(No Model.)

L. J. WOLF.

FLUE CLEANER.

No. 589,590. Patented Sept. 7, 1897.

FIG. 1.

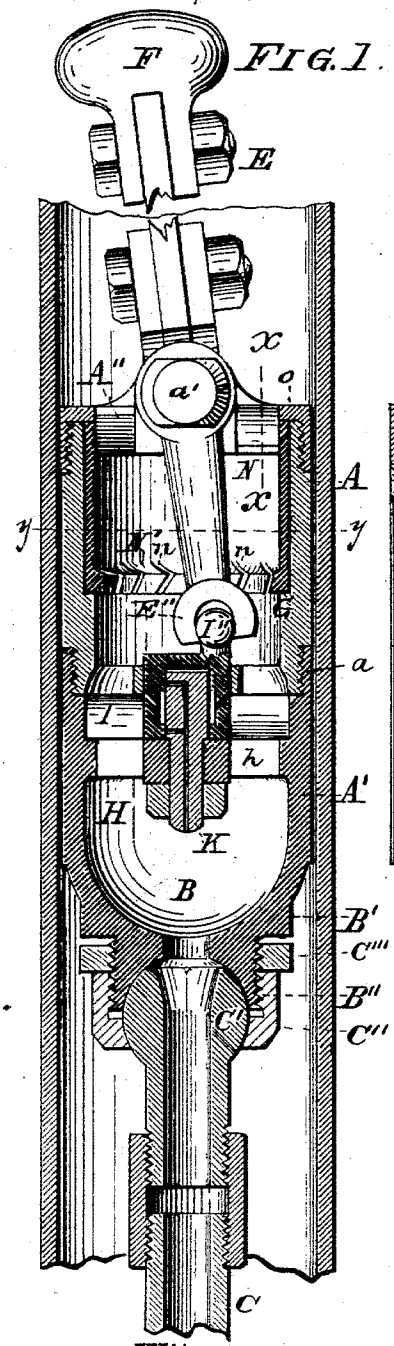


FIG. 2.

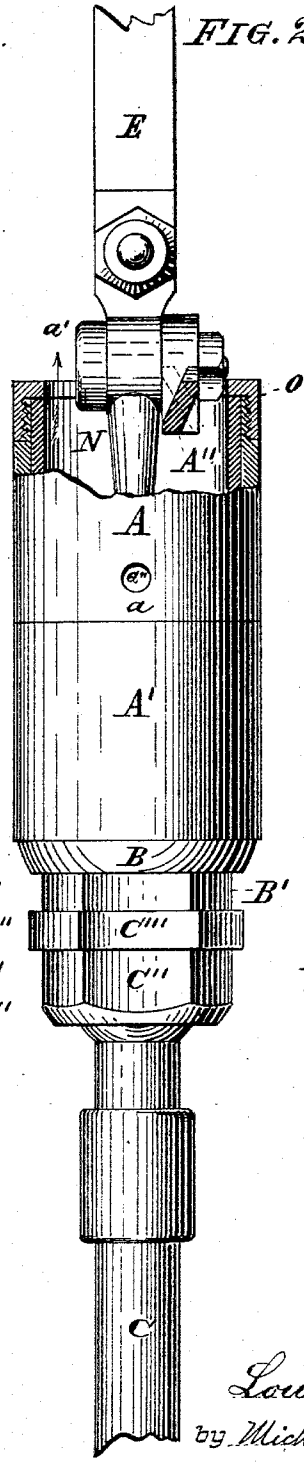


FIG. 3.

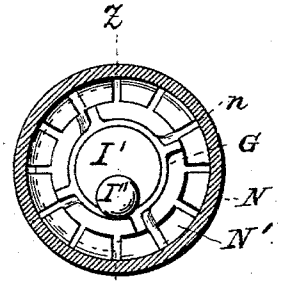


FIG. 4.

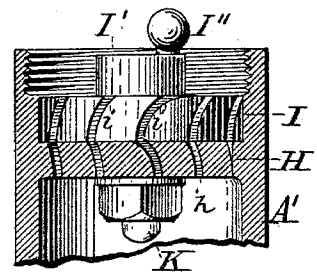
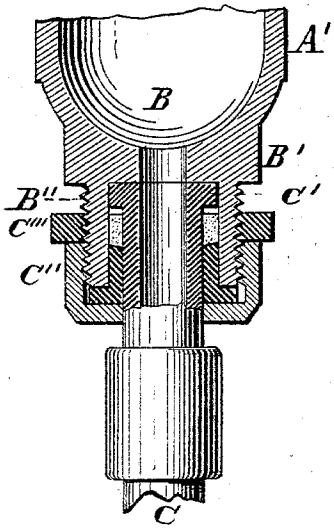


FIG. 5.



Witnesses:

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FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 589,590, dated September 7, 1897.

Application filed May 5, 1897. Serial No. 635,248. (No model.)

To all whom it may concern.

Be it known that I, LOUIS J. WOLF, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Flue-Cleaners; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in flue-cleaners; and its object is to produce a flue-cleaner having a reciprocating or vibrating hammer or chisel with means for automatically revolving the vibrator around the axis of the body of said flue-cleaner.

To this end the invention consists of the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate this invention more fully, Figure 1 is a longitudinal sectional elevation of my improved flue-cleaner. Fig. 2 is an elevation of the same, parts being in section in line $x\,x$ of Fig. 1. Fig. 3 is a sectional plan in line $y\,y$ of Fig. 1. Fig. 4 is a sectional elevation of a fragment of the device in line $z\,z$ of Fig. 3. Fig. 5 is a sectional elevation of the lower portion of the body and illustrating a modified form of connection of the steam-pipe with the body of the cleaner.

