A. NILSON.

FLUE CLEANER.

APPLICATION FILED MAY 18, 1916.

1,218,690.

Patented Mar. 13, 1917.

Fig. 1.

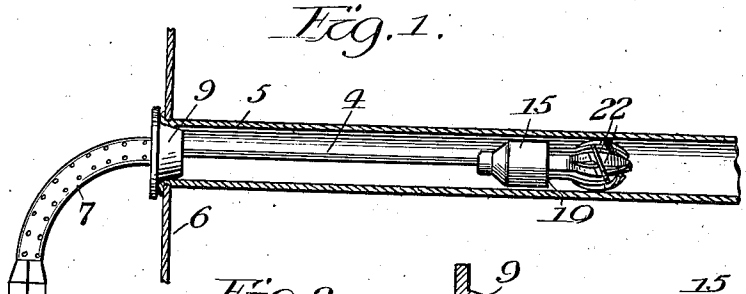


Fig. 2.

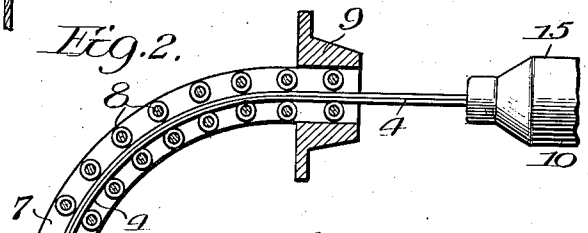


Fig. 5.

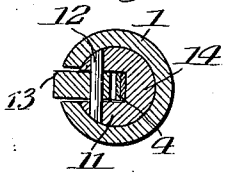


Fig. 4.

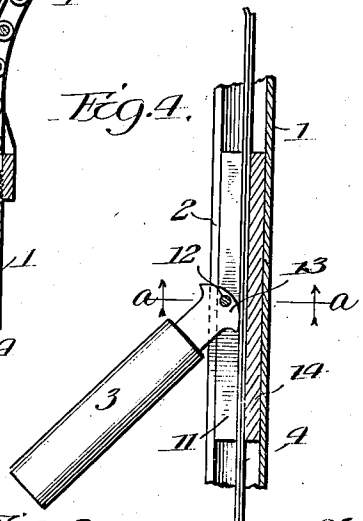
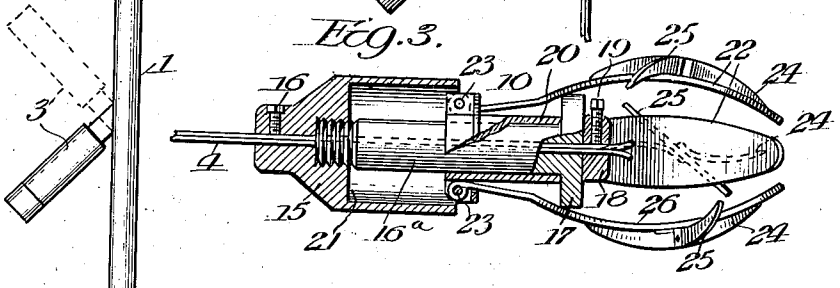


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FLUE-CLEANER.

1,218,690. Specification of Letters Patent. Patented Mar. 13, 1917.

Application filed May 18, 1916. Serial No. 98,269.

To all whom it may concern:

Be it known that I, ANDREW NILSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Flue-Cleaners, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to flue cleaners and has for its object the provision of an improved device which automatically adjusts itself to the size of the tube, and which scrapes the interior of the tube with varying degrees of pressure as may be required.

I will describe one form which my device may take more in detail by referring to the accompanying drawings, in which—

Figure 1 is a side view of my improved device in a flue cleaning position;

Fig. 2 is an enlarged view of certain details of construction;

Fig. 3 is a side view partly in section of the jaw structure;

Fig. 4 is a longitudinal sectional view of the handle operating mechanism, and

Fig. 5 is an enlarged sectional view on line *a*—*a* of Fig. 4.

My improved device consists of a supporting arm or tube 1 having a slot 2 through which a handle 3 is adapted to control a movable rod or tape 4. The tape 4 projects out of the tube 1 and may be of the necessary length so as to accommodate the device within any of the normal lengths of flues, such for instance as the flue 5 fastened to the boiler wall 6. The tube 1 has a curved extremity 7 provided with anti-friction rollers 8 between which the tape 4 is guided into a circular path. The curved extension 7 ends in a cap 9 which is adapted to impinge against the open extremity of the flues, as for instance shown in Fig. 1.

