

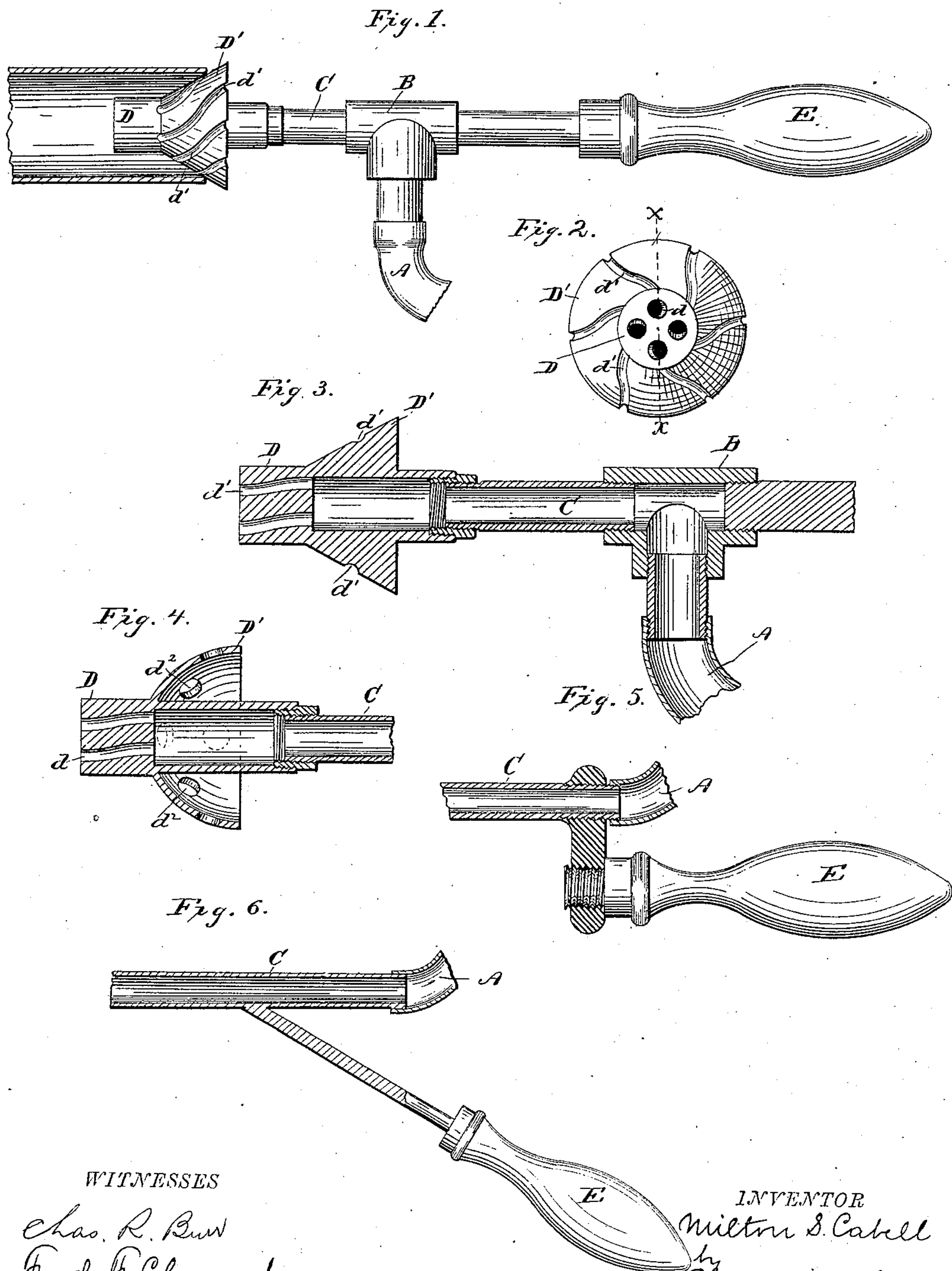
(No Model.)

M. S. CABELL.

MEANS FOR CLEANING FLUES OF STEAM BOILERS.

No. 310,028.

Patented Dec. 30, 1884.



WITNESSES

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MEANS FOR CLEANING FLUES OF STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 310,028, dated December 30, 1884.

Application filed July 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, MILTON S. CABELL, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful
5 Improved Means for Cleansing Flues of Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference
10 marked thereon.

