

No. 620,608.

Patented Mar. 7, 1899.

J. C. OGLETREE.
BOILER FLUE CLEANER.
(Application filed Aug. 15, 1898.)

(No Model.)

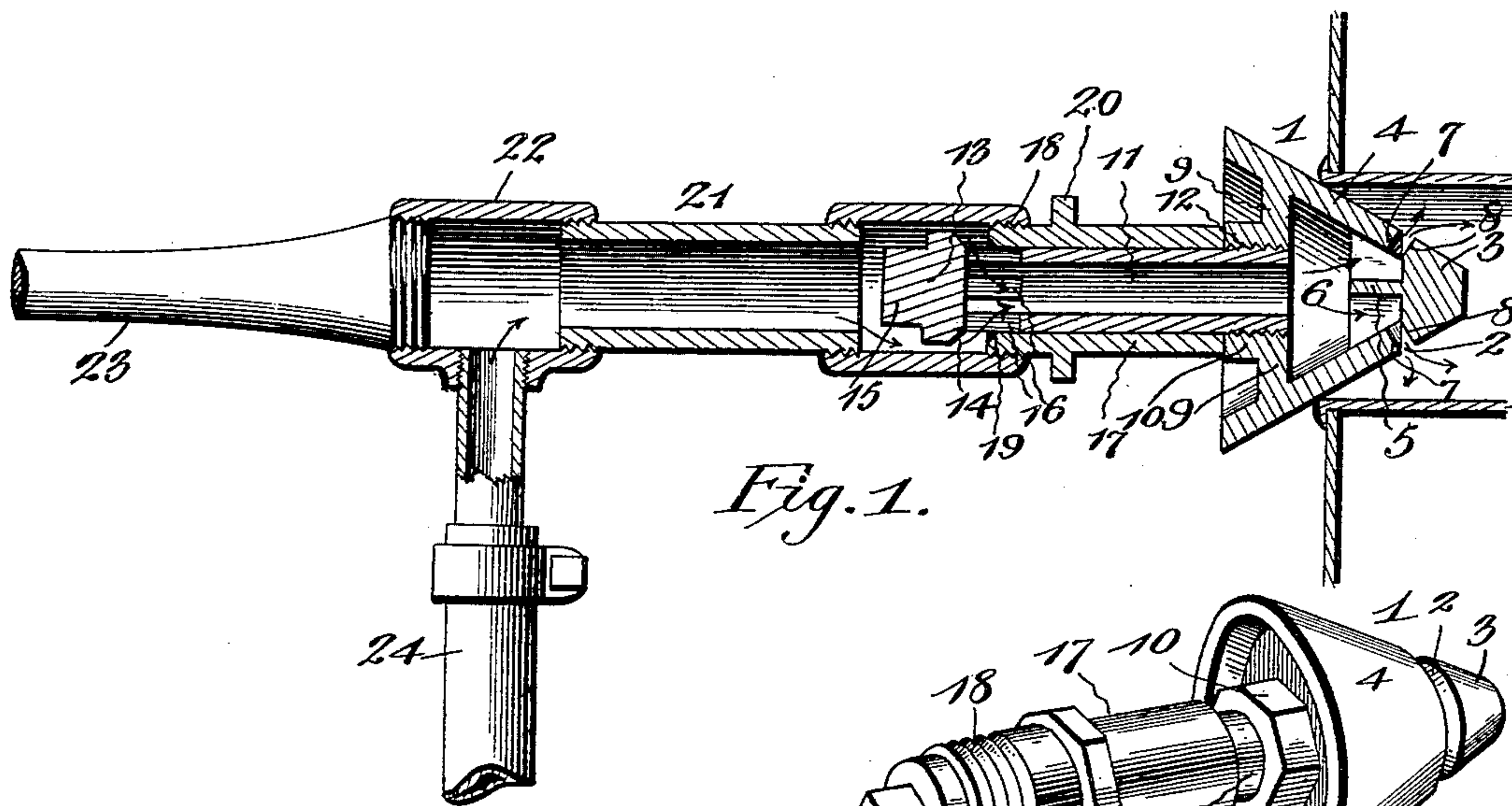


Fig. 1.

