

(No Model.)

A. RAFINER.
AUTOMATIC FLUE BLOWER.

No. 547,287.

Patented Oct. 1, 1895.

Fig. 1.

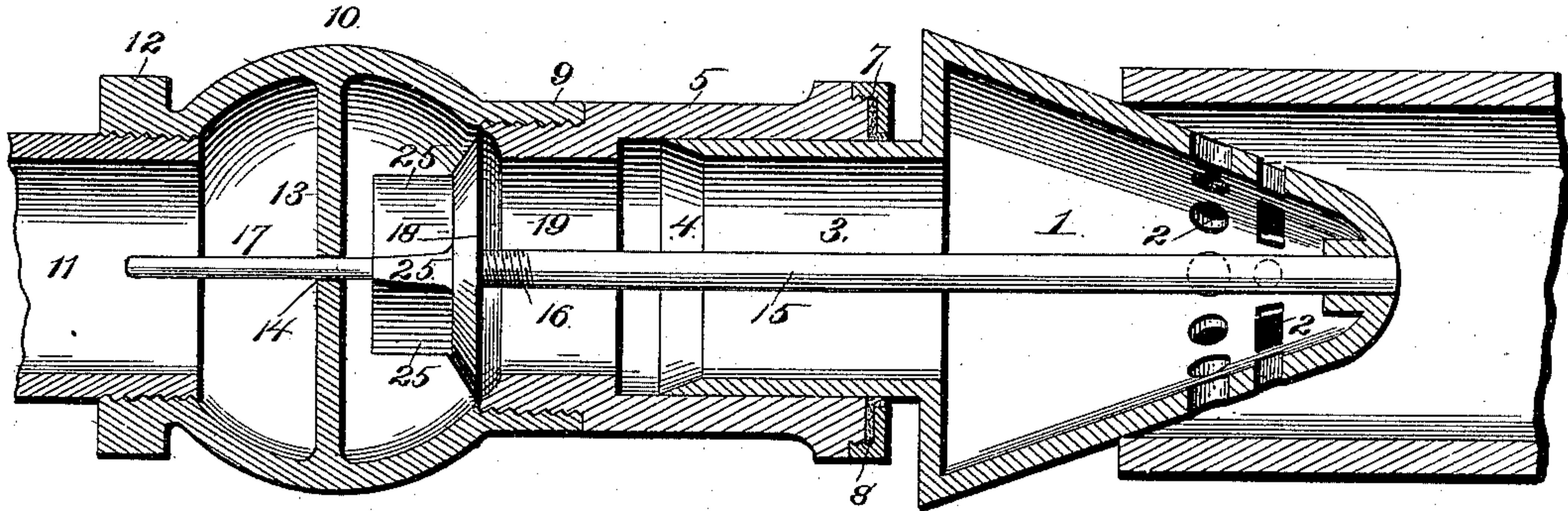


Fig. 2.

