, substantially as described.

In testimony whereof, we hereunto affix our signatures in the presence of two witnesses.
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CLINTON ROBINETT.
JOHN PATRICK REID.

Witnesses:

H. S. BRADLEY,
F. W. KREHBIEL.