

(No Model.)

G. M. ROBINSON.
BOILER TUBE CLEANER.

No. 379,728.

Patented Mar. 20, 1888.

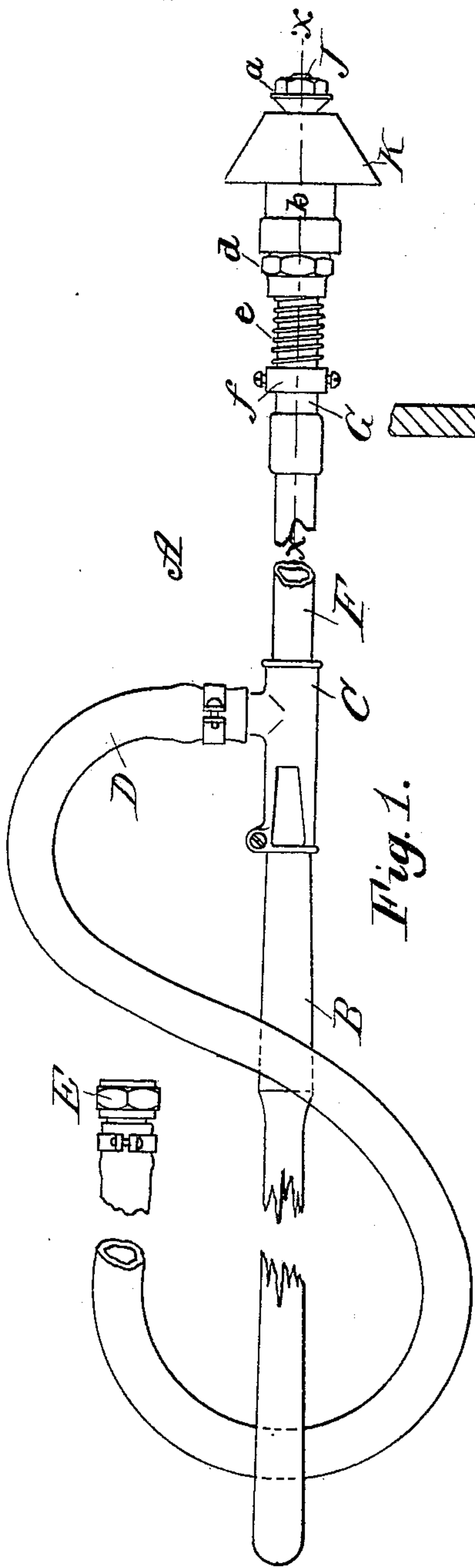


Fig. 1.

