

(No Model.)

J. BOTT.  
FLUE CLEANER.

No. 535,664.

Patented Mar. 12, 1895.

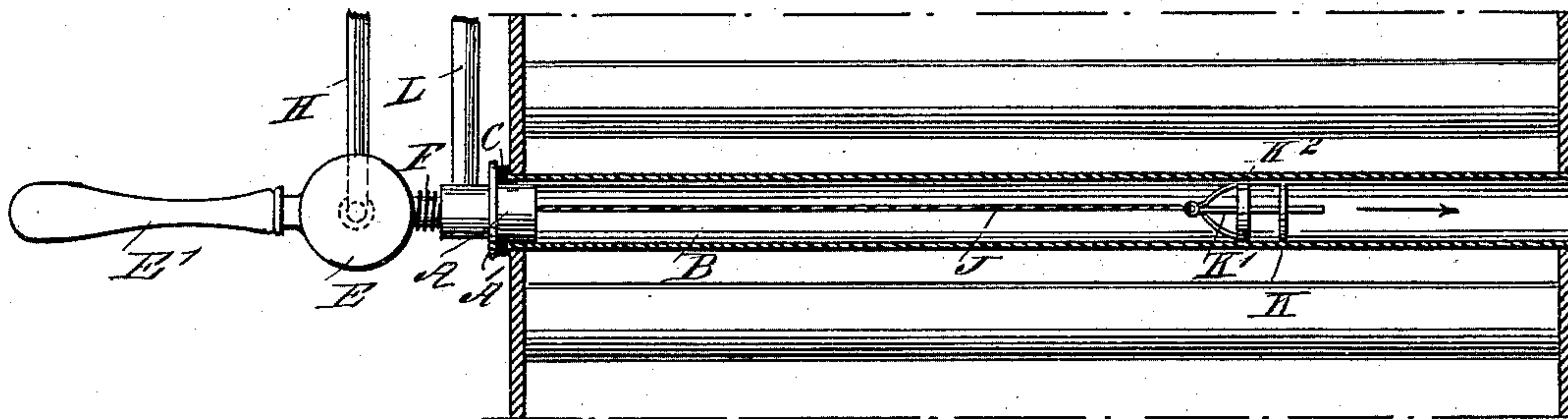


Fig. 1

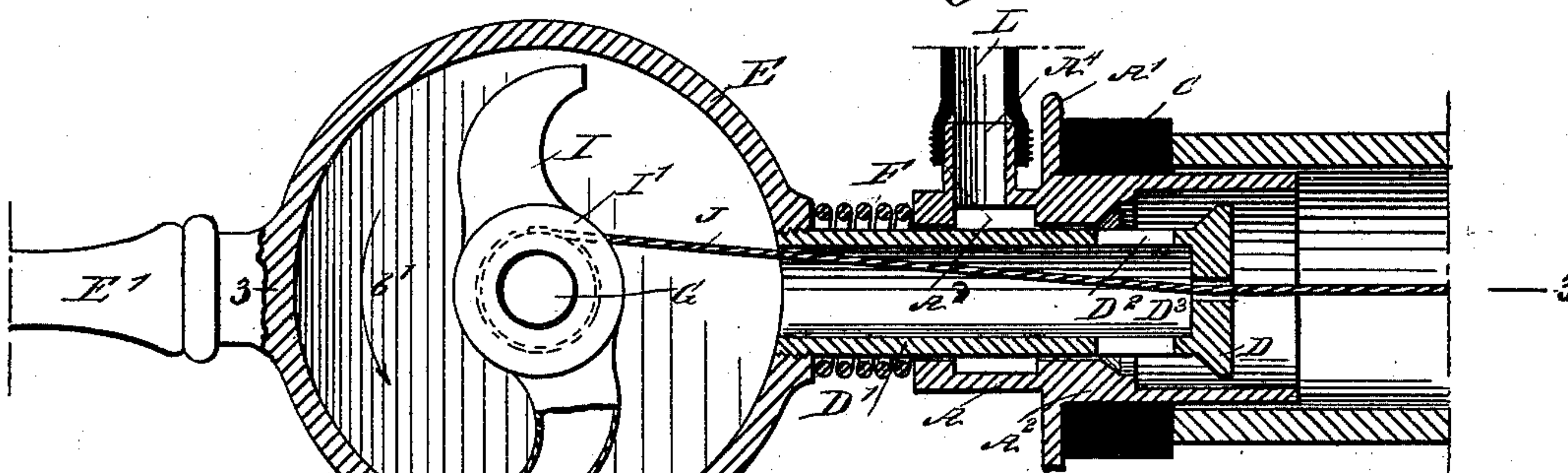