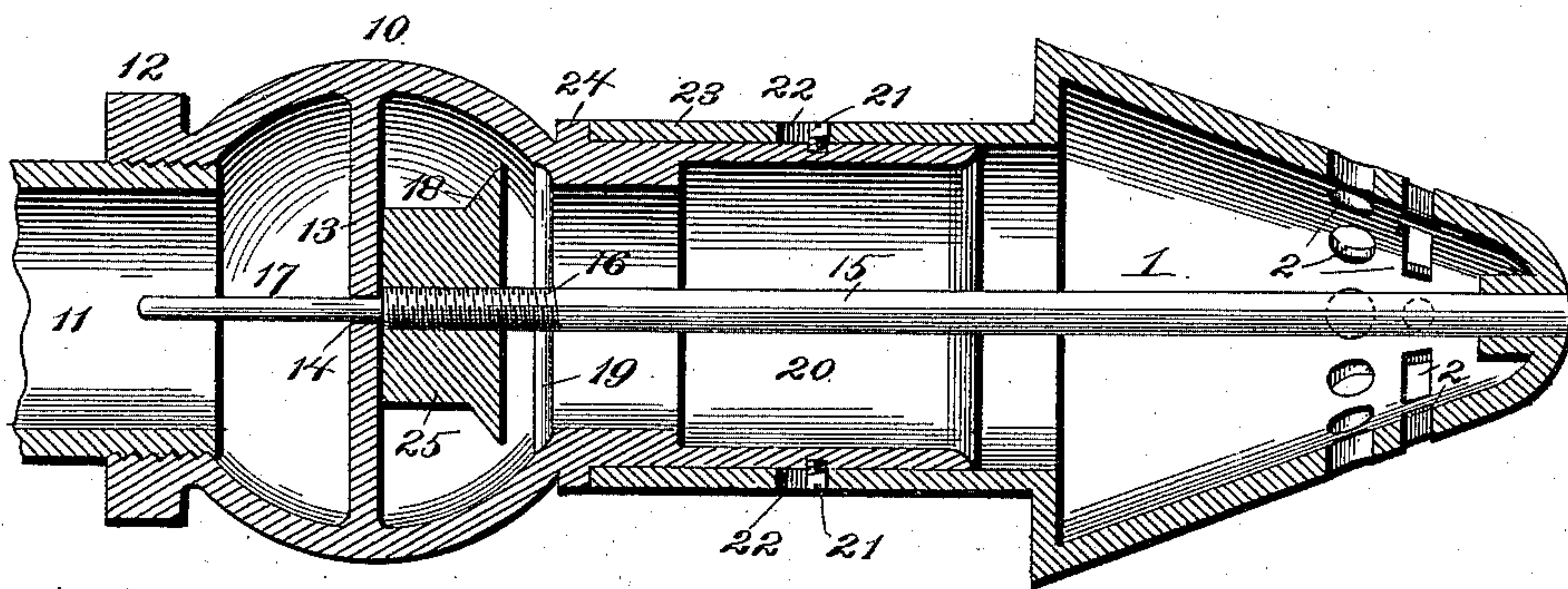
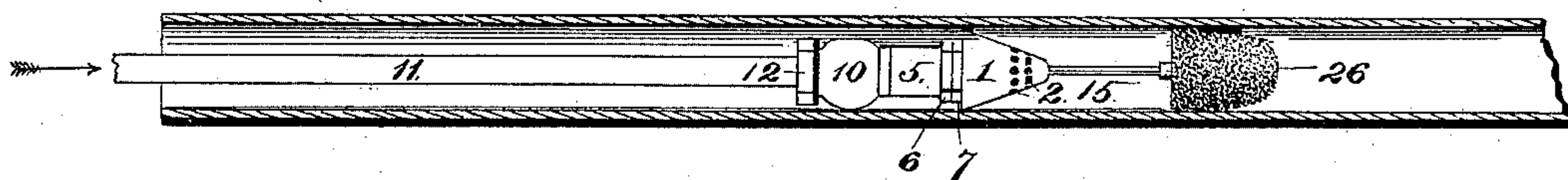


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUSTUS RAFINER, OF KANSAS CITY, MISSOURI.

AUTOMATIC FLUE-BLOWER.

SPECIFICATION forming part of Letters Patent No. 547,287, dated October 1, 1895.

Application filed November 5, 1894. Serial No. 527,943. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS RAFINER, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Automatic Flue-Blowers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to flue or pipe blowers, more particularly to those employing steam; and the object of the invention is to produce a device of this character which is easily manipulated to permit the steam under pressure to escape and which automatically closes and prevents the escape of the steam when not in action; furthermore, to produce a device of this character which is simple, strong, durable, and inexpensive of construction.

To the above purposes my invention consists in certain novel and peculiar features of construction and combination of parts, as will be hereinafter described and claimed.

In order that the invention may be fully understood, I will proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 represents a longitudinal section of a flue-blower embodying my invention as applied operatively to the end of a flue or pipe. Fig. 2 represents a longitudinal section of a slightly-modified form of said flue-blower, and Fig. 3 represents a flue-blower provided with a brush or scraping attachment within a flue or pipe.

Similar reference-numerals refer to corresponding parts in all the figures, in which—

1 designates a hollow cone provided with a series of apertures 2 and with a tubular extension 3, and said tubular extension is flared or beveled outwardly at its rear end, as shown at 4.

5 designates a cylindrical shell or sleeve, which snugly and slidingly embraces the tubular extension 3 of the hollow cone. This shell externally is provided with an angular enlargement 6 at the end adjacent to the cone, and is externally screw-threaded adjacent thereto to receive the ring or band 7, also angular externally, which clamps the washer 8, right-angle shaped in cross-section, firmly upon the tubular extension 3 and against the