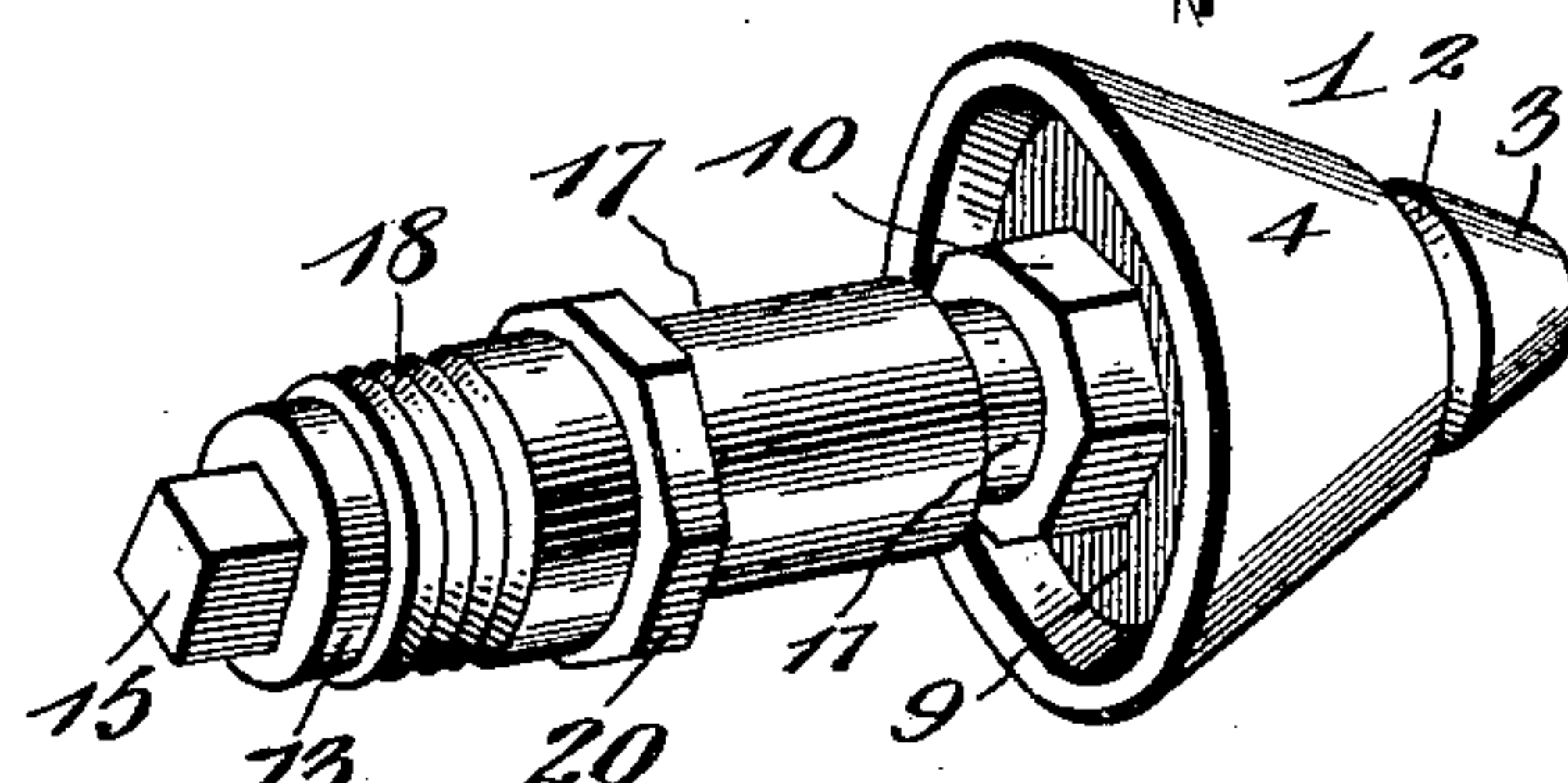


Fig. 2.

