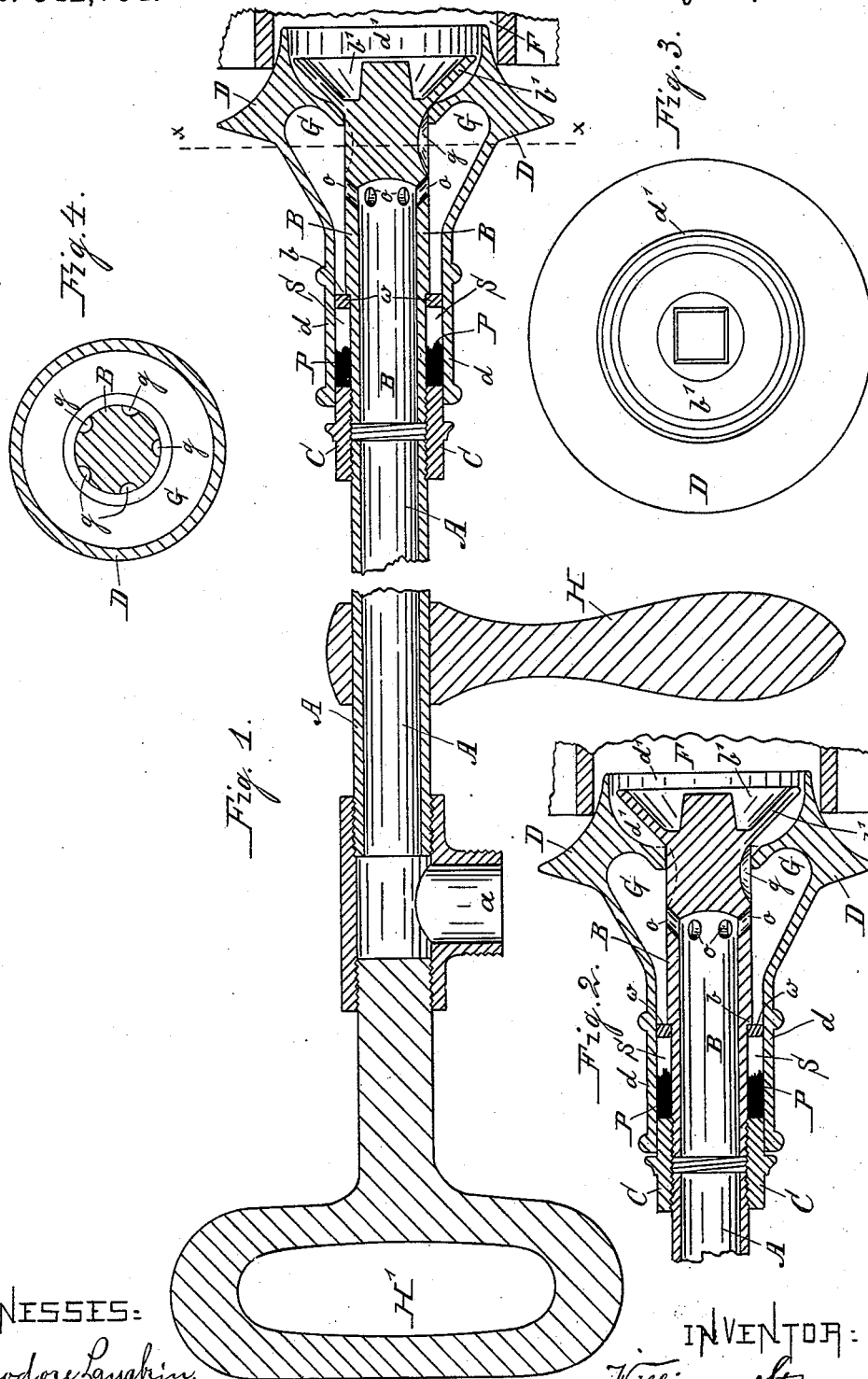


(No Model.)

W. STRONG.  
FLUE CLEANER.

No. 342,764.

Patented May 25, 1886.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

WILLIAM STRONG, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF  
TO CHARLES ANESHAENSEL, JR., OF SAME PLACE.

## FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 342,764, dated May 25, 1886.

Application filed March 8, 1886. Serial No. 194,376. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM STRONG, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Flue-Cleaners, of which the following is a specification.