Fig. 2

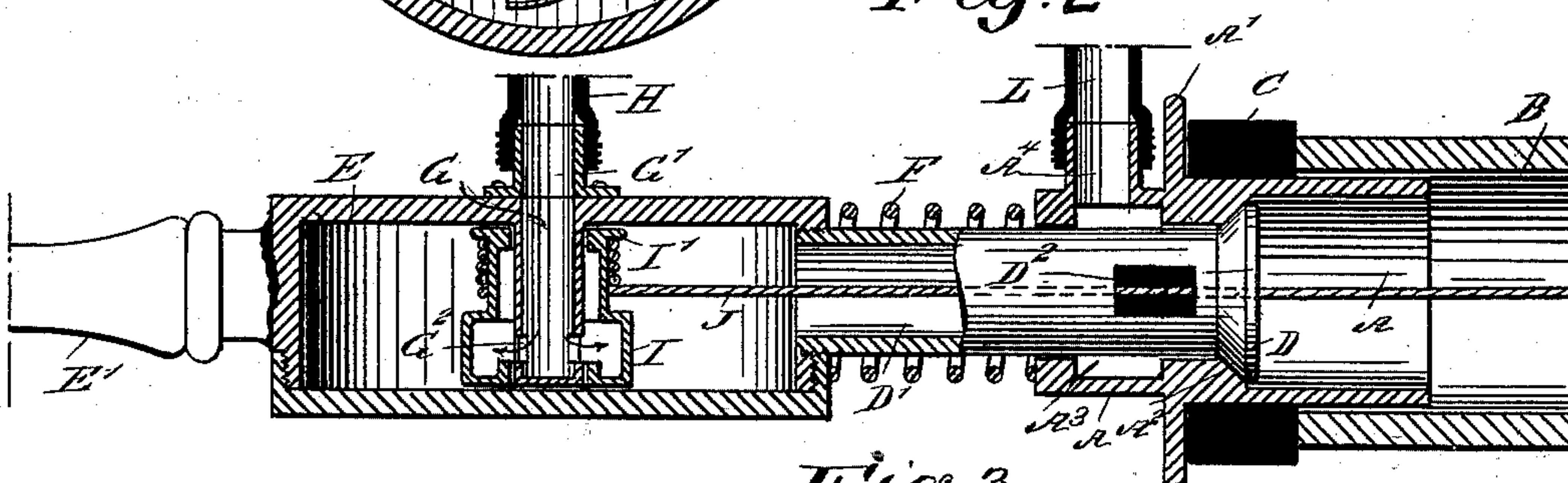


Fig. 3

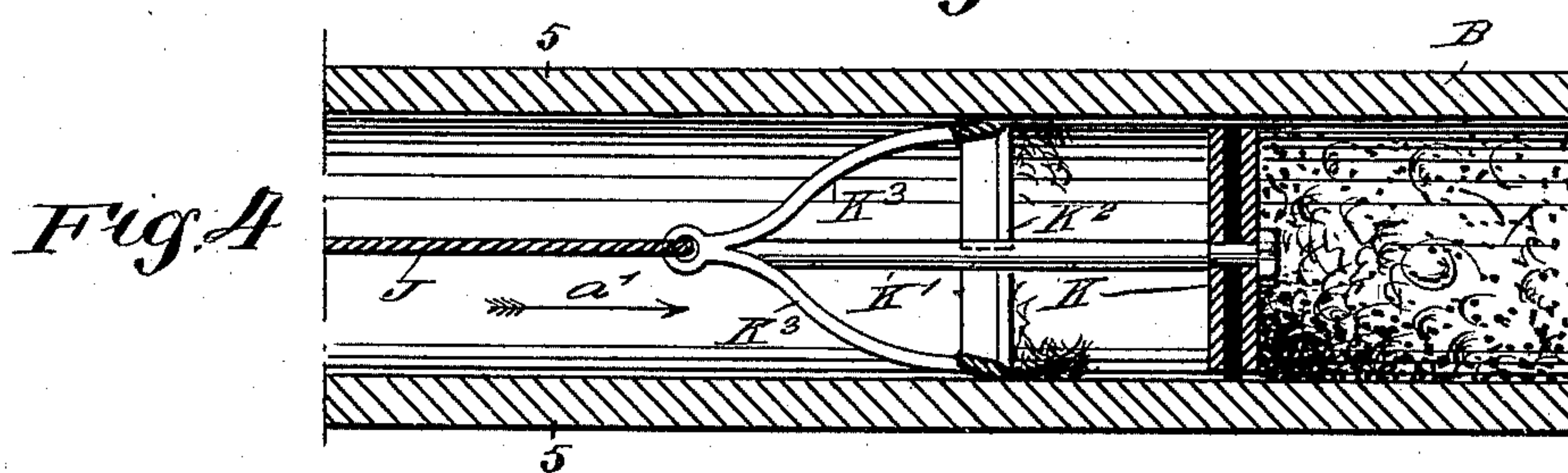


Fig. 4

WITNESSES:  
John Bergstrom  
Geo. G. Foster