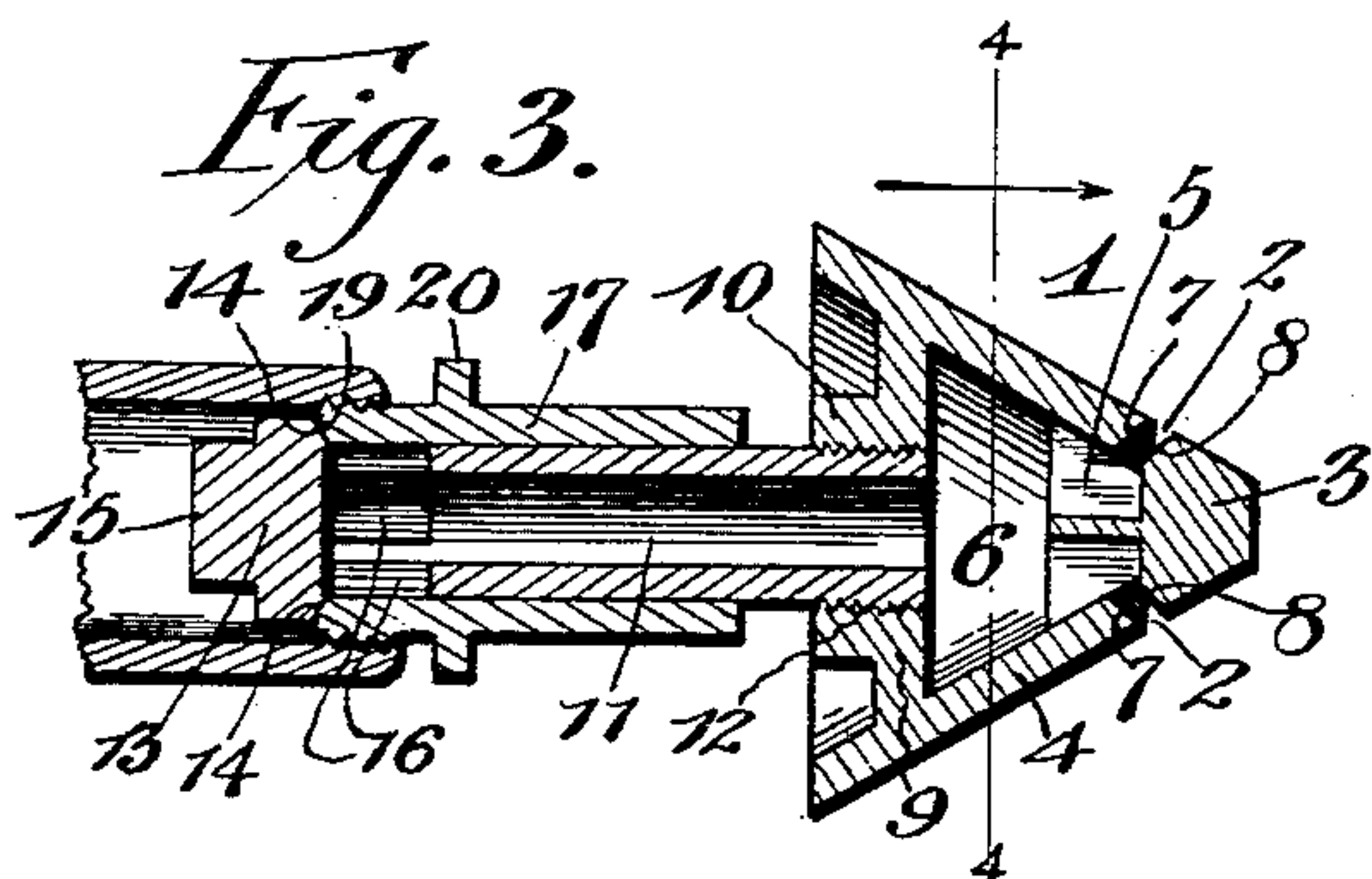


Fig. 3.

