

(No Model.)

F. M. CLARK.
BOILER TUBE CLEANER.

No. 544,908.

Patented Aug. 20, 1895.

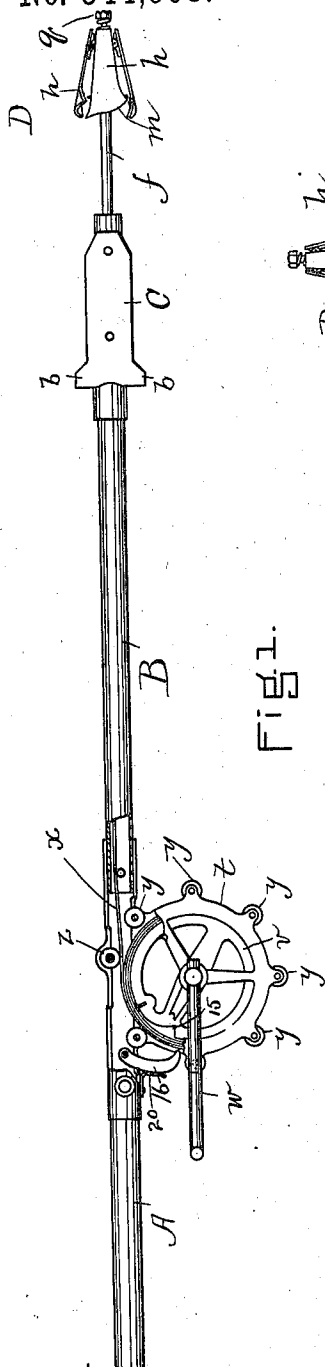


Fig. 1.

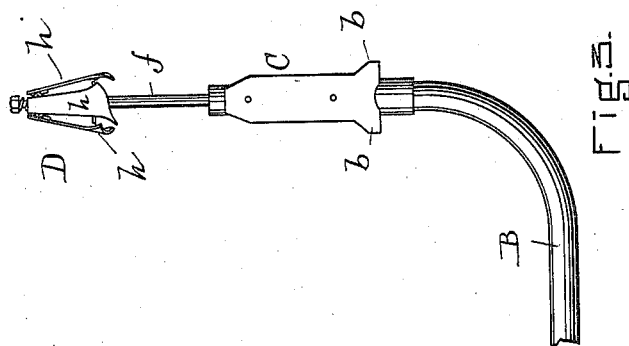


Fig. 3.

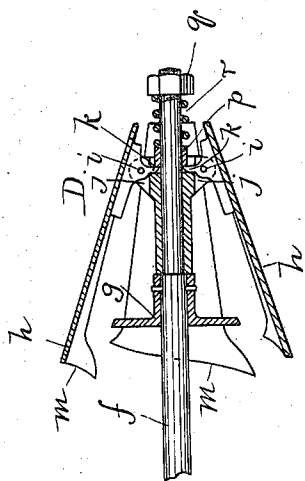


Fig. 2.

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UNITED STATES PATENT OFFICE,

FRANK M. CLARK, OF TILTON, NEW HAMPSHIRE, ASSIGNOR OF ONE-HALF
TO WILLIAM I. HOLMES, OF BOSTON, MASSACHUSETTS.

BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 544,908, dated August 20, 1895.

Application filed January 2, 1895. Serial No. 533,513. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. CLARK, of Tilton, in the county of Belknap, State of New Hampshire, have invented certain new and useful Improvements in Boiler-Tube Cleaners, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of my improved boiler-tube cleaner, a portion of the tubular body being broken away; Fig. 2, a longitudinal section enlarged, and Fig. 3 an elevation illustrating a modification.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to a boiler-tube cleaner for use with either vertical or horizontal boiler-tubes, and by means of which the tubes can be cleaned from over the fire-box or front end.

The object of the invention is particularly to construct a device which can be readily projected through the tube and will scrape on its return to the front, whereby the slag will be deposited in the fire-box.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the handle of the cleaner, and B the tubular body, which is fast on said handle. On this tubular body there is a guide-plate C, which is designed to fit into the mouth of the boiler-tube, and which has a flaring inner end *b*, that the operator may use as a brace or guide for steadying the device in the boiler-tube mouth while working it. An arm *f* is fitted to slide through the outer end of the tube and bears the head or scraper D, which is secured to said arm by means of a flanged collar *g*. (Shown in Fig. 2.) The wings or scraper-blades *h* are pivotally mounted at *i* on lugs *j*, the working edges or faces of said wings *m* being arranged at their inner ends so that the wings form a cone or flare toward the handle. A collar *p* is loose on the arm or rod *f* and engages fingers or

projections *k* on the pivot-blade of each wing. A nut *q* is turned onto the outer end of said arm, and a coiled spring *r* is interposed between said nut and the collar *p*, said spring acting expansively to flare the scraper-blades.

Mounted in a suitable support *t*, secured to the tubular body, there is a reel *v*, operated by a crank-handle *w*. On this reel a band-wire *x* is wound. A series of friction-rolls *y* on the support engage said wire, and a guide-roll *z* in the tubular body also engages it. A notch 15 is formed in the reel, and a pawl 16 pivoted to said body is in position to engage said notch, the toe of said pawl normally engaging the reel of wire, and when said wire is unwound dropping into the notch 15 and limiting the movement of the reel in that direction. This band-wire *x* has its free end secured to the rod or arm *f* carrying the scraper. The pawl 16 is pushed by a spring 20, so that its toe will be at all times in engagement with the band-wire. Owing to the nature of said wire the use of the antifriction-rollers *y* is essential, as otherwise the wire on the reel will spring away and render it exceedingly difficult to unwind the same when it bears against a frictional surface.

In the use of my improvement the guide C is inserted in the mouth of the tube, the scraper D projecting within said tube. By throwing the handle A slightly out of alignment with the boiler-tube the guide C will clamp therein and hold the device firmly in position while being operated. The handle *w* is then actuated to rotate the reel, unwinding the band-wire *x*, which, traveling in the tubular body B, drives the scraper into the boiler-tube until said band-wire is entirely unwound, when the pawl 16 will enter the notch 15 of the reel and lock it against further rotation in this direction. The length of the band-wire is made to correspond with the length of the boiler-tube, and when thus inclined a scraper is disposed within a very short space of the outer end of the tube. The wings of the scraper being spring-tensioned, as described, permits it to slip freely in entering the tube, so that the stiffness of the band-wire is sufficient to project out through said tube. The operator now rotates the reel in the opposite direction, and the cutting-edges *m* of

the blade of the scraper D, as said scraper is drawn back, engage the slag within the tube and detach it in a manner which will be understood by those conversant with such matters without a more explicit description.

5 It will be seen that the refuse detached from the tube is drawn forward by the scraper, so that the larger part of it will be discharged into the fire-box.

10 In Fig. 3 the body B is bent or curved vertically to adapt it for use with vertical tubes.

Having thus explained my invention, what I claim is—

15 1. In a boiler tube cleaner, a body in combination with a reel thereon; a band wire wound on said reel; a scraper connected with the

free end of said band wire and anti-friction rolls on said reel for engaging the coil of wire.

2. The tubular body provided with the guide, C, in combination with the reel attached to said body and provided with anti-friction rolls, *y*; the band wire, *x*, on said reel having its free end projecting through said body; the scraper, D, provided with spring-pushed blades and secured to said band wire and a stop for the reel, all being arranged to operate substantially as described.

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Witnesses:

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