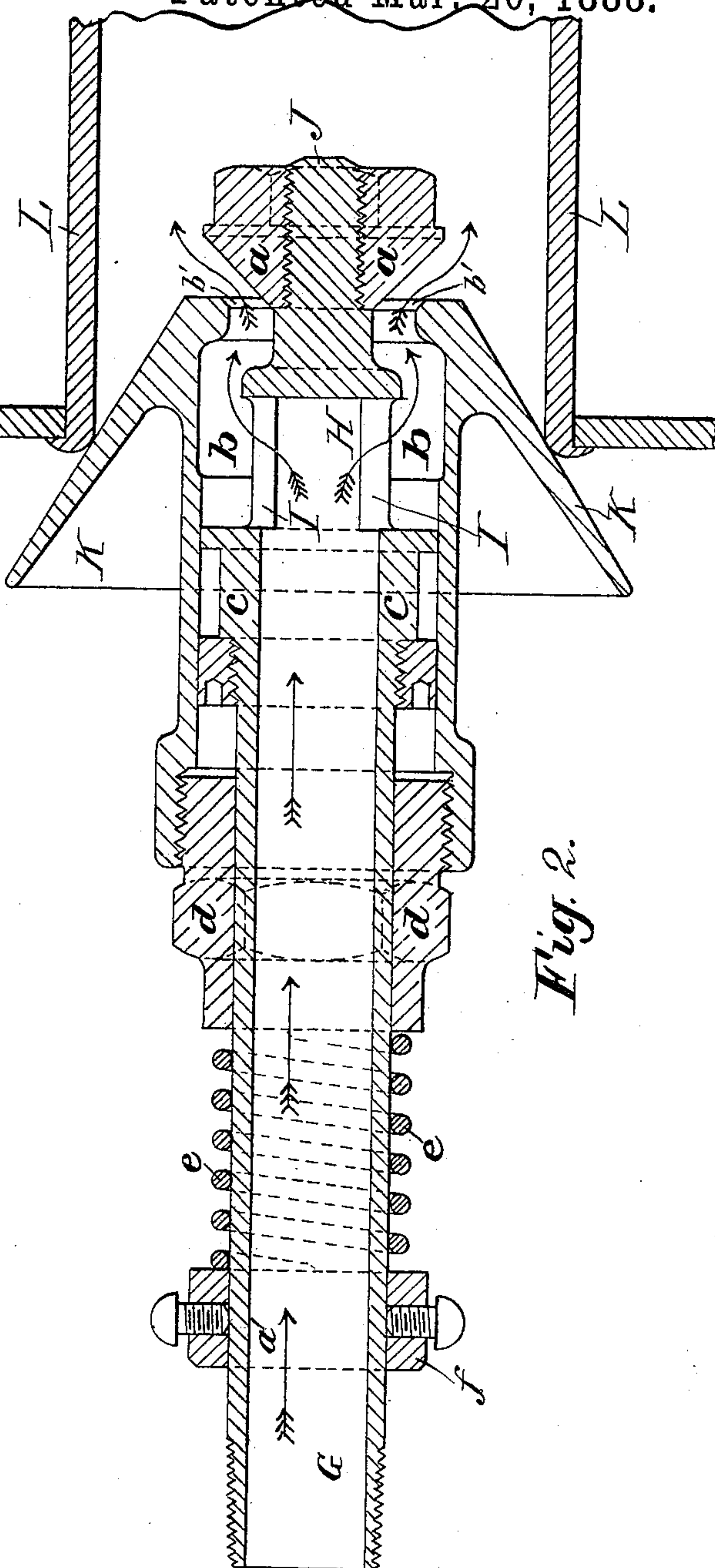


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE MILFORD ROBINSON, OF BALTIMORE, MARYLAND.

BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 379,728, dated March 20, 1888.

Application filed November 26, 1887. Serial No. 256,212. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MILFORD ROBINSON, of Baltimore, in the State of Maryland, have invented a new and Improved Automatic
5 Boiler-Tube Cleaner, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved boiler-tube cleaner in which the tubes are cleaned by the action of steam
10 passing through the cleaner and directed to the inner surfaces of the tubes for removing the soot and other impurities collecting in the tubes.

The invention consists of a steam-inlet pipe
15 carrying a fixed valve, and a cylinder adapted to slide on said steam-inlet pipe and provided with a cone fitting into the tube to be cleaned.

The invention also consists of certain parts and details and combinations of the same, as
20 will be fully described hereinafter, and then 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
25 corresponding parts in both the figures.

Figure 1 is a side elevation of my improvement, and Fig. 2 is an enlarged central section of my improvement on the line *xx* of Fig. 1.

My improved boiler-tube cleaner A is provided with a handle, B, secured to one end of
30 a pipe, C, connected with the flexible tube D, carrying on its outer end a suitable coupling, E, for connecting said flexible tube D with a source of steam-supply, generally a pipe leading to the steam-compartment of the boiler.
35 The pipe C is also connected with the pipe F, connected with the steam-inlet pipe G, provided on its outer end with a closed offset, H, having in its rim several slots, I, leading to the
40 outside. On the offset H is formed a bolt, J, on which screws a valve, *a*, having its inclined seat extending inward, as shown in Figs. 1 and 2.

