R. G. FINLAY.

CLEANING DEVICE FOR FLUES AND OTHER PURPOSES.

APPLICATION FILED APR. 10, 1914.

1,180,831.

Patented Apr. 25, 1916.

2 SHEETS—SHEET 1.

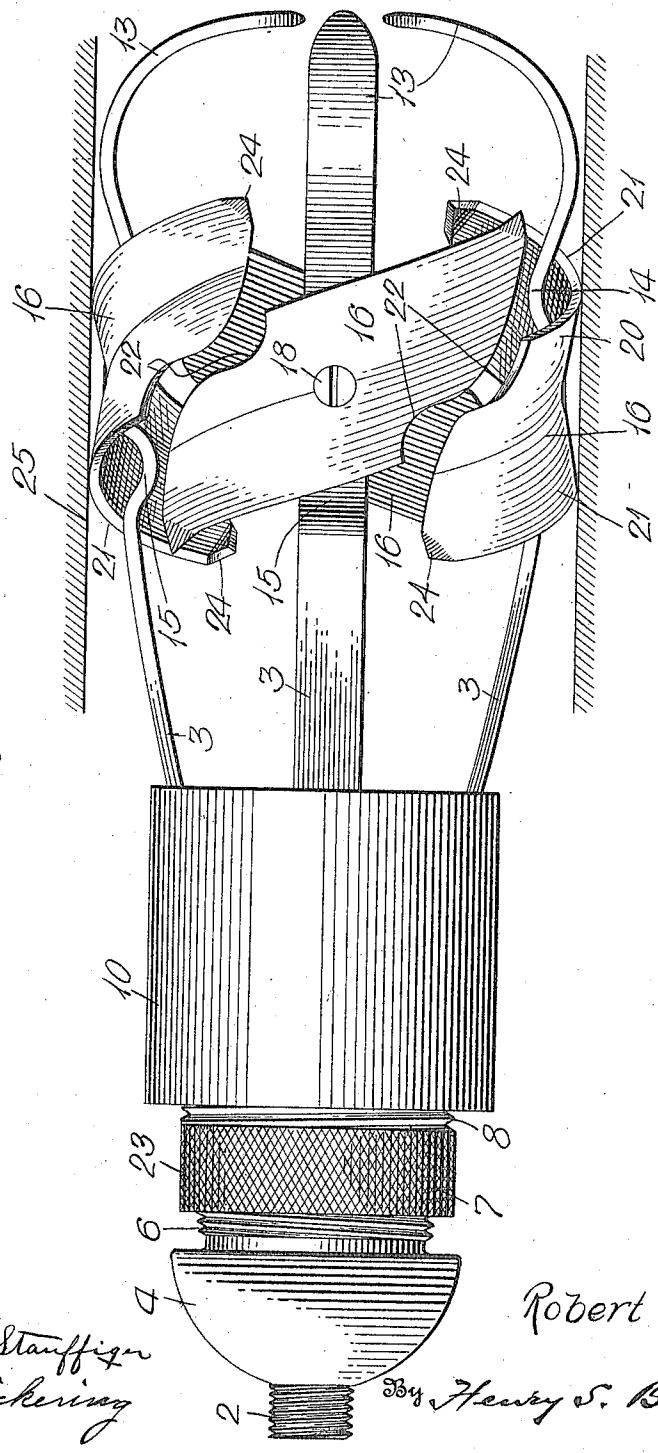


Fig. 1.

