

(No Model.)

2 Sheets—Sheet 1.

L. J. WOLF.
FLUE CLEANER.

No. 576,931.

Patented Feb. 9, 1897.

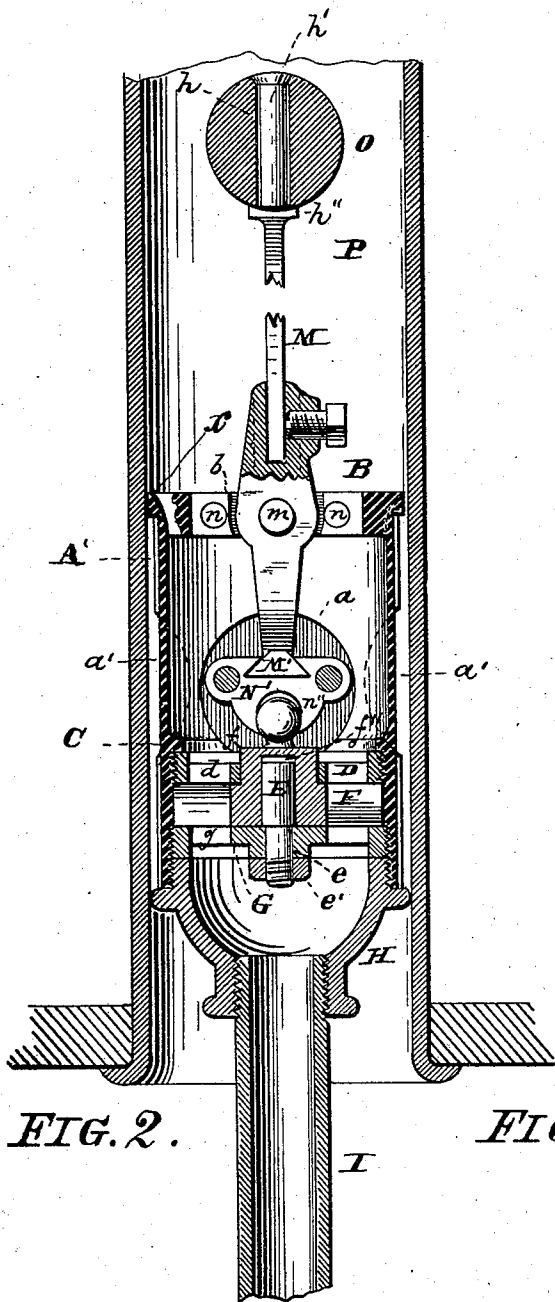


FIG. 2.

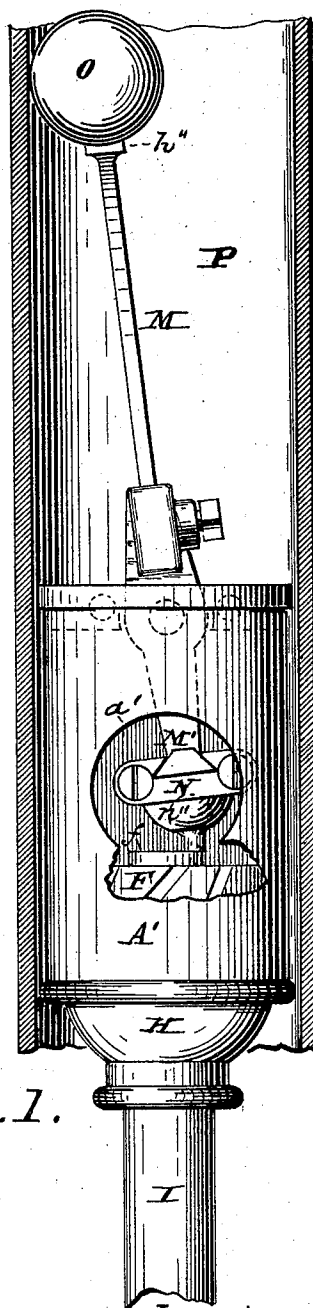


FIG. 1.

