

945,124.

Patented Jan. 4, 1910.

FIG. 1.

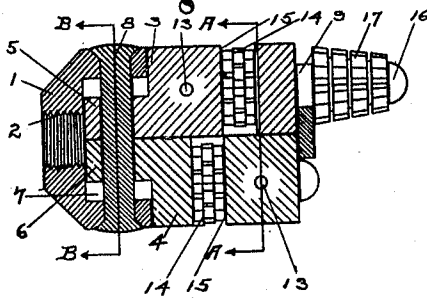


FIG. 2.

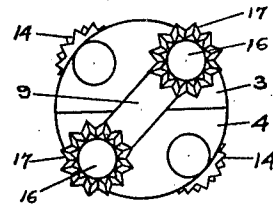


FIG. 3.

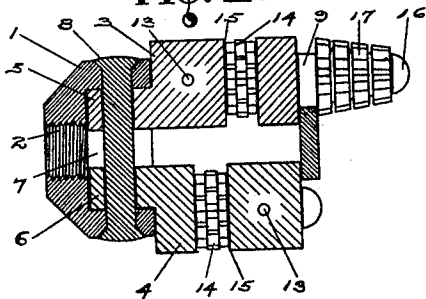


FIG. 4.

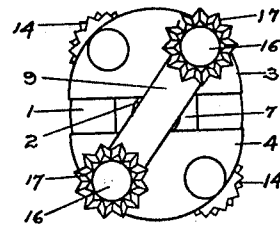


FIG. 5.

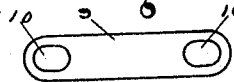


FIG. 6.

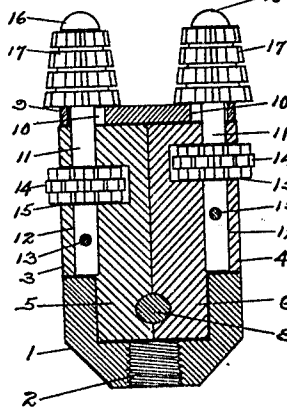
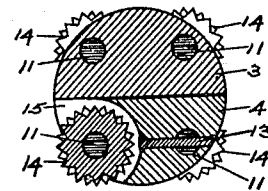
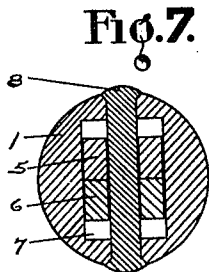


FIG. 7.



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UNITED STATES PATENT OFFICE.

ELMER E. HAUER, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE LAGONDA MANUFACTURING COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

TUBE-CLEANER.

945,124.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed December 11, 1908. Serial No. 467,002.

To all whom it may concern:

Be it known that I, ELMER E. HAUER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Tube-Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to tube cleaners and more particularly to a cleaner head for removing the incrustations from the tubes of water tube boilers.

This invention is a modification of the invention described in an application filed December 11th, 1908, Serial No. 467,003, wherein the body portion of the head is longitudinally divided into radially movable sections carrying cutters, supported, driven and guided in their radial movement by a shaft.

In the modification described and claimed herein, the cutter carrying body portion so divided and radially movable is supported, driven and guided from one end, thus dispensing with the shaft and giving more room in the sections for the accommodation of the cutters, whereby the cleaner head may be made of less dimensions for use in cleaning small tubes.

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

In the accompanying drawings Figure 1 is a longitudinal section of a cleaner head embodying my invention, the radially movable body sections being shown at the limit of their inward movement, Fig. 2 is an end view of Fig. 1, Fig. 3 is a longitudinal section with the radially movable body sections shown at the limit of their outward movement, Fig. 4 is an end view of Fig. 3, Fig. 5 shows a link which limits the movement of the forward ends of the body section, Fig. 6 is a cross section on the line A A of Fig. 1, Fig. 7 is a cross section on the line B B of Fig. 1 and Fig. 8 is a longitudinal section showing the spindles upon which the rotary cutters are mounted.

