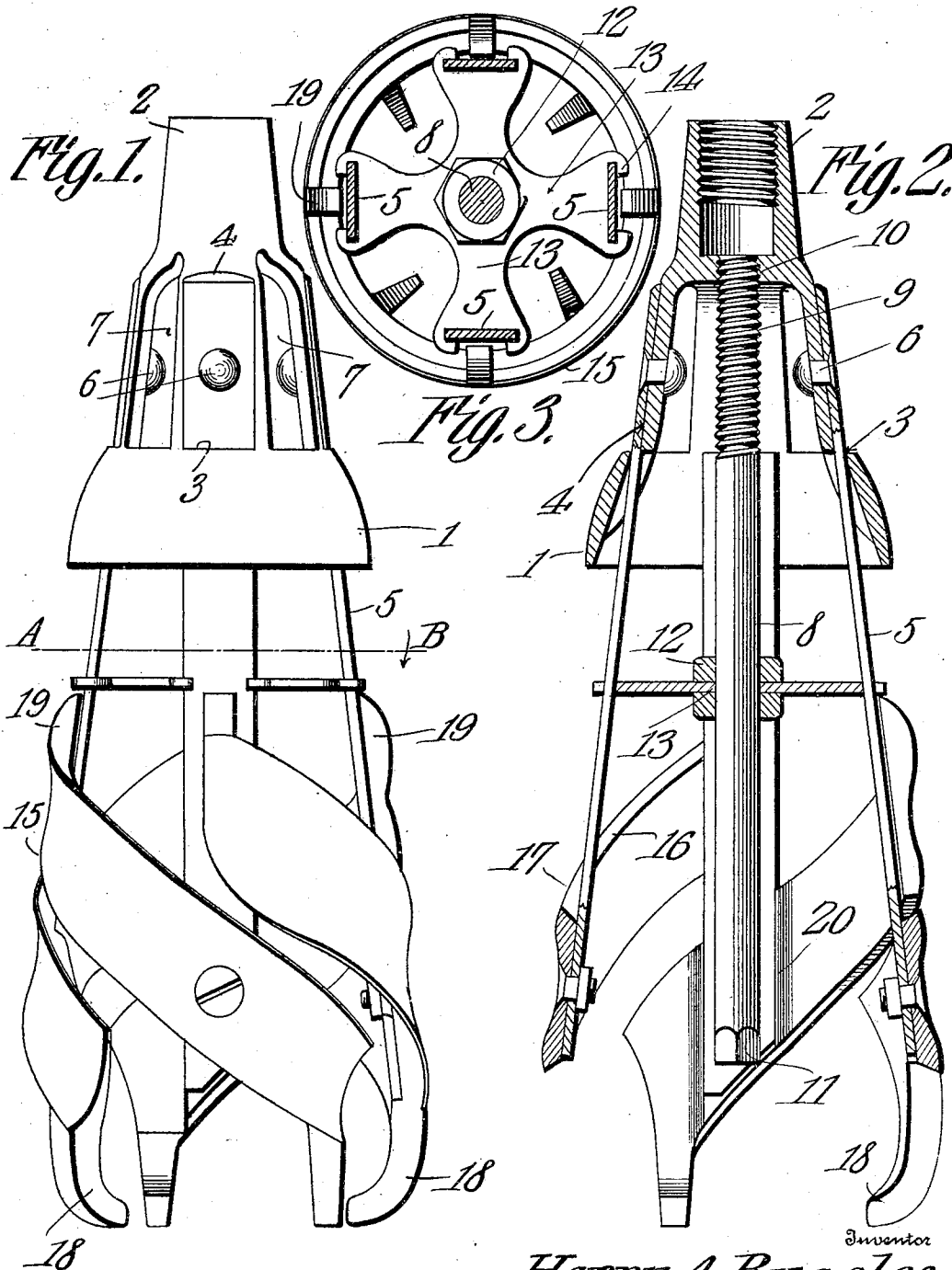


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FLUE CLEANER.
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931,963.

Patented Aug. 24, 1909.



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UNITED STATES PATENT OFFICE.

HARRY A. RUGGLES, OF HUTCHINSON, KANSAS, ASSIGNOR TO THE ENGINEERS SPECIALTY COMPANY, A CORPORATION OF MISSOURI.

FLUE-CLEANER.

931,963.

Specification of Letters Patent. Patented Aug. 24, 1909.

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To all whom it may concern:

Be it known that I, HARRY A. RUGGLES, a citizen of the United States, residing at Hutchinson, in the county of Reno and State of Kansas, have invented a new and useful Flue-Cleaner, of which the following is a specification.

This invention relates to flue-cleaners designed for use either within water tubes or smoke flues, and its object is to provide a device of this character which will operate to efficiently cut all objectionable accumulations from the tubes or flues, the operation of the cleaner being such as to render the cleaner self-sharpening.

Another object is to provide a flue-cleaner which can be readily adjusted so as to operate upon flues or tubes of different sizes, the adjusting means thus being simple in construction and easy to operate.

Another object is to provide improved means for connecting the blades of the cleaner to the head thereof.

A still further object is to provide adjusting means for positively shifting the blades either inwardly or outwardly relative to the longitudinal axis of the cleaner.

A still further object is to provide cleaning blades of improved construction having means whereby they can be readily inserted into or removed from the flues or tubes without danger to the blades.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of the flue-cleaner. Fig. 2 is a central longitudinal section therethrough. Fig. 3 is a section on line A—B Fig. 1.

