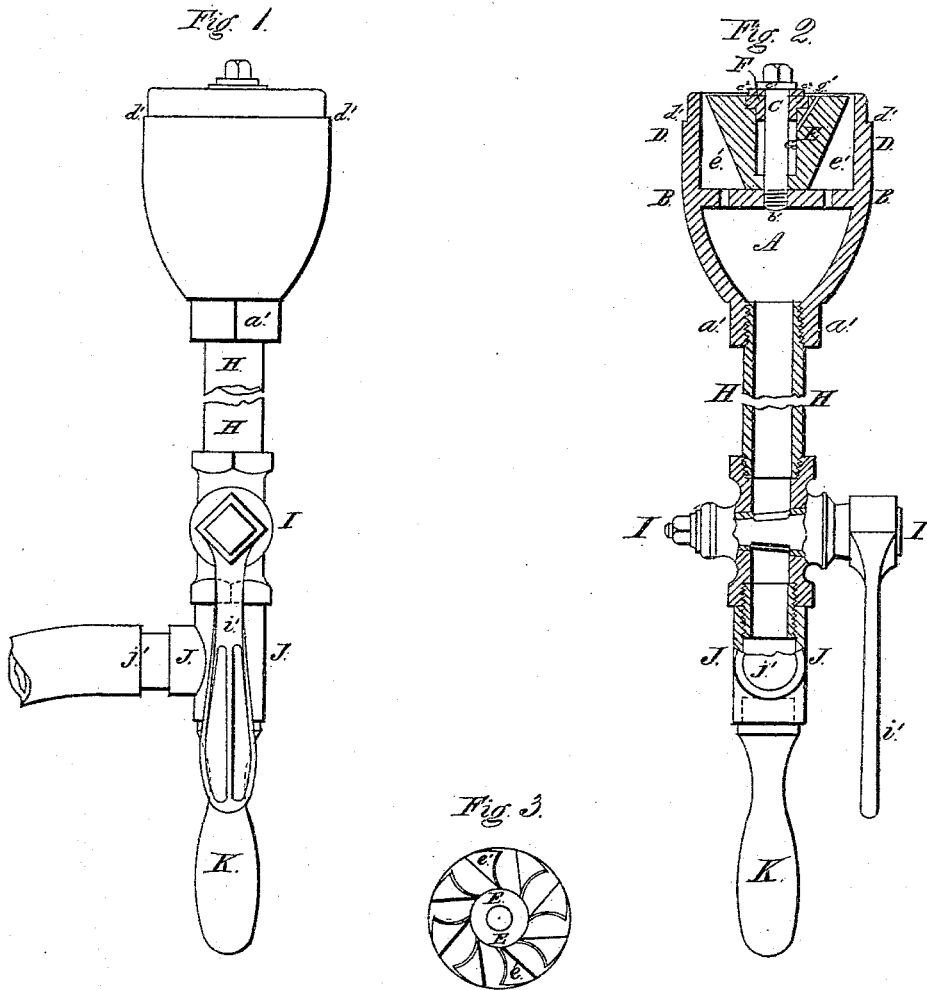


R. ATHERTON.
 Steam Flue-Cleaner.

No. 210,833.

Patented Dec. 17, 1878.



Witnesses
 W. J. Atkinson
 Wm. Hagan

Inventor
 Robert Atherton

UNITED STATES PATENT OFFICE.

ROBERT ATHERTON, OF PATERSON, NEW JERSEY, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILL HAGUE, OF SAME PLACE.

IMPROVEMENT IN STEAM-FLUE CLEANERS.

Specification forming part of Letters Patent No. **210,833**, dated December 17, 1878; application filed August 15, 1878.

To all whom it may concern:

Be it known that I, ROBERT ATHERTON, of the city of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Steam-Flue Cleaners, of which the following is a specification:

Figure 1 is a plan view of my improved steam-flue cleaner. Fig. 2 is a longitudinal through-section of the same. Fig. 3 is a reversed plan view of the conical fan.