On the inner end of the steam-inlet pipe G
45 is formed a fixed piston, *c*, on which is held to slide a cylinder, *b*, into which open the slots I, above described, and it is also provided on its outer end with an opening, *b'*, adapted to be seated on the inclination of the fixed valve *a*.
50 The cylinder *b* carries on its outer end a collar, *d*, fitting on the inlet-pipe G and adapted

to slide on the same. A spring, *e*, is coiled on the inlet-pipe G, and one of its ends rests against the collar *f*, secured to said inlet-pipe G by
suitable means, and the said spring *e* presses
55 with its other end against the collar *d*, so as to force the cylinder *b* at its opening *b'* into contact with the valve *a*, thus holding the cylinder in a closed position.

On the cylinder *b* is formed a cone, K, extending rearwardly and upwardly from its
60 front end, as shown in the drawings. This cone is adapted to fit in the openings of the respective boiler-tubes L, which may vary in diameter according to the different diameters
65 of the said cone.

The operation is as follows: When the apparatus is not in use, the cylinder *b* is in a closed
position—that is, its aperture *b'* fits over the
70 incline of the valve *a* and is held thereon by the pressure of the spring *e*. The operator connects the coupling E with the steam-supply pipe, and then takes hold of the handle B of the cleaner and inserts the valve *a* and the
75 cone K into one end of the tube L to be closed, so that said cone K closes the opening of said tube L, as shown in Fig. 2. The operator now presses the handle B inward slightly, so that the cylinder *b* slides backward on the outlet-
80 pipe G, on account of the cone K resting solidly in the opening of the tube L. The aperture *b'* in the front end of the cylinder *b* thus becomes free, and a passage is established between the valve *a* and the outer end of the cylinder *b*. The steam, entering through the flexi-
85 ble tube D, passes into the pipe C, then into the pipes F and G in the direction of the arrow *a'*, and then into the offset H, and through the slots I in the said offset into the cylinder *b*. From the latter the steam passes through
90 the opening *b'* on the incline of the valve *a*, which directs the steam outward against the inner walls of the tube L, so that all soot and other impurities collected in the said tube L are loosened by the force of the steam and
95 blown out of the rear end of the tube L. As soon as the operator releases the inward pressure on the handle B, the preponderance of steam-pressure within the cylinder *b* on the greater area of the piston *c* over the area of
100 the valve *a* closes and keeps closed the latter. A further escape of the steam is thus prevented.

The operator can now move the cleaner to any tube and repeat the above operation.

It will be seen that my improved boiler-tube cleaner is very simple in construction, can be readily handled and adjusted to tubes of various sizes, and very effectively removes soot and other impurities collected in the tube by the force of the steam directed to the inner walls of the tube by the incline of the valve *a*.

It will further be seen that the cylinder *b* is closed automatically by the steam as soon as the operator removes the apparatus from one tube to another.

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

1. In a boiler tube cleaner, the combination, with a steam-inlet pipe carrying a fixed valve and a piston having a greater area than the valve, of a cylinder adapted to slide on said steam-piston and opening on said valve, substantially as shown and described.

2. In a boiler-tube cleaner, the combination, with a steam-inlet pipe, a fixed valve held on

the outer end of said pipe, and a piston rigidly formed on the said inlet-pipe and having a greater area than the said valve, of a cylinder adapted to slide on the said piston and opening on the said valve, and a cone formed on the outer end of the said cylinder and adapted to fit into tubes of various sizes, substantially as shown and described.

3. In a boiler-tube cleaner, a steam-inlet pipe provided on its outer end with a slotted offset, a fixed valve held on said offset, and a piston formed on the inner end of said steam-inlet pipe and being greater in area than the said valve, in combination with a cylinder adapted to slide on said piston, and into which opens said slotted offset, the said cylinder being adapted to seat itself on the said valve, substantially as shown and described.

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