

UNITED STATES PATENT OFFICE.

HENRY RANDALL, OF BROOKLYN, NEW YORK.

BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 377,171, dated January 31, 1888.

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To all whom it may concern:

Be it known that I, HENRY RANDALL, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Boiler-Tube Cleaner, of which the following is a full, clear, and exact description.

My invention relates to a device for cleaning boiler-tubes, and has for its object to provide a cleaner of simple and cheap construction, which may be expanded in a tube, and which also will cut away scale when either pushed or drawn through the tube.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical section through the device. Fig. 2 is a plan view of one of the expanding-plates, and Fig. 3 is an end view of the same.

In carrying out the invention a tube, A, is provided of suitable length and material, and within said tube, about centrally the same, a circular block, B, is held to slide, having its rearward movement limited by a key, *b*, projecting through the tube, as shown in Fig. 1, the block being prevented from turning by a screw or inwardly-projecting stud, *b'*, projecting within the tube, which screw or stud is adapted to travel in a groove, *b''*, cut longitudinally the outer surface of the block. The block B at its outer end is provided with a recess, *a*, having inwardly-tapering walls, and a threaded aperture, *a'*, centrally the outer end. The threaded end *d* of a rod, D, is screwed into the block B through aperture *a'*, and supported within the tube A through the medium of three or more screws, *d*, projecting through the tube from the outside into an annular groove, *d'*, produced upon the rod.

The rod D may be made of any desired length and in two or more sections, the rod at its extreme outer end being provided with a suitable handle or wheel, *d''*. The tubing incasing the rod may be of one piece, or various sections coupled together, as shown at *d''*, or united in any approved manner.

At the end of the tube A a circular metal block, E, having a convex periphery, is rigidly held by three or more screws, *e*, passing through the tube and into the block. The inner side of the said block E is provided with a central integral outwardly-projecting stem, *e'*, which terminates in a disk, E', as shown in Fig. 1.

Three or more plates, F, are provided segmental in cross-section, wider at one end than the other, and bent at a slight inclination upward at a point, *f*, near the center, (shown in Fig. 2,) the widest end of each plate having an integral flange, *f'*, projecting outwardly at right angles to the body. The plates F are adapted for insertion at their contracted end in the tube A, the under surface of each plate, near the point *f*, being in contact with the periphery of the block E, and are held in contact with the block with slight lateral play by the screws *e*, passing through the casing and through elongated slots in the plates F into the block E. The inner and outer ends of the plates thus placed form a circle, the reduced ends entering the recess *a* in contact with the wall thereof, and the flanged outer ends surrounding the disk E'.

In operation the cleaner is entered the tube to be cleaned and the rod D is turned, whereupon the block B, riding over the inner ends of the plates F, fulcrumed upon the block E, expands the outer ends until the flange *f'* is in close contact with the inner surface of the tube. The cleaner may now be pushed in cutting and carrying the scales before it, and then pulled back, if desired, cutting each way.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a tube and flanged plates fulcrumed upon a block at one end of said tube, of an expanding-block held to slide in said tube, provided with a tapering recess and a threaded aperture, and a rod swiveled in said tube, and having its inner end threaded to carry said expanding-block, substantially as shown and described.

2. In a boiler-tube cleaner, the combination, with a tubular casing, a rod held to turn in said casing, and a series of centrally-depressed segmental plates provided with a flanged outer

end, and a block secured in the end of said tube, upon which the said plates are fulcrumed, of an expanding-block traveling upon the outer end of the rod and adapted to bear upon the inner end of said plates, and a disk supported within said combined plates at their outer ends, supported from the fulcrum-block, substantially as shown and described.

3. In a boiler-tube cleaner, the combination, with a tubular casing, a rod held to turn in said casing, provided with a threaded outer end, and an expanding-block traveling upon the threaded portion of the rod, provided with a longitudinal recess having rearwardly and

inwardly tapering walls, of a circular block secured at the forward end of the casing, and a series of angular centrally-depressed plates, wider at the outer than at the inner end, fulcrumed upon the said end block and projecting from the casing, provided at their outer ends with a flange extending at right angles to the body, and having their inner ends in engagement with the said expanding-block, substantially as set forth.

HENRY RANDALL.

Witnesses:

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