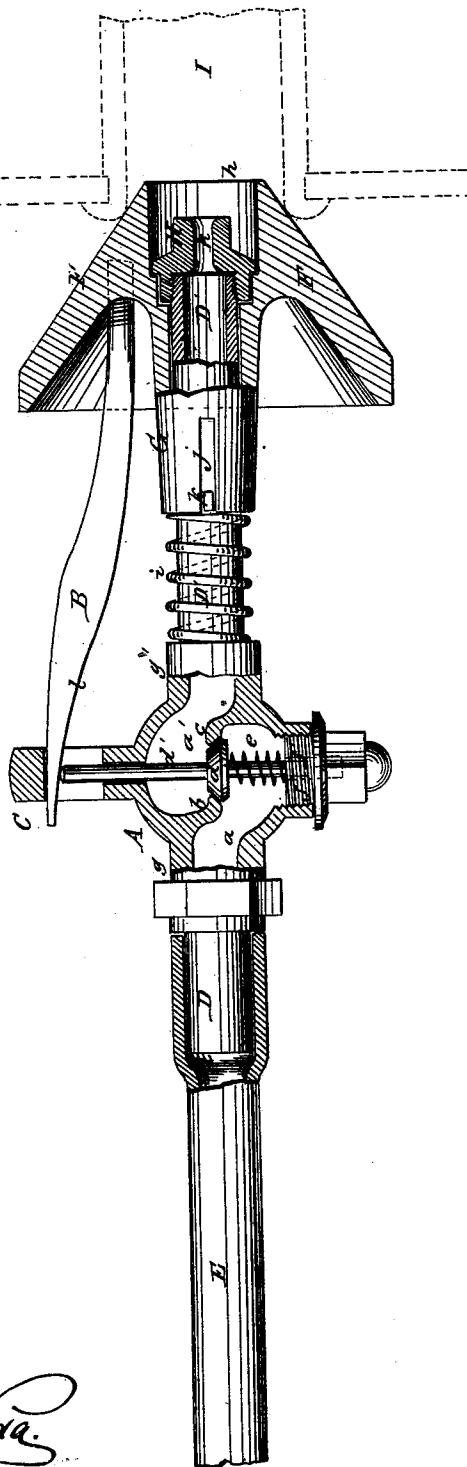


C. CASTLE.
Boiler-Flue Cleaner.

No. 219,688.

Patented Sept. 16, 1879.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHRISTOPHER CASTLE, OF CLEVELAND, OHIO.

IMPROVEMENT IN BOILER-FLUE CLEANERS.

Specification forming part of Letters Patent No. **219,688**, dated September 16, 1879; application filed January 30, 1879.

To all whom it may concern:

Be it known that I, CHRISTOPHER CASTLE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Boiler-Flue Cleaner, of which the following is a specification.

This invention relates to improvements in apparatus for cleaning boiler-flues by directing a jet of steam through them; and the object of the improvement is to prevent the wasting of steam and the blowing of the soot from the flues out into the boiler-room.

It consists in providing the nozzle of the apparatus with a conoidal head, provided with a sleeve fitting over the nozzle and bearing against a spiral spring, and a finger that operates the stem of the valve that shuts off the passage of steam through the apparatus. The spring keeps the head thrust forward so that the valve remains closed, and when the head is placed in a flue it closes the same, whereby, when the steam is permitted to flow through, the head prevents the soot from being blown back out of the flue and into the room.

In the accompanying drawing a side view of the cleaner is shown, with the valve-chamber and conoidal head, sleeve, and nozzle in section.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a spheroidal valve-chamber, in which are made ducts *a a'*, separated by a diaphragm, *b*, with an opening, *c*, through the same, wherein is seated a conical valve, *d*, opening downward, having a stem, *d'*, passed through it. A spiral spring, *e*, is wrapped around the valve-stem below the valve, one end bearing against the under side of the valve, and the other against the screw-plug *f*, in which is a socket, *f'*, to receive the lower end of the stem. The upper end of the stem passes through the upper casing of the valve-chamber and bears against the finger B, held under the guard C on the upper side of the chamber, as shown.

The ducts *a a'* lead into short projections *g g'*, respectively, on opposite sides of the chamber, and to these projections are joined tubes D D'. To tube D is connected the flexible tube E, leading from the boiler or steam-pipe.

F is the conoidal head or cap, having at its

forward end a socket, *h*, and projecting from this a sleeve, G, slipped over the tube D' and bearing against the end of spring *i*, coiled around the tube. In the sleeve is a slot, *j*, for guide-stud *k* in the tube, which prevents the head from turning, and also guides it.

In the socket *h* is placed a flanged cap-nut, H, and screwed onto the projecting end of pipe or nozzle D', the bottom of the socket being stepped or counterbored, the end and flange of the nut abut against the steps, and thus hold the head on the nozzle. The hole *k* through the cap-nut forms the vent of the nozzle.

The finger B is rigidly connected with the conical head, and projecting backward, its inclined under edge, *l*, rests upon the top of the valve-stem *d'*. When the head is forced back the finger, bearing upon the stem, presses it down, and thus opens valve *d*.

The operation of the invention is as follows: The apparatus is managed by a wooden or iron handle attached to it, and when a flue is to be cleaned the conical head is placed in the end of the flue, as at I, and using that as a bearing, the nozzle-pipe D' is pressed in the sleeve G, thus forcing the head and finger back, and the latter pressing down the valve-stem opens the valve and permits the steam to pass through the valve-chamber, and is thence delivered from the nozzle into the flue I, thoroughly cleaning off the soot, which is forced back to the rear of the boiler. When the cleaning is finished the apparatus is relieved of pressure by the operator, and the head moving forward, the finger permits the spring *e* to force the valve into its seat and stop the flow of steam.

Thus it is apparent that the action of the apparatus is wholly under the control of the operator, and the steam only flows when it is necessary to clean the flue to which it is applied, thus preventing the waste of steam. Further, the conoidal head is fitted so closely into the flue under the pressure necessary to open the valve that no soot can possibly be blown back into the room from the flue, but it is all forced back in the rear of the boiler at the proper place.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. As an improvement in apparatus for clean-

ing boiler-flues, the conoidal head F, provided with a sleeve, G, for connecting it with the nozzle-pipe D', and adapted to move back and forth thereon, for the purpose of opening the valve, and also serving to close the entrance of the flue and prevent the escape of soot in the process of cleaning, substantially as described.

2. The conoidal head F, placed upon the nozzle-pipe D', adapted to receive a reciprocatory movement thereon, and provided with a finger, B, for operating the valve *d* through the stem *d'*, on which it bears, so that when the head is placed in the flue and the nozzle-pipe is pushed in the finger presses down upon the stem and opens the valve, substantially as described.

3. The spheroidal valve-chamber A, provided with ducts *a a'*, diaphragm *c*, with valve

d, opened by means of the finger B when the conoidal head F is pushed back and closed by the spring *e*, in combination with tubes D, E, and D' and conoidal head F, substantially as described.

4. The combination and arrangement of the following parts, to wit: the valve-chamber A, provided with ducts *a a'*, leading to pipes D D', respectively, diaphragm *c*, with valve *d*, operated by spring *e*, and finger B, conoidal head F, with sleeve G, placed over pipe D' and controlled by spring *i*, and the cap-nut H for holding the head on the pipe D', substantially as described.

CHRISTOPHER CASTLE.

Witnesses:

THOMAS REILLEY,

PATRICK MALLEY.