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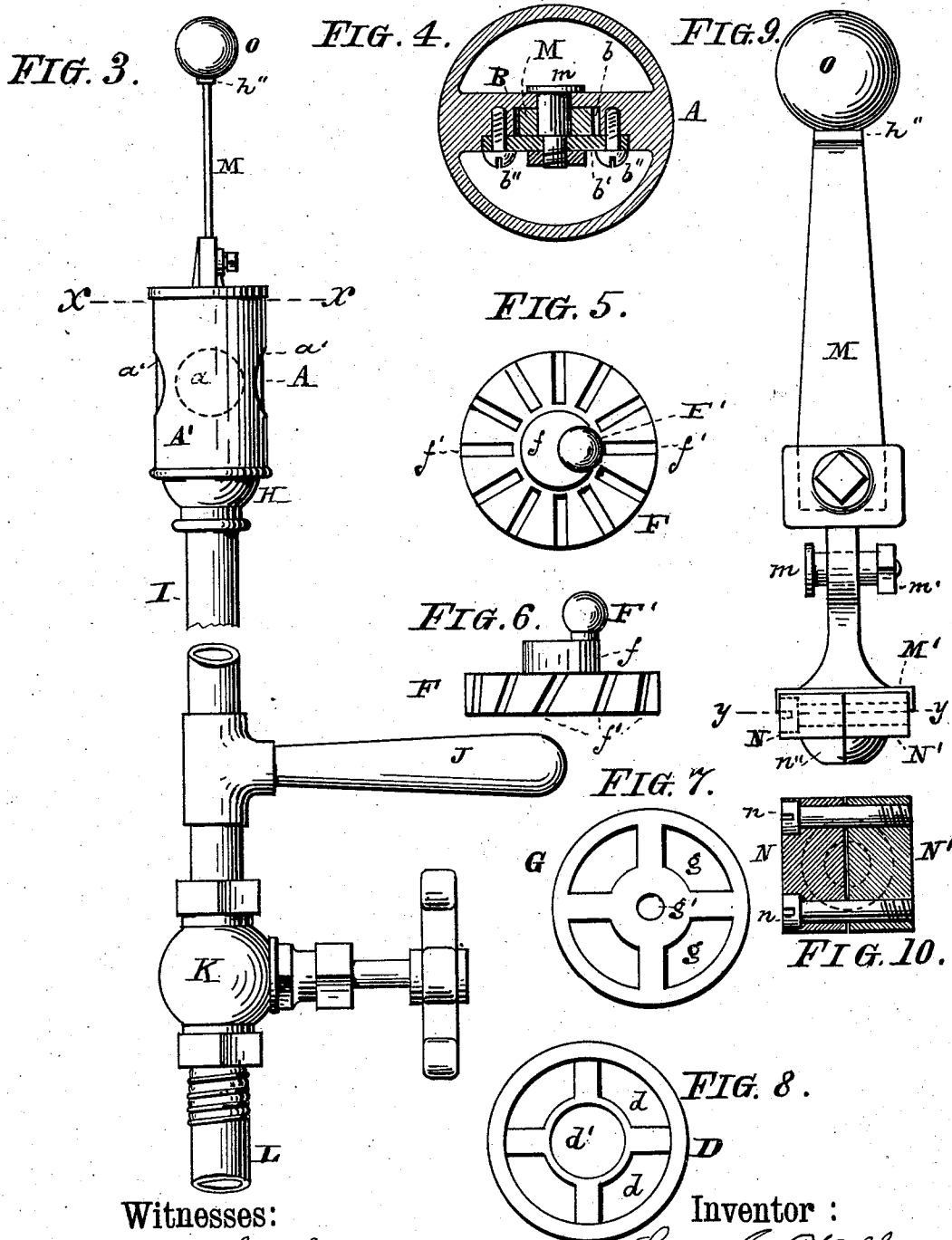
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UNITED STATES PATENT OFFICE.

LOUIS J. WOLF, OF BUFFALO, NEW YORK.

FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 576,931, dated February 9, 1897.

Application filed December 24, 1896. Serial No. 616,899. (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 sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains or to which it is nearest connected to make and use the same.

This invention has general reference to improvements in flue-cleaners, and especially that class in which steam is applied to revolve the cleaning mechanism and at the same time to free the flues from the deposits removed by the cleaning device; and its object is the production of a simple, durable, and efficient device which will clean both the interior and exterior of said boiler-flues.

To obtain this end, my 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 mentioned, which serve to illustrate my said invention more fully, Figure 1 is a plan of my improved flue-cleaner. Fig. 2 is a sectional plan of the same. Fig. 3 is a plan view of the flue-cleaner complete. Fig. 4 is a transverse section in line X X of Fig. 3, underlying parts being omitted. Fig. 5 is a plan of the propeller-wheel. Fig. 6 is an elevation of the same. Fig. 7 is a plan of the lower, and Fig. 8 a similar view of the upper, disk. Fig. 9 is an elevation of the vibrator, and Fig. 10 a sectional plan in line y y of Fig. 9.

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

This flue-cleaner consists of a cylindrical shell A, open at both ends and having at its forward end a bridge B, hereinafter to be referred to, and about midway in its interior an inwardly-projecting band C.

The interior of the shell A is screw-threaded below the band C to receive a disk D, bearing against the band C, which said disk D, as shown in detail in Fig. 8, has a series of segmental openings *d* and centrally a circu-

lar aperture *d'*, the former being arranged to serve as a steam-passage, while the latter is adapted to receive an annular projection *f* of the propeller-wheel F. This latter wheel is arranged to revolve freely within the shell A below the upper disk D, and it consists of a circular plate having in its periphery a series of obliquely-arranged slots *f'* and centrally a circular aperture *f''*, Fig. 1, for the reception of a pivot E, there being upon its upper surface the annular projection already mentioned and upon this and out of its center line a ball-shaped pitman E'. Below this propeller-wheel F there is screwed into the shell A the lower disk G, (shown in detail in Fig. 7,) being in all respects similar to the upper disk, that is to say, having a series of segmental openings *g* and centrally an aperture *g'* for the passage of the reduced portion *e* of said pivot, which latter is secured to said lower disk by a nut *e'*, as clearly illustrated in Fig. 1.