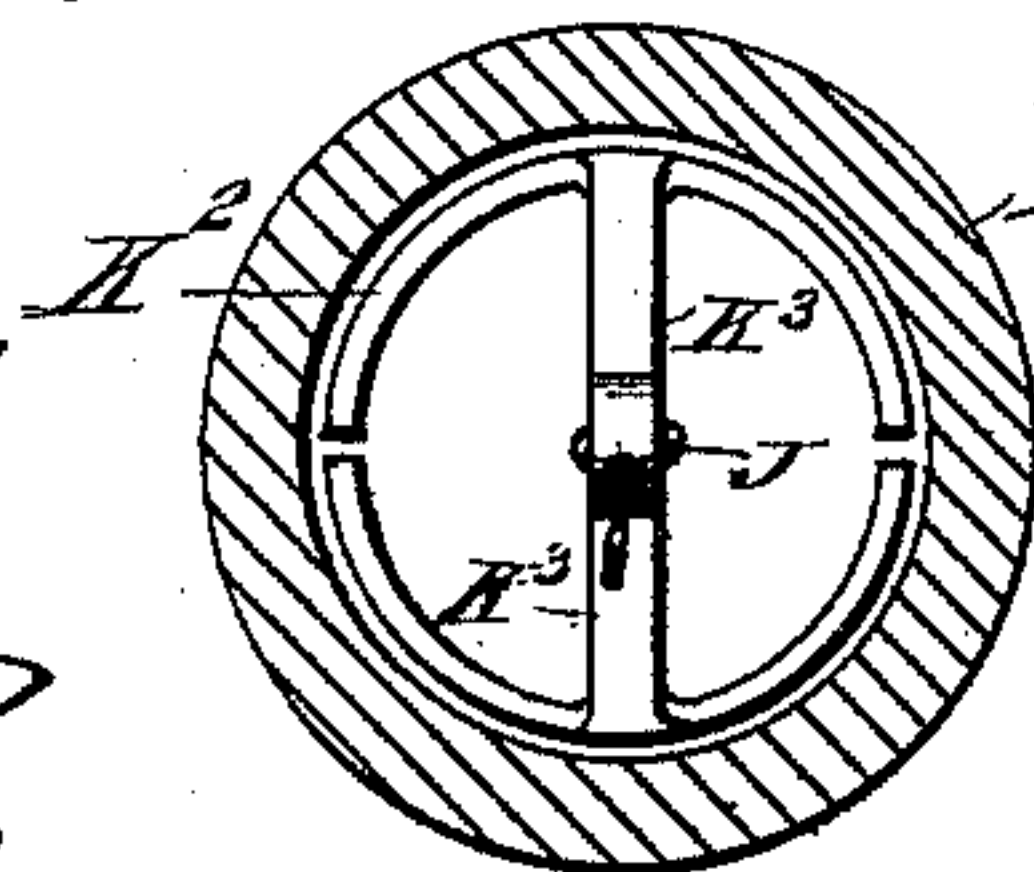


Fig. 5

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# UNITED STATES PATENT OFFICE.

JOSEPH BOTT, OF LEADVILLE, COLORADO.

## FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 535,664, dated March 12, 1895.

Application filed October 31, 1894. Serial No. 527,564. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH BOTT, of Leadville, in the county of Lake and State of Colorado, have invented a new and Improved Flue-Cleaner, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved flue cleaner, which is simple and durable in construction, and arranged to properly clean the flue by a moving scraper actuated by a motive agent such as steam, compressed air or other fluid under pressure.

The invention consists of a scraper forming a piston, and adapted to be propelled forward by a fluid under pressure, and a revoluble drum driven by the fluid and connected with the said scraper to return the latter in the flue.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied. Fig. 2 is an enlarged sectional side elevation of the same. Fig. 3 is a sectional plan view of the same, on the line 3—3 of Fig. 2. Fig. 4 is an enlarged sectional side elevation of the scraper in position in the flue; and Fig. 5 is a transverse section of the same, on the line 5—5 of Fig. 4.

The improved flue cleaner is provided with a cylindrical casing A, adapted to be inserted in the end of the flue B which is to be cleaned, as is plainly illustrated in the drawings, the said casing being provided with an annular flange A' between which and the end of the flue B is arranged a flexible packing ring C encircling the casing A and serving to form a tight joint between the casing and the outer end of the flue B.

In the casing A is formed a valve seat A<sup>2</sup> adapted to be engaged by a valve D held on the end of a hollow valve stem D' connected with a cylinder E, provided with a handle E'

adapted to be taken hold of by the operator to manipulate the device in the manner hereinafter more fully described.

Between the cylinder E and the end of the casing A is arranged a spring F coiled on the stem D', and serving to hold the valve D normally in position on its seat A<sup>2</sup> in the casing A. Now, when the operator desires to open the valve D, he pushes on the handle E' to force the stem D' of the valve D inward, so as to move the valve D off its seat A<sup>2</sup>, as shown in Fig. 2.

In the hollow valve stem D' are openings or ports D<sup>2</sup> adapted to open into the casing A, so that the fluid under pressure can pass from the hollow stem D' through the said ports into the casing A; and from the latter into the flue B which is to be cleaned, at the time the valve D is inserted as shown in Fig. 2.

The cylinder E is provided with a centrally arranged hollow shaft G provided with ports G<sup>2</sup> and connected at its outer end by a short pipe G' with a hose H connected with a boiler or other suitable source of fluid supply, so that steam or other fluid, can pass into the hollow shaft G and through the ports G<sup>2</sup> therein, into the turbine wheel I mounted to turn on the shaft G, and having the usual bent arms, as illustrated in Fig. 2, so that when the fluid under pressure passes through the curved arms, the wheel is rotated, as is well understood.

On the wheel I is formed a drum I' on which winds a cord or metallic tape J extending through the hollow stem D' and through a small opening D<sup>3</sup> in the valve D, through the casing A to connect at its outer end with the rod K' carrying a piston K and a scraper K<sup>2</sup> made in the form of two segments having sharp edges adapted to engage the inner surface of the flue B which is to be cleaned, the segments being made of a diameter about corresponding to the interior diameter of the flue B. The scraper K<sup>2</sup> is supported by arms K<sup>3</sup> from the rod K', and is arranged in the rear of the said piston K, to scrape the flue on the forward movement of the piston within the flue B. The piston K is preferably made of



two disks between which is clamped a rubber or leather disk fitting snugly in the flue and adapted to give on rough places in the flue.

The outer end of the casing A is formed with an annular exhaust chamber A<sup>3</sup>, into which open the ports D<sup>2</sup> at the time the valve D is seated on the valve seat A<sup>2</sup>, and from this chamber A<sup>3</sup> leads a short pipe A<sup>4</sup> connecting with a hose L forming the steam exhaust pipe at the time it is desired to return the piston K within the flue B.