My invention relates to that class of devices employed for cleaning the flues of steam-boilers in which a jet or jets of steam are projected into and through the flues from a nozzle or tip inserted in the ends of the flues.
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In devices of this kind as ordinarily constructed the steam-injecting tip or nozzle is inserted into the end of a flue, and a collar or
20 shoulder back of the nozzle or tip operates to completely close the end of the flue. This closure of the end of the flue causes the steam projected into the flue from the nozzle to form a vacuum or partial vacuum between the
25 shoulder or collar and the point where the projected blast of steam strikes the sides of the flue, and the flue at that point is consequently not properly cleaned.

In my invention I construct the collar or
30 shoulder which is back of the nozzle or tip of conical or tapering form and adapt it to partially enter the end of the flue, and I provide it with a series of exterior corrugations, or I perforate it, so as to form channels for the passage of air into the flue around the nozzle.
35 By this construction the formation of a vacuum is prevented, and the air drawn in in the form of jets is caused to clean that part of the flue which ordinarily remains untouched. I also
40 preferably provide the nozzle or tip with a series of discharge-passages arranged spirally, so that the steam as it emerges from the tip is given a spiral whirling motion, which increases greatly the effectiveness of the device;
45 and I also, by preference, arrange spirally the air-passages in the collar or shoulder, so that the same whirling motion will be given the inflowing air-currents.

In the accompanying drawings, Figure 1
50 represents a side view of one form of my flue-cleaner; Fig. 2, an end view of the same; Fig.

3, a longitudinal sectional view taken on the line $x x$, Fig. 2. Fig. 4 is a view of a modification of the invention; Figs. 5 and 6, views showing different modes of connecting the
55 flexible steam supply pipe.

Similar letters of reference in the several figures indicate like parts.

The letter A indicates the flexible pipe through which the steam employed is conducted. As shown in Figs. 1 and 3, this pipe
60 has connections to a T-shaped coupling, B, with the tubular stem C. Upon the stem C is arranged a tip or nozzle, D, having in its end a series of spirally-arranged passages, d ,
65 which lead into the tubular stem C, as shown in Fig. 3, and having also an outwardly-projecting tapering collar or enlargement, D' , provided with the series of spirally-arranged exterior corrugations, d' , as shown in Fig. 1, or
70 with a series of perforations, d'' , as shown in Fig. 4.

The coupling has connected to it a suitable handle, E, by means of which the device can be conveniently manipulated.
75

In operation the tube A is connected to the boiler to be cleaned, or any other source of steam-supply, and the tip or nozzle is inserted into the flues one after another, the flange or collar D' being of such size as to prevent the
80 nozzle or tip being entirely pushed into the flue, as shown in Fig. 1. The steam, as it is delivered from the extremity of the tip or nozzle, is blown along in a spiral whirling course through the flue, the air entering the
85 air channels or apertures rushing along with it, and effectually cleaning the whole flue from end to end. The air-inlets are preferably properly arranged so as to deliver the air at the same angle at which the steam is projected
90 from the tip.

By curving or tapering the perforated flange the device is made self-centering when the extremity of the nozzle is thrust into the end of the flue.
95

Instead of employing the T-shaped coupling B, the flexible steam-supply pipe may be connected directly to the hollow stem C, as shown in Fig. 5, and a handle connected directly to the said hollow stem; or, in lieu of
100 the last-named construction, that shown in Fig. 6 may be employed.

I claim as my invention—

1. In a flue-cleaner, a tip or nozzle having a steam-discharge orifice or orifices, and provided back of the point of discharge with a projection constructed to prevent the insertion of the tip too far within the flue, but yet admit the passage of air into the flue around the tip, substantially as described.
2. In a flue-cleaner, the tip or nozzle provided with a steam-discharge, and having a perforated or corrugated collar or flange back of the point of steam-discharge, substantially as described.
3. A flue-cleaner having a passage or passages for discharging steam and a tapering perforated or corrugated flange or collar, substantially as described.

4. In a flue-cleaner, the combination of the tip or nozzle having the spirally-arranged steam-discharge orifices and the flange or collar having the spirally-arranged air-inlet channels, substantially as described.

5. The combination of a tubular stem or handle and the flexible steam-supply pipe connected thereto, and the tip or nozzle having the spirally-arranged steam-discharge channels, and the tapering perforated or corrugated flange or collar, substantially as described.

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Witnesses:

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