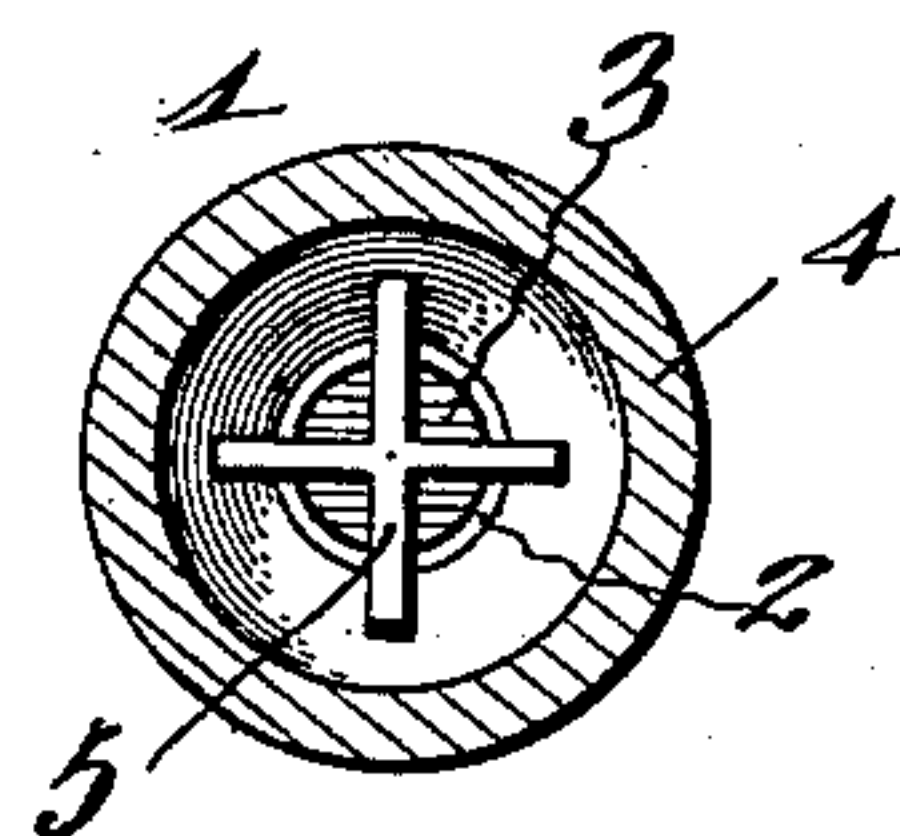


Fig. 4.