Into the rear end of the shell A there is screwed a bell H, which receives the steam-supply pipe I, having, as shown in Fig. 3, a handle J, by means of which the flue-cleaner is actuated, and a globe or other stop valve K, to admit, regulate, and turn off the supply of steam, a rubber hose L being attached to the lower end of the steam-pipe for convenience in manipulating the device.

The bridge B, already mentioned, has, as shown in Fig. 4, a recess *b*, partly closed by a cap *b'*, there being pivoted to said bridge within the recess *b* a vibrating lever M by a pivotal bolt *m*, passing through the said bridge B and cap *b'*, and having a nut *m'* to securely hold the said bolt in position, said cap *b'* being secured to the bridge by screws *b''*.

The vibrating lever M has at one end and transversely arranged a prismatic guide M', upon which is placed a slide consisting of two parts N N', secured together by screws *n*, as clearly illustrated in Figs. 9 and 10, there being formed on the under side of said slide a recessed projection *n''*, wherewith engages the ball-shaped portion of the crank-pin or pitman E'. On the upper end of this lever M there is a spindle *h*, upon which is loosely placed a ball O, acting as a hammer to strike the flue P in its inner surface when the apparatus is in operation, said ball O being pre-

vented from leaving the spindle *h* by the upper part of said spindle being burred or upset at *h'*, as clearly illustrated in Fig. 2, and by a collar *h''* below the ball O.

5 The portion of the lever M projecting from and outside of the shell A is made rather thin, so as to be elastic or flexible, and thereby to enable the hammer O to yield more or less should the flue-cleaner meet with any obstruction while being passed through the flue P.

10 In operation steam is admitted to the shell A by opening the stop-valve K. This will cause the propeller-wheel F to revolve rapidly and its pitman F' to actuate the vibrating lever M, the slide N N' being provided to convert the rotary motion of the propeller-wheel F into a reciprocating one of the short arm of the lever M. The ball O on the end of the vibrating lever M strikes the interior of the flue P a succession of light but rapid blows, and thereby dislodges deposits from the said flue on both its interior and exterior surfaces, the deposits from the interior of the flue being blown out of the same by the current of steam used in operating the propeller-wheel, while the forward edge of the shell A being made sharp, as shown at *x* in Fig. 2, any deposit not removed by the hammering of the tube is scraped away by said sharp edge, it being understood that the flue-cleaner while being pushed through the flue P is also rotated by the handle J, Fig. 3, so as to cause the hammer O to strike the interior of said flue in all directions.

35 It will be observed that this flue-cleaner will not only remove the deposit from the interior of the tube, but also loosen any scale-deposit on the exterior thereof, thus producing a more thorough cleaning of the flues than has heretofore been accomplished.

40 To enable the slide N N' to be placed upon the prismatic portion of the short arm of the lever M when the latter is in position, there are in the shell A, at diametrically opposite places, openings *a*, and to close these openings when the device is in use there is placed

upon the shell A a jacket A', having openings *a'* registering with the openings *a* in the shell A. This jacket A', when revolved in the proper direction, will either close or open the openings in the shell A in a manner readily comprehended.

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 shell, a propeller-wheel located therein, a vibrating lever, a guide on the short arm of said lever, a slide thereon to connect said lever with said propeller-wheel, a hammer on the end of said lever, and a suitable supply-pipe for admitting steam to the interior of said shell, as and for the purpose set forth.

2. A flue-cleaner having a shell provided with a bridge, an upper disk in said shell, a propeller-wheel located in said shell, a pitman on said propeller-wheel, a vibrating lever pivoted in said bridge, a guide on the short arm of said lever, a slide upon said guide and means for connecting the slide with the pitman, and a hammer on the outer end of said lever, the whole being constructed and arranged as and for the object set forth.

3. A flue-cleaner consisting of a shell having a bridge on one end, a bell at the opposite end, openings at diametrically opposite places in said shell, a jacket on the outside of said shell, a propeller-wheel in said shell, two disks inclosing said propeller-wheel, a pitman on said propeller-wheel, a lever pivoted in said bridge, a guide on the short arm of said lever, a slide upon said guide having a recess in its under side engaging the pitman, and a hammer on the end of said lever, as and for the object set forth.

In testimony that I claim the foregoing as my invention I have hereunto set my hand in the presence of two subscribing witnesses.

LOUIS J. WOLF.

Attest:

MICHAEL J. STARK,
MICHAEL J. STARK, Jr.