The operation is as follows: When it is desired to clean a flue, then the piston K is close to the valve D, seated on the seat A<sup>2</sup> and with the rope J wound upon the drum I'. The casing A is passed into the end of the tube or flue B which is to be cleaned, the packing ring C being in position, as previously explained. The operator now presses the handle E' inward, so as to move the valve D off its seat and to establish communication between the interior of the hollow stem D', casing A and cylinder E, so that when the operator now permits fluid under pressure to pass through the hose H, hollow shaft G and wheel I into the cylinder E, then it passes from the latter, through the stem D' into the casing A and into the flue B, to exert its pressure against the piston K, whereby the latter is forced outward in the direction of the arrow a', and the soot and other impurities contained loosely in the flue are pushed forward by the piston K, and the firmly adhering soot is scraped off by the scraper K<sup>2</sup>. When the piston and scraper have reached the outer end of the flue B, then the operator releases the pressure on the handle E', so that the spring F pushes the valve D shut, and the steam passing through the cylinder E into the stem D' can pass from the latter through the ports D<sup>2</sup> into the chamber A<sup>3</sup>, and from the latter the steam can escape through the outlet or exhaust pipe L. It will be seen that the wheel I is now rotated by the force of the steam in the direction of the arrow b', so that the rope or cord J is wound upon the drum I', and consequently the piston K and scraper K<sup>2</sup> are pulled backward within the flue B, so as to be returned to their original position at the time of starting. The device is then applied on a second flue, and the above described operation is repeated, that is, steam is admitted to the casing A by pressing the handle E' to cause the steam to act on the piston K, to force the latter and the scraper K<sup>2</sup> outward in the flue, and then the piston and scraper are returned on releasing the pressure on the handle E' and permitting the wheel I to revolve, to wind up the cord J on the drum I'. It is understood that when the fluid passes into and through the wheel I to the casing E, then the wheel I remains at a standstill as the casing is filled with the fluid. When the

valve D is opened then the pressure of the fluid on the piston K pushes the latter outward and causes the wheel I to turn in the inverse direction, but when the valve D is seated and communication is established between the casing E and the atmosphere, then the force of the fluid rotates the wheel I in the direction of the arrow a'.

It will be seen that this device is both simple and durable in construction, can be readily applied, and requires comparatively little power to manipulate the individual moving parts.

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

1. A flue cleaner, comprising a casing having an open end adapted for engagement with the flue, a hollow stem constructed to slide in the said casing and provided with ports adapted to either open into the open end of the casing, or to be closed by contact with the walls of the casing, passages for admitting a fluid under pressure into the hollow stem, a piston scraper adapted to be propelled in the flue by said fluid, and a drum held on the outer end of the hollow sliding stem, and connected to the scraper, as and for the purpose set forth.

2. A flue cleaner, comprising a scraper held on a piston, adapted to be propelled through the flue by a fluid under pressure, and a revoluble drum driven by the fluid, and connected with the said scraper to return the latter, substantially as shown and described.

3. A flue cleaner, comprising a casing having a valve seat, a valve adapted to be seated on the said seat and held on a hollow valve stem, a cylinder connected with the said stem and containing a wheel adapted to be rotated by a fluid under pressure, the said wheel discharging into the said cylinder from which the fluid can pass through the said stem and its ports into the casing, and a piston-scraper connected by a cord with a drum on the said wheel, substantially as shown and described.

4. A flue cleaner, comprising a casing having a valve seat, a valve adapted to be seated on the said seat and held on a hollow valve stem, a cylinder connected with the said stem and containing a wheel adapted to be rotated by a fluid under pressure, the said wheel discharging into the said cylinder from which the fluid can pass through the said stem and its ports into the casing, a piston-scraper connected by a cord with a drum on the said wheel, and a spring for holding the said valve normally on its seat, substantially as shown and described.

5. A flue cleaner, comprising a casing having a valve seat, a valve adapted to be seated on the said seat and held on a hollow valve stem, a cylinder connected with the said stem and containing a wheel adapted to be rotated



by a fluid under pressure, the said wheel dis-  
charging into the said cylinder from which  
the fluid can pass through the said stem and  
its ports into the casing, a piston-scraper con-  
5 nected by a cord with a drum on the said  
wheel, and a steam exhaust chamber formed  
on the said casing and into which open the  
ports of the hollow stem, substantially as  
shown and described.

10 6. A flue cleaner, comprising a casing hav-  
ing an open end adapted for engagement with  
the flue, and an exhaust opening, a hollow  
stem constructed to slide in the said casing

and provided with ports adapted to either  
register with the exhaust opening, or commu- 15  
nicate with the open end of the casing, a cyl-  
inder held on the outer end of the hollow stem  
and communicating therewith, a turbine wheel  
mounted to turn in the cylinder and to dis-  
charge the driving fluid into the same, and a 20  
piston-scraper connected to the said wheel, as  
and for the purpose set forth.

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Witnesses:

A. LYNCH,

A. C. MURDOCK.