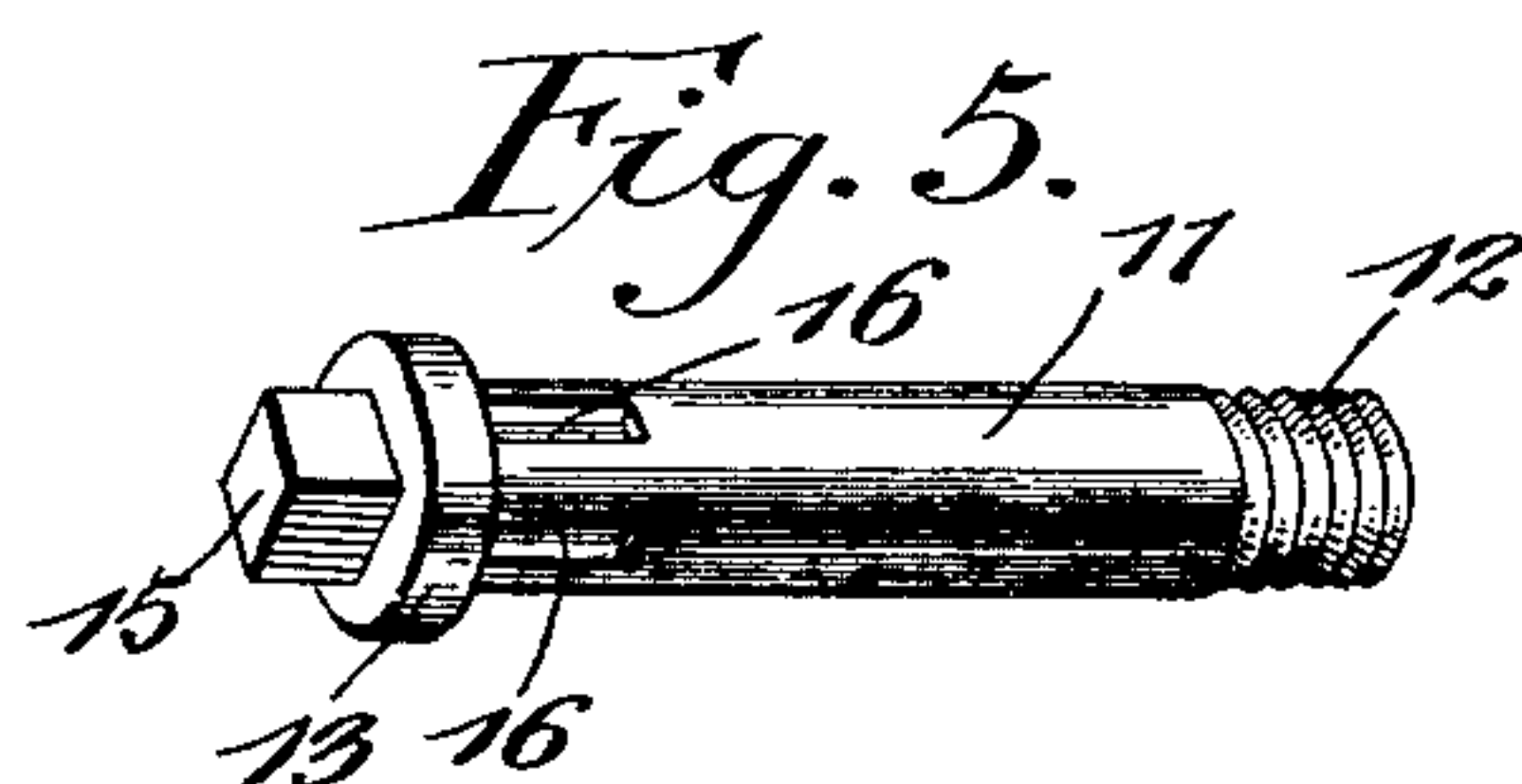


Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH C. OGLETREE, OF NEW ALBANY, INDIANA.

BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 620,608, dated March 7, 1899.

Application filed August 15, 1898. Serial No. 688,604. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. OGLETREE, a citizen of the United States, residing at New Albany, in the county of Floyd and State of Indiana, have invented a new and useful Boiler-Flue Cleaner, of which the following is a specification.

My invention relates to improvements in flue-cleaners of that class in which a fluid under pressure, such as steam or air, is employed to blow the sediment and soot out of the tubes of steam-boilers.

One object of the present improvement is to simplify the construction of fluid-pressure flue-cleaners by dispensing with separate parts and a plurality of valve-seats, thus promoting the efficiency of the apparatus, cheapening the cost of manufacture, and facilitating the removal of the valve from the head of the cleaner.

Another object is to provide an improved construction of the head adapted to center the cleaner when thrusting it into a boiler-tube, thus making it assume a proper position therein, and also to provide for the egress of the fluid under pressure in a direction to impinge against the walls of the tube and effectually remove the sediment therefrom.