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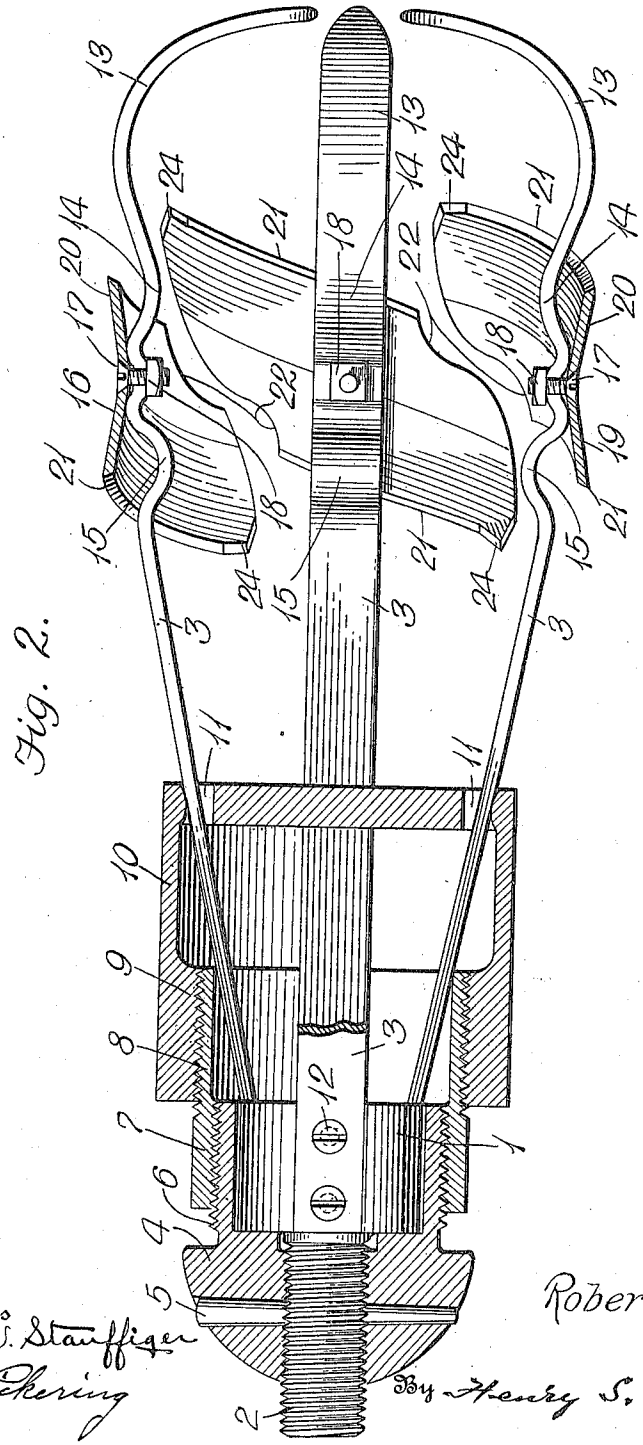


Fig. 2.

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UNITED STATES PATENT OFFICE.

ROBERT GILMORE FINLAY, OF CLEVELAND, OHIO.

CLEANING DEVICE FOR FLUES AND OTHER PURPOSES.

1,180,831. Specification of Letters Patent. Patented Apr. 25, 1916.

Application filed April 10, 1914. Serial No. 830,855.

To all whom it may concern:

Be it known that I, ROBERT GILMORE FINLAY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Cleaning Devices for Flues and other Purposes, of which the following is a specification.

This device relates to cleaners for flues, boiler tubes, and other purposes, and has for some of its objects the provision of a device, whereby greater cleaning capacity may be secured in shorter time and with greater efficiency than with the devices of similar nature employed hereto, while at the same time, the preservation of the flues or tubes is attained and whereby the cleaning blades of the device may be attached and detached from time to time as desired for the purpose of sharpening, shaping, or replacing, in the renewal or adjustment of the device in contradistinction to and from those which become inoperative and rendered necessary to discard or destroy by reason of their comprising fixed and unremovable parts or members, and it comprises the combination of members and arrangement of parts more definitly described, illustrated, and set forth hereafter, reference being directed to the accompanying drawing in which;

Figure 1 illustrates an elevation of the device as it appears when employed in a flue, or tube, such as a boiler flue, or tube and, Fig. 2 illustrates a sectional view partly in elevation showing the arrangement of parts and co-action of members of the device.

Similar numerals of reference designate corresponding parts in the various views.

Referring to the drawings, the numeral 16 designates a cutting blade, provided with oppositely situated cutting edges 21 and pointed guide members 24. The blade being provided with a means 17 for attaching and detaching the same to and from the springing or spring actuated support 3, and also provided with the spring actuated rocking means 14 and 15. The support 3 is provided at one end with the entering guide 13 for automatically adjusting the cutting diameter or zone of the blades 16 upon entering the flue and comprises in this instance a curved inwardly projecting member or end of the support. The other end of the support 3 is fixed in the screw threaded anchor 4, by means of the screw 12, the anchor 4 being provided with exteriorly threaded member 6, the interior threaded member adapted to engage the screw thread of the handle or projecting member 2, and the fixing or attaching member 5. Engaging and co-acting with exterior screw thread 6 is the sleeve 7 which is provided at its outer end with the screw thread 8 upon which travels the adjusting device 10 through the co-action of the inner screw thread 9. The supports 3 are anchored at selective points on the bearing 1 by means of screws 12, or other means and pass through the openings 11, in the adjusting device 10 in such a manner that the revolution of the adjusting device 10, or the actuating device 7 in its travel forward or backward on the screw thread 8 by reason of the screw thread bearing 9 causes the scraping blade bearing member 3 to be extended or depressed at its outer end in such a manner that the operative cutting or scraping diameter of the device may be adjustably expanded or constricted. The cutting blades 16 are preferably secured to the support 3 by the screws 17 operating against the nut 18 in such a manner as to provide a resilient, springing or rocking support, whereby, the opposite cutting edges 21 of the blades 16 may be brought in scraping co-action with the interior of a flue or tube, such as a boiler flue, or tube, in a forward or backward movement of the device, and each of the plurality of blades are arranged preferably in an angular direction with reference to each other in such a manner as to overlap the other, when in operation, in their cutting effect, the ends of the blades being shaped to this end, as shown at 22 and the pointed ends 24 of the blades being slightly inwardly projecting to act as a guide in the rotary and forward or backward movement of the device while in the flue or tube.