Like parts are designated by corresponding letters of reference in all the figures.

A A are two cylindrical shells screwed together at a and constituting the body of this flue-cleaner. The lower part A′ terminates in a bell B, having a hexagonal wrench-section B′ for the application of a wrench in conjunction with an aperture a'' in the upper shell A for the reception of the pin of a spanner-wrench, by means of which the two parts A A′ may be securely fastened together. Below this wrench-section there is formed an externally-screw-threaded part B″, upon which is located a clamping-nut C″ and a lock-nut C‴, which latter nut prevents the clamping-nut from revolving.

C is the steam, compressed-air, or water-supply pipe. It terminates in a ball C′, fitting a correspondingly-shaped recess in the end of the part B″ and retained therein by the clamping-nut C″, so as to form a so-called "ball-and-socket joint," which will enable the body of the cleaner to revolve on the said steam, &c., pipe C and the latter to assume a position out of axial line with the said body, as will hereinafter more fully appear.

In the interior of the lower shell A″ there is formed a spider H, above which is located a propeller-wheel I, having centrally an upwardly-projecting boss I′, provided with a projecting ball-shaped arm I″, serving as a crank, and clearly illustrated in the figures.

The spider H has curved radially-arranged slots or passages h, pointing in a direction opposing that in which the similar radial slots i in the propeller-wheel are arranged, and it has centrally an aperture for the reception of a stud K, upon which said propeller-wheel revolves.

The upper shell of the body A is internally bored out to receive a shell N, which is retained in position by a nut O, screwed onto the shell A at its upper end. This shell N has near its upper end a bridge A″, located to one side of the center of the said shell and adapted to receive the pivot a' of a vibrating lever E, which lever is provided on its outer end with a hammer or chisel F and on its inwardly-projecting end or short arm with a grooved guide E″, the groove of which engages the ball I″ on the propeller-wheel and thus converts the rotary movement of the said propeller-wheel into a reciprocating one of the said lever E. In the interior of this shell N there is formed an annular inwardly-projecting ledge N′, provided with a series of inclined slots n, the object of which will hereinafter be stated.

The bridge A″ has its members that connect the central hub with the body of the shell N inclined in opposite direction, as shown in Figs. 1 and 2, to coact with the inclined slots n in revolving the shell N within the shell A by the escaping steam, &c., used to revolve the propeller-wheel impinging upon these inclines.

In operation steam, compressed air, or water under pressure enters the body of the

cleaner through the pipe C and, passing through the inclined or curved radial slots in the propeller-wheel, causes the latter to revolve and thereby the lever E to vibrate rapidly. In passing the cleaner through a water-tube or boiler-flue it is necessary to revolve the same, so that the interior of these tubes may be thoroughly cleaned, and to so revolve the cleaner or a part thereof which carries the vibrating lever I pivot the said lever to the bridge located in the shell N, which, by the inclined slots in the inner annular ledge, is caused to slowly revolve, it being assisted by the inclined surfaces of the bridge A″. In this manner I accomplish the desired result in an efficient an effective manner.

Instead of revolving the shell N within the shell A, I may discard this shell N and form the bridge A″ integral with the shell A, forming the annular ledge in said shell A, or form radial slots *h* in the spider H and incline the same, as shown in Fig. 4, whereby the steam, &c., passing through the body A A′ and acting upon the inclined surfaces *n* and *h*, or either, causes the entire body to slowly revolve. In this case I need either of the two connections shown in the drawings to connect the steam-pipe with the said body, preference being given to the ball-and-socket joint shown in Figs. 1 and 2, because the flue-cleaner will be enabled to retain its position in axial line with the flue or tube, though the steam-pipe C may be inclined thereto, which will happen when the apparatus is being introduced into the said tube or flue to be cleaned.

In Fig. 5 I have shown the steam-pipe C attached to the body of the cleaner by a stuffing-box joint, which will be readily comprehended without further description and would be a substitute for the ball-and-socket joint shown in Figs. 1 and 2, though probably not quite so effective in operation.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. In a flue-cleaner, a suitable body having a bell-shaped bottom, an externally-screw-threaded portion thereon, a clamping and a lock nut upon said screw-threaded portion, a supply-pipe having a ball on its end and engaging a recess in the end of said screw-threaded portion and held therein by said clamping-nut, an internally-projecting ledge in said body having a series of inclined slots or notches, a propeller-wheel within said body, a lever pivoted in said body and engaging said propeller-wheel with one end, and a suitable tool on the other end of said lever, whereby said lever is reciprocated and at the same time caused to automatically revolve around the longitudinal axis of said body, as set forth.

2. A flue-cleaner consisting, essentially of a body composed of a lower section having a bell and a supply-pipe connected therewith, a spider in said lower section, a propeller-wheel having a ball-shaped arm projecting therefrom, an upper section secured to said lower section, a spider in said upper section above said propeller-wheel, a shell within said upper section and retained therein by a nut on the end of the upper section, a ledge in said shell having a series of inclined notches or slots, a bridge in said shell, a lever pivoted to said bridge and connected with its lower end with said propeller-wheel, and a suitable cutting-tool on the outer end of said lever, whereby said lever is reciprocated and the said shell and lever caused to automatically revolve within said body, as stated.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LOUIS J. WOLF.

Attest:
MICHAEL J. STARK,
WM. O. STARK.