Referring to the figures by characters of reference 1 designates a hollow bell-shaped head provided with a tubular interiorly screw-threaded extension 2 at its small end, there being a series of slots 3 formed within the head and extending partly there-around, each slot registering with a longitudinal recess 4 formed in the outer face of the intermediate portion of the head 1. Extending through each slot 3 and with one end portion seated within the adjoining recess 4, is a

straight spring strip 5 extending loosely through the large flared end of the body 1, that portion of the strip within the recess 4 being held securely in place by means of rivets 6 or in any other preferred manner. Longitudinal slots 7 are formed within the head between the recessed portions thereof and constitute outlets for the incrustations loosened by the tool.

A spindle 8 is arranged longitudinally within the head and has a screw-threaded end portion 9 engaging threads within an opening 10 formed between the head 1 and the tubular extension 2. The other end of the spindle is formed with a head 11 designed to be engaged by a suitable actuating tool, and arranged upon the spindle at an intermediate point are spaced nuts or collars 12, between which is mounted a spider 13. The arms of this spider radiate from the center thereof and toward the spring strips 5, and these arms constitute bearings for the spring strips. A pair of retaining lugs 14 is formed upon the outer end of each arm of the spider, said lugs being turned toward each other and disposed to embrace opposite edges of the spring strips 5 there-between, so that radial movement of the spring strips relative to the spindle 8 is prevented by the spider as long as said spider is stationary. It is to be understood that the lugs 14 only engage the spring strips 5 loosely, so that the spider can be moved along the strips 5 by screwing the spindle 8 into or out of the opening 10.

Secured to the free end portion of each spring strip 5 is a scraping blade or knife curved in the direction of its length so as to practically conform to the interior contour of the flue or tube to be cleaned. The blade is also formed with its outer face concaved transversely and provided with edges extending throughout the length of the knife or blade, the rear face of the blade being beveled along its edges as indicated at 16 in Fig. 2, so that the cutting edges 17 are spaced from the spring strips 5. One of these blades is mounted on each spring strip and all of the blades are spirally arranged with their ends lapping, there being a forwardly extending bowed arm or runner 18 at the front or advancing end of each of the blades, while another arm or runner 19 is formed at that end of each blade nearest the head 1. The runner 18 of each blade is disposed in

practically the same longitudinal plane as the runner 19 of the next adjoining blade lapped thereby.

Each of the knives or blades 15 is provided in its inner face and at the center thereof with a transversely extending recess 20 in which the spring strip 5 is seated, and a screw or other securing device 21 extends through the middle portion of each blade and through the spring strip 5 seated within the recess 20 of said blade, so as to hold the blade and strip securely together. The walls of the recess 20 constitute means for preventing the blade from rocking upon the screw 21. When the blades are thus assembled upon the strips 5 the rear runners 19 of the blades extend longitudinally of the strips 5, although spaced slightly therefrom, while the runners 18 project beyond the ends of said strips and turn inwardly as clearly indicated in the drawings.

When it is desired to use the cleaner herein described the same is placed in engagement with an actuating rod by screwing the extension 2 onto the rod. The spindle 8 is then rotated by means of a suitable tool engaging the head 11, so as to shift the spider 13 either toward or away from head 1, this movement of the spider causing the spring strips 5 to swing either toward or away from the spindle 8. After the desired adjustment has been attained the tool is forced into the flue or tube to be cleaned, the inturned runners 18 constituting means for causing the necessary contraction of the tool to permit the blades to pass into the tube or flue. As the tool is moved within the tube or flue the edges 17 of blades 15 scrape said tube and the loosened material is free to escape through the slots 7, and will not become packed within the head 1. The runners 19 also constitute means for properly deflecting the blades and the strips 5 when the tool is pulled back into a flue or tube after it has been pushed therefrom.

Obviously various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the advantages of the invention.

What is claimed is:—

1. In a flue-cleaner a head having annular slots and longitudinal recesses in the outer portions of the head and communicating with the slots, flexible strips secured within the recesses and extending through the slots and into and beyond one end of the head, spirally disposed blades carried by the free ends of the strips, a spindle having a threaded end engaging the head, said spindle hav-

ing an end portion for engagement with a tool to rotate the spindle and shift it longitudinally relative to the head and strips, and means shiftable with the spindle and slidably engaging the strips for simultaneously shifting the strips toward or from each other.

2. In a flue-cleaner a head having an enlarged end, there being annular slots within the head, and exterior longitudinal recesses communicating with the slots, flexible strips secured at one end within the recesses and extending through the slots and into and beyond the large end of the head, a blade carried by the free end of each strip, a centrally disposed spindle having a threaded end adjustably engaging the head, one end of the spindle being disposed between the blades and constituting means for engaging an actuating tool, a member swiveled upon the spindle and having radial arms slidably engaging the flexible strips for shifting said strips toward or away from the spindle simultaneously, there being openings within the head and between the recesses for the escape of material entering the head.

3. In a flue-cleaner a handle-engaging structure a spirally disposed blade upon said structure and having a transversely concaved outer face, and a runner projecting from each end of the blade, the two runners extending in opposite directions.

4. In a flue-cleaner the combination with a head and spring strips secured thereto and extending therefrom, said strips converging toward the head; of means interposed between and slidably mounted on the strips for simultaneously shifting said strips toward or from each other, and a spirally disposed blade upon each strip, said blade being curved in the direction of its length and having a transversely concaved outer face, and oppositely extending runners upon the ends of each blade.

5. In a flue-cleaner the combination with a flexible strip; of a spirally disposed blade curved from end to end and having a transversely concaved outer face, said blade having a central transverse recess constituting a seat for the strip, and a runner projecting from each end of the blade, the two runners extending in opposite directions.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HARRY A. RUGGLES.

Witnesses:

MYRTLE M. JACKSON,
C. A. THOMPSON.