end of the shell or sleeve 5, so that leakage of the steam will be prevented. The shell or sleeve 5 at its opposite end is preferably reduced diametrically and is externally threaded, as shown at 9, and said external threads are engaged by the internally-threaded tubular extension or spherical shell 10. Said shell 10 is also internally threaded at its opposite end to engage the pipe 11, connected to the steam-supply, (not shown,) and is formed angular externally at the same end, as shown at 12. Extending diametrically of said spherical shell 10 is a cross-bar 13, provided with a central guide-aperture 14. Extending axially of the tubular extension 3 and secured at its front end rigidly and firmly in the apex of the cone is a stem 15, which is formed with a thread 16 and with an extension 17, which projects through the guide-aperture 14, and mounted upon the threaded portion of said stem is a disk-valve 18, which is adapted, when the flue-blower is in operation, to be held by the pressure of the steam firmly against the valve-seat 19, formed in the adjacent end of the shell or sleeve 5, as clearly shown in Fig. 1. When said valve is in this position, the base of the cone is some distance from the band 7 and the opposite side of the valve is the same distance from the cross-bar 13 of the shell 10, so as to permit the valve to be moved away from its seat when properly manipulated, as will be hereinafter explained.

Referring now to Fig. 2, it will be seen that I dispense with the intermediate shell or sleeve 5 and employ in lieu thereof an equivalent consisting of the tubular extension 20 of the shell 10, and this extension carries the outwardly-projecting pins or screws 21, which engage longitudinal slots 22 in a sleeve or extension 23, which projects from the cone in lieu of the tubular extension 3. With this construction it will be apparent that it is not necessary to employ a packing-ring to prevent the escape of the steam. The longitudinal movement of the cone and valve in this instance is limited in one direction by the valve impinging upon its seat and in the other by the end of the sleeve extension 23 coming in contact with the shoulder 24, projecting externally of the shell 10. It will be apparent that the longitudinal movement or throw of

the valve is controlled by its position upon the threaded portion 16 of the valve-stem, and for convenience in adjusting the valve it is provided with the radial arms 25, by which it is grasped when operated. In practical operation the flue or pipe is cleaned by inserting the end of the cone therein, as illustrated in Fig. 1. Sufficient pressure is then brought to bear upon the pipe 11 to overcome the pressure of the steam upon the valve and move said pipe, shell 10, and shell or sleeve 5 forward until the band 7 comes in contact with the base of the cone and the seat has been moved a corresponding distance away from the valve. Immediately the valve-seat has been opened, as described, the steam under pressure passes around the valve and escapes through the apertures 2 into the flue or pipe and cleans the same in the ordinary manner.

It will be understood, of course, that the base of the cone must be larger diametrically than the flue or pipe to accomplish the end in view and that the apertures in said cone must be located at a point diametrically smaller than the passage of the said flue or pipe.

Referring now to Fig. 3, it will be seen that the valve-stem 15 projects beyond and externally of the cone 1 and carries a brush 26, of steel wire or any other suitable material, upon its front end, which is of greater diameter than the cone. This construction is employed when it is desired to clean a flue or pipe larger internally than the external diameter of the base of the cone, but slightly smaller than the diameter of the said brush.

In operation the brush is introduced within the end of the flue of the pipe and offers sufficient frictional resistance to the pressure brought to bear upon the pipe 11 in the direction indicated by the arrow to open the valve and allow the steam under pressure to escape through the apertures 2 within the flue or pipe, so that the said flue or pipe is subjected to the action of the steam as well as to the scraping action of the brush. It will be apparent with this construction that the cone

may be mounted rigidly upon the valve-stem, as illustrated in Figs. 1 and 2, or may be mounted loosely upon the same, as the effect will be the same in either case. In fact, in the last-mentioned case the device would operate just as well if the cone was made an integral part of the extension of the shell 10.

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

1. A flue-blower, comprising a hollow cone having apertures and a tubular extension, a shell or sleeve embracing said tubular extension and provided with a valve-seat, a second shell engaging the first-mentioned shell and provided with a cross-bar having a guide-aperture, a pipe connected to a steam-supply engaged by and carrying said last-mentioned shell, a valve-stem carried by the cone and projecting through the guide-aperture of said cross-bar and threaded, and a valve internally threaded and mounted upon the threaded portion of said valve-stem and adapted by the pressure of the steam to fit upon and close the valve-seat opening, substantially as set forth.

2. A flue-blower, comprising a hollow cone having apertures and a tubular extension, a shell or sleeve embracing said tubular extension and provided with a valve-seat, a second shell secured to the first-mentioned shell and provided with a cross-bar having a guide-aperture, a pipe connected to the steam-supply secured to the opposite end of the said last-mentioned shell, a valve-stem extending through the guide-aperture of said cross-bar at one end and projecting at its opposite end beyond the front end of the cone, a valve mounted upon said stem adjacent to the valve-seat, and a brush mounted upon the front end of said stem of diameter exceeding the base of the cone, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUSTUS RAFINER.

Witnesses:

G. Y. THORPE,
M. R. REMLEY.