A. W. ABRAMS.

TUBE-BRUSH.

No. 187,341. Patented Feb. 13, 1877.

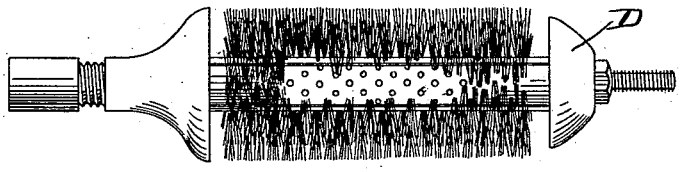

Fig. 1.

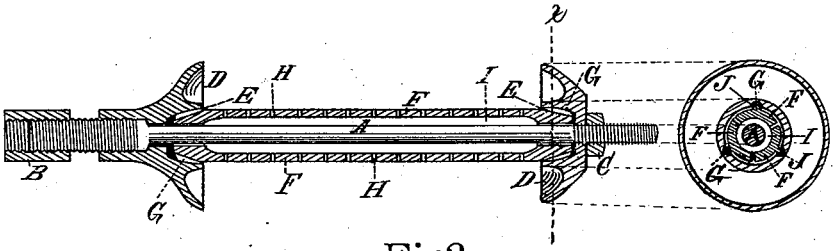

Fig. 2.

Witnesses:

Lloyd E. Baldwin

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UNITED STATES PATENT OFFICE.

ADDISON W. ABRAMS, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN TUBE-BRUSHES.

Specification forming part of Letters Patent No. **187,341**, dated February 13, 1877; application filed October 20, 1876.

To all whom it may concern :

Be it known that I, ADDISON W. ABRAMS, of Springfield, in the county of Hampden, State of Massachusetts, have invented a novel Improvement in Tube-Brushes, of which the following is a specification, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a longitudinal plan view. Fig. 2 is a longitudinal vertical view and a cross-section at *x*.

The object of my invention is to improve upon a boiler-flue cleaner on which a patent was granted to me May 11, 1875, No. 163,129, and my invention consists in casting on the tapering ends of the sectional bristle-holder longitudinal ribs, which fit into grooves cast in the inside of the tapering countersinks within the end cones, so that when the cones are forced together in the act of expanding the brush, there shall be no torsion of the sections of the brush-holder, and no twisting strain, but only a true lateral pressure on the ends.

In order that those skilled in the art may make and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the central rod on which are arranged the clamping devices or cones D D, provided with the internal tapering countersinks E to receive the tapering ends of the sections F F of the bristle-holder. On the inside of the tapering countersinks E are cast grooves J J, into which fit longitudinal ribs G G on the tapering ends of the three longitudinal sectional bristle-holders. The movements of the cones D D are controlled by means of the nut C. When the nut C is screwed against the cone D, the tendency would be, in the absence of the ribs G and grooves J, for the edges of the sections to ride over one another, and make an unequal expansion by the yielding to the twisting strain—the bristle-holder being inelastic. And after being expanded to a particular point to fit a tube, the cleaner is rigid, not yielding to, but removing any obstacle in, the tube.

The advantage in constructing the bristle-holder in three pieces is that in expanding it the bristles remain much nearer a true circle, and do not assume a decidedly elliptical form, as when the holder is in only two longitudinal sections.

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

In a boiler-tube cleaner, the rigid sectional bristle-holder having ribs G, in combination with cones D, provided with internal tapering countersinks, having grooves J, to receive said ribs G, substantially as described.

ADDISON W. ABRAMS.

Witnesses :

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