With these ends in view the invention consists in the novel construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated it in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional elevation of a boiler-tube cleaner embodying my invention and showing it in proper relation to a boiler-tube. Fig. 2 is an enlarged perspective view of the cleaner detached from the pipe which supplies the fluid under pressure to the head. Fig. 3 is a longitudinal sectional view taken centrally through the cleaner shown by Fig. 2. Fig. 4 is a transverse section at right angles to Fig. 3 and in the plane indicated by the dotted line 4 4 of Fig. 3. Fig. 5 is a detail perspective view of the valve disconnected from the head.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

The head 1 of my improved boiler-tube cleaner is of conical form and cast in a single piece of metal for strength, simplicity, and cheapness. The head is divided by a circumferential slot 2 into front and rear sections 3 4, and this slot is located near the apex of the conical head to make the sections thereof unequal in area, the front section 3 being much smaller than the rear section 4. Although the slot divides the working face of the head into sections, the latter are joined in rigid relation by a crossed connection 5, which is made integral with the two sections in the operation of casting the head. This crossed connection 5 is formed by a plurality of radial wings which are joined at the median line of the head and are spaced to provide openings or passages for the pressure fluid and the circumferential slot 2, and the passages between the radial wings establish communication with the chamber 6, formed in the large rear section 4 of the head 1. The front edge 7 of the rear section 4 is beveled or flared inwardly from the exposed working face of the head 1 toward the chamber 6 therein, while the rear edge 8 of the front head-section 3 is flared outwardly. The flared edges 7 8 of the respective sections 3 4 constitute the walls of the circumferential slot 2, and the inclined edge 8 forms a deflector for the impingement of the pressure fluid, so as to direct the latter on substantially radial lines to the axis of the head, and thereby insure the impingement of the fluid against the walls of the boiler-tubes. The conicity of the section 3 corresponds to that of the section 4, so that both sections are flush or parallel, and the head thus presents a substantially conical form, which insures the proper centering of the head in a boiler-tube when the cleaner is fitted in proper relation to said tube, thereby effecting the equal distribution of the pressure fluid in the receiving end of the boiler-tube and insuring thorough cleansing thereof. By making the sections or members in a single piece with the crossed connection 5 the strength and durability of the head are promoted, the cost of manufacture is reduced, and the efficiency is increased, because the crossed connection, which is located within the chamber 6, offers very little resistance to the free passage of the pressure

fluid. The rear wall 9 to the chamber 6 of the conical head is located or arranged in advance of the rear edge of the section 4, the wall of which is extended beyond the wall 9, so as to form a cup at the closed enlarged end or base of the head. An interiorly-threaded nipple 10 is made integral with the rear wall 9 and it lies within the recess or cavity formed by the cup-shaped base of the head. This nipple 10 is located centrally and in axial relation to the conical head 1, and to it is detachably connected the front end of the tubular valve 11. Said end of the valve is threaded, as at 12, to provide for its ready union with the internally-threaded nipple 10. The rear end of the valve 11 is closed by a head 13, which is made integral with said end of the valve, and said head is formed with a beveled collar 14, that is of greater diameter than the tubular valve and which surrounds the same, thereby providing a valve-face on one side of the head 13. This head is, furthermore, provided with an angular or polygonal stud 15, which is made a part of the head by casting it integral therewith, and this stud protrudes rearwardly from the head 13, and its width is less than the diameter of the tubular valve 11 and the head 13 thereof, so that a wrench or other implement may readily be adjusted to the stud for the purpose of unscrewing the valve from the nipple 10 on the head. Near its rear end the tubular valve is provided with circumferential slots 16, which extend longitudinally of the valve and open into or communicate with the longitudinal passage in said valve, said slots constituting the ports by which the pressure fluid may gain access to the hollow valve for passage therethrough into the chamber of the conical head.

