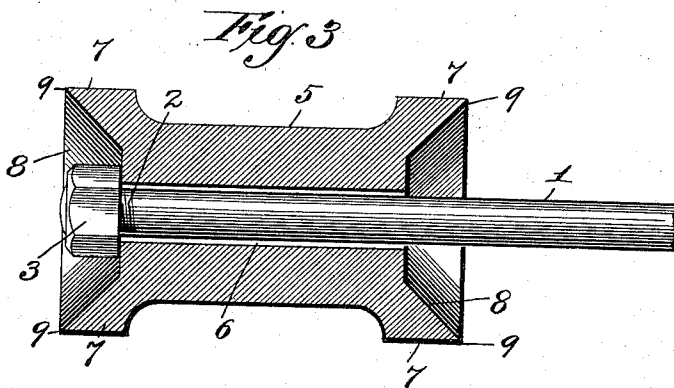
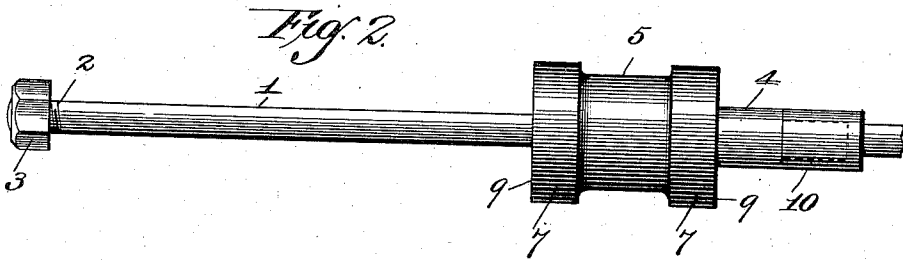
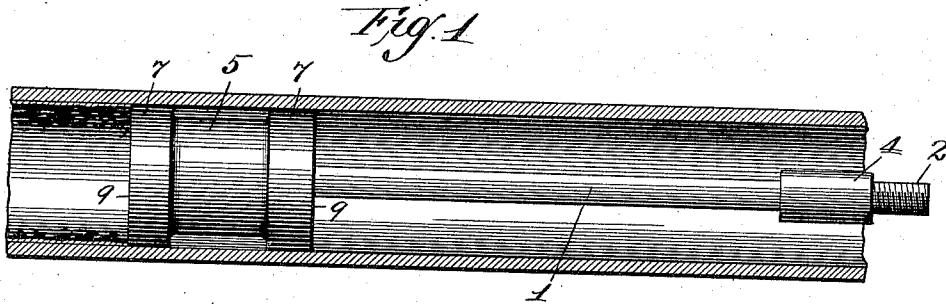


(No Model.)

J. LOCKWOOD & G. CLIFFORD.
BOILER TUBE CLEANER.

No. 577,765

Patented Feb. 23, 1897.



Attest:
John L. Timmons
Wm. Smith

Inventor's
James Lockwood.
George Clifford.
By Higdon & Higdon
Attys.

UNITED STATES PATENT OFFICE.

JAMES LOCKWOOD AND GEORGE CLIFFORD, OF ST. LOUIS, MISSOURI.

BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 577,765, dated February 23, 1897.

Application filed December 26, 1895. Serial No. 573,379. (No model.)

To all whom it may concern:

Be it known that we, JAMES LOCKWOOD and GEORGE CLIFFORD, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Boiler-Tube Cleaners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to an improved boiler-tube cleaner; and it consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal sectional view of a portion of a boiler-tube, our improved boiler-tube cleaner being shown in proper position within said tube. Fig. 2 is a side elevation of our improved boiler-tube cleaner. Fig. 3 is a longitudinal sectional view of the head of our improved device.

Referring by numerals to the accompanying drawings, 1 indicates a rod the ends of which are screw-threaded, as indicated by 2. Upon one of said screw-threaded ends is located a nut 3, while adjacent the screw-threaded portion of the opposite end is fixed or formed integral therewith a collar 4.

5 indicates a cylindrical head, the same being provided with a longitudinal bore 6, which is slightly larger in diameter than is the rod 1, and as said rod 1 passes through said bore 6 said head is free to slide on said rod between the nut 3 and collar 4. The ends of the head 5 are of larger diameter than is the main portion of said head, said enlarged ends being indicated by the numeral 7. The ends of the bore 6 are countersunk, as indicated by 8, to the extreme edges of the enlarged ends 7. This countersinking will necessarily form a sharp cutting edge 9 at each end of the head 5.

To facilitate the manipulation of our improved boiler-tube cleaner, a series of rods of approximately the same diameter as is the rod 1 are provided, a portion of one of which is shown in Fig. 2. Each of said rods is provided at one end with an interiorly-screw-threaded sleeve, such as 10, which is located

upon the screw-threaded end 2 of the rod 1 adjacent the collar 4. The opposite end of each rod is screw-threaded, so as to receive the interiorly-screw-threaded collar of the next rod. In this manner a sectional operating-handle is provided.

In the operation of our improved cleaner the head 5 is inserted in the end of the boiler-tube and pushed and pulled backward and forward therethrough by means of the handle until all the scale or other accumulation on the interior of said tube is removed. The enlarged ends 7 of the head 5 are of such diameter as that they will readily fit the ordinary-sized boiler-tube, and during the backward-and-forward movement of said head the cutting edges 9 engage against and remove the scale or other accumulation. As the enlarged ends 7 are quite short as compared to the length of the entire head, there will be little or no friction between the peripheries of said enlarged ends and the interior surface of the tube. In other words, the friction will all be at the cutting edge. Should the scale or other accumulation upon the interior of the tube be so great as to prevent the head from being pushed or pulled through in an ordinarily easy manner, the handle may be driven backward and forward with force and thus impart a hammer-like movement to the head as the nut 3 and collar 4 alternately come in contact with the ends of said head, and in this manner said head may be driven through the tube. The enlarged ends 7, being some distance apart, form bearings for the guidance of the head through the boiler-tube, and it is unnecessary to have a supplemental central bearing for the rod 1, as has been the case with the devices heretofore in use.

A boiler-tube cleaner of our improved construction possesses superior advantages in point of simplicity, durability, and general efficiency, is easily manipulated, and boiler-tubes may be very expeditiously cleaned in a thorough manner by the use of said device.

We claim—

A boiler-tube cleaner, comprising the rod 1, having the screw-threaded ends 2, the nut 3 located upon one of said screw-threaded

ends, the collar 4 adjacent the opposite end of said rod, and the cylindrical head 5, having the longitudinal bore 6 arranged to slide upon the rod 1 between the nut 3 and the collar 4 and also having the enlarged ends 7, and the bore 6 being countersunk to form the cutting edges 9, substantially as stated.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES LOCKWOOD.
GEORGE CLIFFORD.

Witnesses:

E. E. LONGAN,
MAUD GRIFFIN.