Each of the blades 16 besides being curved are arranged so that the cutting edges 21 are flared oppositely or extended from the center in a manner as shown at 19 and 20, so that the rocking effect imparted to the blades during the forward and backward movement of the device will provide means for bringing the scraping edges 21 into action at the opposite sides in either direction of movement, it will also

be noted that by the manner in which the blades are anchored to the supports 3 that a spiral shearing effect is secured in the forward and backward movement of the device. The device 7 upon and within which the adjusting device 10 and anchoring device 4 travels is provided with the ruffened or frictional gripping member 23 as shown in Fig. 1.

In Fig. 1 the device is shown as it appears when operating in a flue or tube such as a boiler flue or tube 25.

In employing the device the adjusting member 10 is moved toward or from the anchoring member 4 by revolving the actuating member 7 in either direction, which by means of the coacting threaded member 6, 8, and 9 operate to expand or contract the operating diameter of the blades 16, by extending or withdrawing the regulating device or member 10.

Having arranged the operating diameter of the cutting or scraping blades to approximately that desired, the device is attached to a handle by means of the screw thread 2 and then introduced into a flue or tube such as a boiler flue or tube 25. (Fig. 1). As the device enters the flue or tube, the entering guides 13 first engage the interior of the flue or tube, or flue or tube lining and gradually depresses the supporting members 3, and as the device enters the flue the forward edges of the blades 16 engage such material as soot or other substance which may be therein, and by rocking action gradually increases the forward pressure thereon, and removes the obstructing material in an angularly revoluble shearing scraping manner during the forward movement of the device, as the device is withdrawn the opposite shearing or scraping effect is secured by the vibratory rocking of the blade in an opposite direction bringing the cutting or shearing blade nearest to the operator into action as it is withdrawn. This device not only shears the soot or other material from the flue or tube wall, but, also breaks it up so that it is readily removed, and by reason of the springing and rocking character as well as the angular shearing effect, the flue lining or tube itself is protected against cutting destruction. When the blades become worn and the cutting edges dull they can be readily removed by withdrawing the screw 17, thereby removing the nut 18 and can be resharpened, reshaped, and re-adjusted with ease.

The device may be constructed of any suitable material, of cast, stamped, or other character and of any form and the shape and arrangement of the various members may be in the manner as illustrated or any other suitable or desired form, so long as the integrity of the members in their arrangement and co-action are maintained without departing from the spirit of the invention.

The rigidity of the blades may be secured by employing suitable anchorage and the control of the rocking, so that the movement and operation may be facilitated, may be obtained by the selective form or character of the blades to which the blade is secured.

It will be noted that the cutting or scraping members of the combination are supported on extended supports which are actuated to adjust the operating diameter of the scraper by external means which is not fouled or interfered with by the dust of the flue and can be readily cleaned, the supports traveling in a slotted guideway in a forward and backward direction while the slots are located at a fixed distance from a center.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. A cleaning device for flues and other purposes, consisting of an anchor element having spring blade supports secured thereto, blades on said supports, an adjusting member having openings therein through which said supports pass and a sleeve threaded to said anchor element and to said adjusting member for longitudinally actuating the latter.

2. A cleaning device for flues and other purposes, consisting of an anchor element having spring blade supports secured thereto, removably secured blades on said supports, an adjusting member having openings therein through which said supports pass and a sleeve threaded to said anchor element and to said adjusting member for longitudinally actuating the latter.

In witness whereof, I affix my signature in the presence of two witnesses.

ROBERT GILMORE FINLAY, [L. S.]

Witnesses:
VAL B. RULE,
F. L. WHORTNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."