17 designates the valve-shell, in which the tubular valve 11 is snugly fitted to have a limited endwise or reciprocating play; but this valve-shell is not connected with the head, but at its rear end is formed an external screw-thread 18, by which the shell may be fixed to a supply-pipe 21. The rear end of the valve-shell is beveled to provide a valve-seat 19, which lies in the path of the inclined face 14 on the tubular valve 11, and the shell 17 is provided in advance of its threaded portion 18 with an angular collar 20, adapted for the application of a wrench or spanner for coupling and uncoupling the valve-shell to and from the pipe 21. This pipe is united to a T-coupling 22, to one arm of which is fastened a handle 23 for the convenient manipulation of the cleaner. A hose or tube 24 is coupled to the remaining arm of the union 22, and said hose is adapted to be attached to a steam-boiler or to an air-pressure reservoir for the purpose of supplying the pressure fluid to the cleaner.

In operation the pressure fluid is supplied by the tube or hose to the pipe 21, and said fluid acts against the head 13 of the valve to normally force the latter in a forward direction, thereby projecting the conical head be-

yond the shell 17 and pressing the valve 11 in a direction for its face 14 to bear firmly against the seat 19 of the shell 17. The pressure of the fluid thus seats the valve in its shell to cut off the passage of steam from the pipe 21 and the shell 17 to the ports 16 in the tubular valve. In using the cleaner the operator manipulates it to thrust the conical head into one end of a boiler-tube and the conical form of the head insures the proper seating of the cleaner in the tube, so that the cleaner has bearing against the tube at all points. By pressing forward on the implement the shell and pipe 21 are advanced, because the valve has free sliding movement in the shell, and this adjustment of the parts exposes the ports 16 in the valve, as shown by Fig. 1, to permit the pressure fluid to pass through the valve and into the chamber 6 of the head. The fluid impinges against the flared edge 8 of the front head-section 3, by which the fluid is deflected in an outward direction within the boiler-tube, and said fluid is thus caused to impinge against the tube in which it is uniformly distributed, to the end that it removes the sediment and soot which adheres to the interior of said tube. The cleaner may be held in operative relation to a boiler-tube for any length of time; but to use it in connection with another tube it is only necessary for the operator to withdraw it from the tube, thereby permitting the pressure fluid to instantly close the valve and shut off the further passage of said fluid until the device is fitted to the tube which it is desired to clean.

In my improved cleaner the valve may readily be disconnected from the head by unscrewing the shell 17 from the pipe 21, thus exposing the angular stud 15. A wrench or other implement may be thrust into the shell, so as to grasp the stud 15 and enable the valve to be rotated very conveniently for detaching said valve from the head. A single valve-seat is employed for the action of the tubular valve, and the conical head is made in a single piece, thus reducing the cleaner to its simplest form and enabling it to be manufactured very cheaply.

Changes may be made in the form of some of the parts, while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. A boiler-flue cleaner comprising a casing, a valve-shell united detachably thereto and provided at its inner end with a valve-seat, a pressure-operated hollow valve fitted slidably within said valve-shell to have unrestrained play therein and provided at its rear end with a head and with radial ports in front of said head, said valve-head arranged in the casing to fit against the seat of the valve-shell and the front end of said hollow valve

projecting beyond the shell, and a chambered conical head fast with the protruding front end of the hollow valve to travel therewith and said head provided with a circumferential slot near its extremity, substantially as described.

2. A boiler-flue cleaner comprising a conical chambered head having a circumferential slot the faces of which are inclined to the longitudinal axis of the head and with its small front extremity united to the large head-section by wings which are integral with the head and are presented edgewise to the fluid traversing the head, a valve-shell having at its rear end a valve-seat, a slidable valve

having an unobstructed longitudinal passage and coupled at its front end to the head to communicate directly with the chamber thereof, the rear end of said hollow valve being provided with a head adapted to the seat of the valve-shell, and a casing united to the valve-shell and inclosing the head of the valve, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH C. OGLETREE.

Witnesses:

WILBUR R. ELLIS,
J. P. THEOBALD.