Similar letters of reference indicate corresponding parts.

The object of this invention is to facilitate the operation of cleaning the flues of steam-boilers at all times, when the same are carrying any desired pressure of steam, by means of attaching a suitable rubber tube to the T-connection, said rubber tube being attached to a suitable pipe or connection in the boiler.

The invention consists in the steam-chamber and fan-case consisting of the hollow chamber, perforated partition, and fan-case, in combination with the conical fan, spindle, and washer, extension-pipe, stop-cock, T-connection, and handle, as hereinafter more fully described.

A is the steam-chamber. *a'* is the inlet to the same. B is the perforated partition (dividing the steam-chamber from the fan-case) through which the steam passes. *b'* is a hole in the center of the partition B, which is tapped out for the reception of the spindle C. D is the fan-case, the outside edge of which is turned to allow the same to be easily inserted into the end of the flue, leaving a beading or shoulder, *d'*, which, coming in contact with the end of the flue, allows the machine to be firmly held in its place, at the same time keeping the flue almost steam-tight, thereby preventing any waste of force. E is a conical fan, with blades or wings *e'* set spirally.

The center of the cone E is bored out at one end, so as to revolve easily on the spindle C, and at the other end is as much larger as may be desired. In the larger end is fitted a bush, F, the inside diameter of which corresponds with the diameter of the small hole, said bush being made the desired length and securely fitted in the cone E, and forms a recess, G, in

the center of the cone E, which serves as a reservoir for oil or any other lubricant, which is supplied through the oil-hole *g'* in the face or front of the cone E.

The spindle C has a thread cut on one end, and near the other end is a shoulder or collar, *c'*, between which and the face or front of the conical fan E is inserted a loose washer, *c''*, which relieves the collar *c'* on spindle C. Outside of the collar *c'* on the spindle C is left a square, so that the spindle C may be readily tightened or loosened by means of a wrench.

H is the extension-pipe, (which may be of any desirable length for the convenient working of the machine,) one end of which is securely screwed into the inlet *a'* of the steam-chamber A, and the other end is screwed into one end of the stop-cock I. In the other end of the stop-cock I is screwed one end of the T-connection J, and in the other end of the T-connection J is securely screwed the handle K, leaving the remaining opening in the T-connection J for the attachment *j'* to be properly connected with the boiler.

With this construction the small end of the fan-case D is inserted into the end of the flue, with the beading or shoulder *d'* firmly held against the extreme end of the flue, when the proper connections having been made with the boiler, the steam rushes into the rubber tube and attachment *j'*, T-connection J, and stop-cock I. When the handle *k'* of the stop-cock I is turned the steam enters the extension-pipe H, passing into the steam-chamber A, through the holes or perforations in partition B, to the fan-case D, and, coming in contact with the conical fan E and spirally-set blades or wings *e'*, causes the same to revolve at an astonishing speed on the spindle C, and the steam which escapes through the opening between the outside of the conical fan E and the inside of the fan-case D, by the action of the swiftly-revolving conical fan E, rushes into the flue with an expanded spiral and rotary force, causing the dirt in the flue to revolve with increasing speed until forced out at the opposite end, thereby preventing any dirt from falling to the bottom of the flue while being cleaned. The steam is then turned off by reversing the

handle *i'* of the stop-cock I, and the operation is speedily performed on the succeeding flue.

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

The combination of the steam-chamber A, inlet *a'*, perforated partition B, center hole *b'*, fan-case D, and outside beading or shoulder *d'*, the conical fan consisting of the cone E, spirally-set blades or wings *e'*, bush F, recess

G, oil-hole *g'*, the spindle C *c'*, loose washer *c''*, the extension-pipe H, the stop-cock I *i'*, T-connection J, attachment *j'*, and the handle K with each other, arranged substantially as set forth.

ROBERT ATHERTON.

Witnesses:

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