My invention relates to portable flue-cleaners, such as are used to force steam into and through the flues of a boiler, or the like, for the purpose of blowing out the soot and cleaning the flues; and the object of my improvements is to provide a flue-cleaner superior to the ones now in use.

The flue-cleaners heretofore made were either difficult to operate, the construction and location of the valve being such that the operator had to overcome the full pressure of the steam in order to open the valve and discharge the steam into the flue, or they were constructed in such a manner that for different-size flues different-size cleaners had to be employed, and to all the objection of being too complicated, cumbersome, and too expensive could be raised. In my device these objections are overcome by the employment of what might be called a "balance-valve," and by the simple and peculiar construction of the steam-discharge cup.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through my flue-cleaner with the valve closed; Fig. 2, a section showing the valve open and the steam turned on into the flue; Fig. 3, an end view, looking into the steam-discharge cup; and Fig. 4, a vertical cross-section through the valve on line *xx* on Fig. 1.

Similar letters refer to similar parts throughout the several views.

A is the portable cleaner pipe or tube, into which the steam is received by an inlet, *a*, from a flexible and adjustable hose or pipe connected with a steam-generator.

The cleaner A is carried and handled by taking hold of the vertical and horizontal handles H and H', secured to the pipe A.

The steam-discharge cup and valve are constructed and secured to the cleaner-pipe A in the following manner: The cleaner-pipe A is

screwed into one end of the socket C, the other end of which is to receive the open end of the hollow valve-stem B, the pipe A and stem B being of the same diameter. Before the valve-stem B is screwed into the socket C the sleeve *d* of the steam-discharge cup D is slipped over the socket C, then the washer *w* is slipped over the end of the valve-stem B until it rests against the shoulder *b*, the elastic packing P is put on around the stem B, and the stem then screwed into the socket C. Thus between the sleeve *d* of the steam-discharge cup D, the walls of the valve stem B, the socket C, and the washer *w* a stuffing-box, S, is formed. The steam-discharge cup D is held in place with its sleeve *d* over the valve stem B, as before described, by its hollow cup-shaped end *d'*, encircling and snugly fitting around the solid end of the stem B, and forming a flaring seat for the cup-valve *b'* at the end of the stem B. Openings *o o* in the walls of the stem B conduct the steam into the chamber G, which chamber is formed by the walls of the steam-discharge cup D bulging out around the valve-stem B. From the chamber G the steam passes through the grooves *gg*, that longitudinally are cut out of the circumference of the valve-stem B, into the cup *d'* when the valve is open. The area of the openings *o o* must be larger than the area of the openings *g g*, so that more steam is admitted at a time to the chamber G than allowed to escape, thus keeping the valve automatically closed. The outer shape of the steam-discharge cup D is conical, forming a tapering nozzle, which can be inserted into small as well as big flues.

The device operates in the following manner: When the steam is turned onto the cleaner-pipe A, the steam entering the chamber G closes the valve by acting on the walls of the steam discharge cup D and pressing against the stuffing-box S, which action moves the sleeve *d* outward over the socket C, the stuffing-box packing P, and the washer *w*, and presses the flaring valve-seat of the cup *d'* against the cup-valve *b'*.

When a flue is to be cleaned, the operator, holding the cleaner by the handles H and H', inserts the cone-shaped end of the steam-dis-

charge cup D into the flue and presses against the handles H'. This motion pushes the cup-valve *b'* out of its seat, and the steam-discharge cup D and its valve-seat rest immovably against the end of the flue F. The steam  
5 passing from the pipe A and the valve-stem B through the openings *o o* into the chamber G escapes then from said chamber through the slots or grooves *g g* into the cup *d'*, and,  
10 striking against the walls of the valve cup *b'*, is discharged and ejected into the flue F in shape of a circular jet, thus striking and cleaning the flue-walls in the best possible manner.

Having thus fully described my invention,  
15 what I claim, and desire to secure by Letters Patent, is—

A flue-cleaner having the steam-supply tube

A, the cup-valve *b'*, and valve-stem B, rigidly connected to the tube A by the socket C, the outward cone-shaped steam-discharge cup D, 20 forming the seat for the valve *b'* and the cup around the same, and being rigidly connected to the sliding sleeve *d*, operating around the stem B and the socket C, and the steam-chamber G, and the stuffing-box S, all constructed 25 as described, and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM STRONG.

Witnesses:

CHARLES ANESHAENSEL, Jr.,  
THEODORE LANGBEIN.