Like numerals represent the same parts in the several views.

In the drawings 1 represents a support having a screw threaded opening 2 therein to attach the driving mechanism. A body portion divided longitudinally into radially

movable sections 3 and 4 have reduced ends 5 and 6, which extend into a recess 7 of the support 1. Said recess and reduced ends are shown rectangular in cross section as seen in Fig. 7; but they may be of any suitable shape whereby the support will engage said reduced ends of the body sections to rotate and guide the same in their radial movement and limit said movement. A retaining pin 8 extends through a perforation of the support and said reduced ends of the body sections, and is riveted to the support as particularly shown in Figs. 1, 3 and 7. A link 9 having slotted openings 10 through which spindles 11 extend limits the radial movement of the body sections at their outer ends. Said spindles are held in longitudinal apertures 12 extending through the body sections and are secured from rotation by pins 13.

Cutters 14 are mounted on spindles 11 within recesses 15 of the body sections, and one of the spindles 11 in each section extends through the slotted openings of the link 9, projects forwardly and has a head 16 thereon to secure cone cutters 17 which rotate on said spindles in front of the body portion as particularly shown in Fig. 8.

The support being attached to suitable driving mechanism, the head is introduced into a tube and the cone cutters first act upon the scale; and as the head is advanced into the tube the body sections with their cutters press outwardly by centrifugal force and attack the scale.

It will be seen the head is very simple in construction and may be readily taken apart for repairs by removing the pins 8 and 13.

Having thus described my invention I claim:

1. In a rotary tube cleaner, a body having cutters mounted therein, said body being divided into non-pivoted radially movable sections, means to limit the radial movement of the sections, said means including a support in which said sections have their radial movement independent of the movement of the support, the support being limited in its engagement to one end only of said body and forming the sole support for said body, substantially as described.

2. In a rotary tube cleaner, a body having cutters mounted therein, said body being divided longitudinally into non-pivoted radially movable sections, a support in which said sections have their radial move-

ment independent of the movement of the support, the support being limited in its engagement to one end only of the body and forming the sole support for said body, substantially as described.

3. In a rotary tube cleaner, a body having cutters mounted therein, said body being divided longitudinally into radially movable sections, members at the respective ends of said body, to limit the radial movement of the sections, one of said members being carried solely by said sections and the other forming the sole support for said body and being further adapted to guide said sections in their radial movement, substantially as described.

4. In a rotary tube cleaner, a body having cutters mounted therein, said body being divided longitudinally into non-pivoted radially movable sections, members at the respective ends of said body, to limit the radial movement of the sections, one of said members being carried solely by the sections and the other forming the sole support for said body in which said sections have their radial movement independent of the movement of the member, said last named member being adapted to attach means for driving the cleaner, substantially as described.

5. In a rotary tube cleaner, a body portion divided longitudinally into radially movable sections, having a reduced central projection at one end with a perforation therethrough, means at the other end to

limit the radial movement of said sections, a support having an elongated recess the side walls of which form a guide for said reduced projections to move therein, a pin secured to said support extending through the perforation in said projection and cutters mounted in said section, substantially as described.

6. In a rotary tube cleaner, a body portion divided into radially movable sections, a link at one end of said sections adapted to limit their radial movement, a support at the other end adapted to guide and limit the sections in their radial movement and cutters mounted on said section, substantially as described.

7. In a rotary tube cleaner, a body portion divided into radially movable sections, spindles secured in said sections and cutters mounted thereon in recesses in said sections, one of said spindles in each section projecting forward of the sections with cutters mounted thereon, a link having slotted openings engaging the projecting spindles to limit the radial movement of the sections, a support at the rear end of the body portion adapted to guide and limit said sections in their radial movement, substantially as described.

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

ELMER E. HAUER.

Witnesses:

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CARL CASKEY.