The tape or flexible rod 4 carries at its extremity a jaw structure 10, which jaw structure is movable throughout the length of the flue. In order to move this jaw structure I provide a sliding shoe 11 within the tube 1, which sliding shoe carries the handle 13 by having it pivoted thereto through the agency of the stud 12. The handle has at its extremity a cam head 13 extending away from both sides of the stud 12. The tape 4 can then be locked between the solid wall 14 of the shoe 11 and the cam 13 when the handle is moved, for instance, into the position shown in Fig. 4. Under these conditions the handle 3 bends the tape 4 between it and the shoe 11, and by pulling downwardly (Fig. 4) the tape 4 may be pulled downwardly. Should it be desired to pull the tape upwardly, then the handle 3 is moved substantially about ninety degrees to its alternative position in a clockwise direction, where the other face of the cam 13 grips the tape 4 between it and the solid portion 14 so that an upward movement of the handle will force the tape upwardly, thereby forcing the jaw structure 10 outwardly away from the cap 9. The jaw structure comprises a suitable framework 15 fixedly mounted upon the tape 4 by means of the set screw 16. Within this framework 15 is mounted a tube 16ª through which the tape 4 passes. The extremity of the tube 16ª has a collar 17 and a locking ring 18 is secured to the end of the tape 4 by means of the set screw 19. Slidable upon the tube 16ª is a sleeve 20, which sleeve can be slid between the abutment 21 forming part of the framework 15 and the collar 17. The sleeve 20 carries four scrapers or jaws 22 which are pivotally mounted on this sleeve by the studs 23. The jaws have cutting edges 24 running substantially longitudinally thereof but being bent slightly as shown more clearly in dotted lines in Fig. 3 and which also have diagonal cutting edges 25.

In the operation of the device it is first placed into the position shown in Fig. 1, at which time however the jaw structure 10 usually rests immediately next to the collar 9. The handle 3 is then moved to the alternative position shown in dotted lines in Fig. 1, and the tape 4 moved upwardly so as to push the jaw structure in the flue 5 to the farthest extremity of this flue. During this movement the friction between the jaws 22 and the sides of the flue of course pushes the sleeve 20 to the left (Fig. 3) so that the jaws are contracted, this being due to the fact that the inner surfaces 26 of the jaws are rounded and they thus move inwardly when the jaws slide to the left along the collar 17. As soon as the jaw structure has been moved a sufficient distance into the flue the handle 3 is placed into the position shown in Figs. 1 and 4 and the tape 4 drawn

downwardly so as to pull the jaw structure toward the collar 9. In this position the friction of the jaws, of which there are at least some touching the flue, draws the said jaws together with the sleeve 20 to the right relative to the framework 15 (Fig. 3), whereupon these jaws are expanded into the position shown in Fig. 3 as their tapering inner surfaces slide along the collar 17. The harder the pull the stronger is the tendency to push the jaws outwardly against the sides of the flue.

In this manner the flue is thoroughly cleaned, the material on the inside thereof being properly scraped therefrom to present a clean surface. This operation can be repeated if necessary.

From what has been described the nature of my invention will be readily clear to those skilled in the art, as will also the fact that many modifications within the scope of the appended claims can be made without departing from the spirit of my invention. Having however thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising a supporting arm, a rod movably mounted within said arm, a jaw structure carried at the extremity of said rod, and means carried by said arm to move said rod to thereby move said jaw structure away from or toward said arm, said means including a gripping device having means adjustably movable along said rod to thereby progressively move said rod in either direction along said arm.

2. A device of the character described comprising a supporting arm, a rod movably mounted within said arm, a jaw structure carried at the extremity of said rod, and means carried by said arm to move said rod to thereby move said jaw structure away from or toward said arm, said jaw structure including a support, a sleeve movable relatively thereto, a plurality of jaws, and wedge mechanism for expanding and retracting said jaws upon relative movement between said sleeve and said support.

3. A device of the character described comprising a supporting arm, a rod movably mounted within said arm, an expandible and retractable jaw structure carried at the extremity of said rod, and means carried by said arm to move said rod to thereby move said jaw structure away from or toward said arm, said jaw structure including a support, a sleeve movable relatively thereto, a plurality of jaws, and wedge mechanism for expanding and retracting said jaws upon relative movement between said sleeve and said support.

4. A device of the character described comprising a supporting arm, a rod movably mounted within said arm, a jaw structure carried at the extremity of said rod, and means carried by said arm to move said rod to thereby move said jaw structure away from or toward said arm, said means including a gripping device having means adjustably movable along said rod to thereby progressively move said rod in either direction along said arm, said jaw structure including a support, a sleeve movable relatively thereto, a plurality of jaws, and means for expanding and retracting said jaws upon relative movement between said sleeve and said support.

5. A device of the character described comprising a supporting arm having a rounded extremity, a flexible tape movably mounted within said arm, a jaw structure carried at the extremity of said tape, and means carried by said arm to move said tape to thereby move said jaw structure away from or toward said arm, said jaw structure including a support, a sleeve movable relatively thereto, a plurality of jaws, and wedge mechanism for expanding and retracting said jaws upon relative movement between said sleeve and said support.

In witness whereof, I hereunto subscribe my name this 25th day of April, A. D., 1916.

ANDREW NILSON.

Witnesses:
HAZEL A. JONES,
MAX W. ZABEL.