

No. 719,528.

PATENTED FEB. 3, 1903.

J. S. STEVENS.
VALVE.

APPLICATION FILED AUG. 11, 1902.

NO MODEL.

Fig. 1.

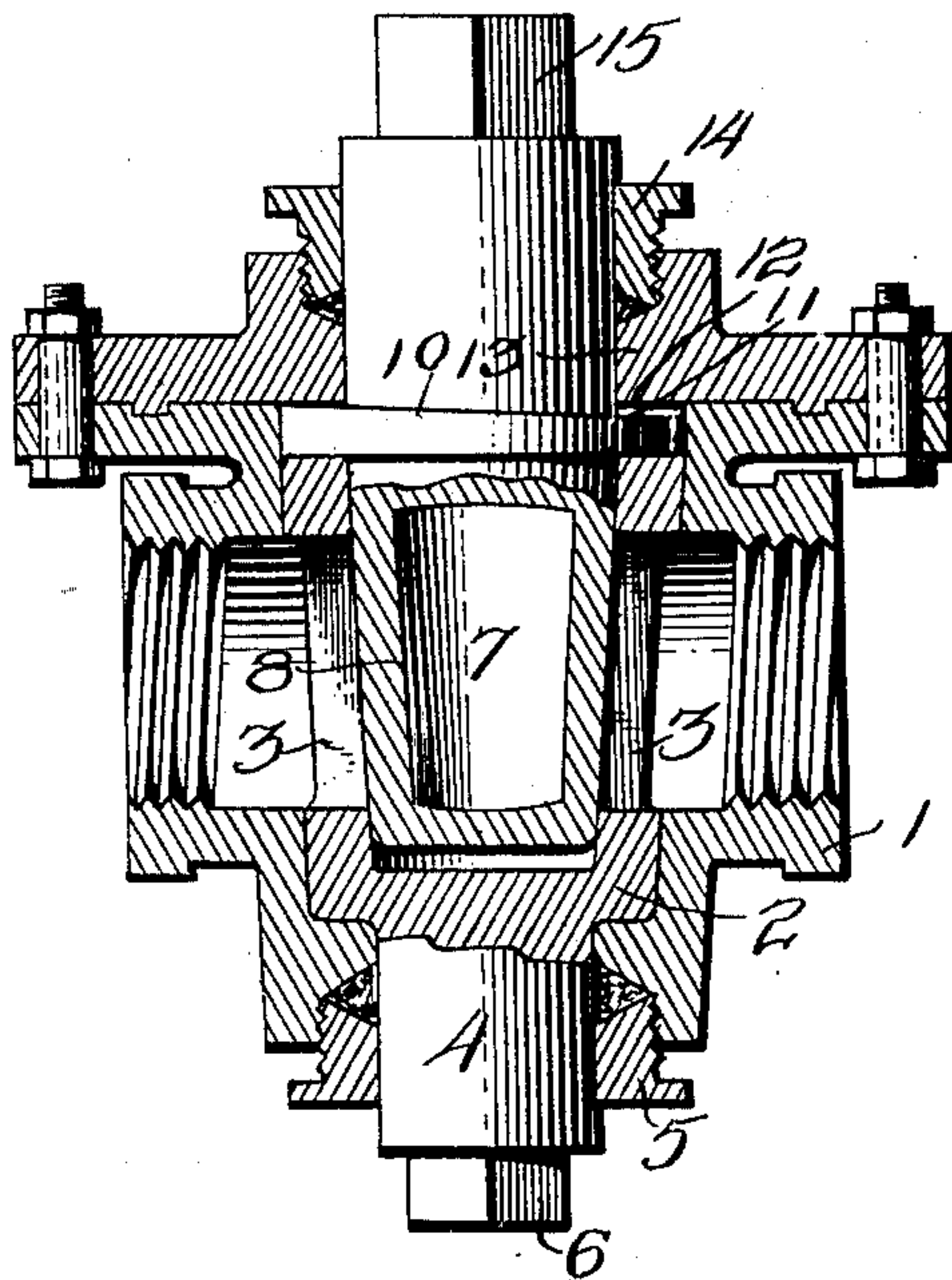


Fig. 2.

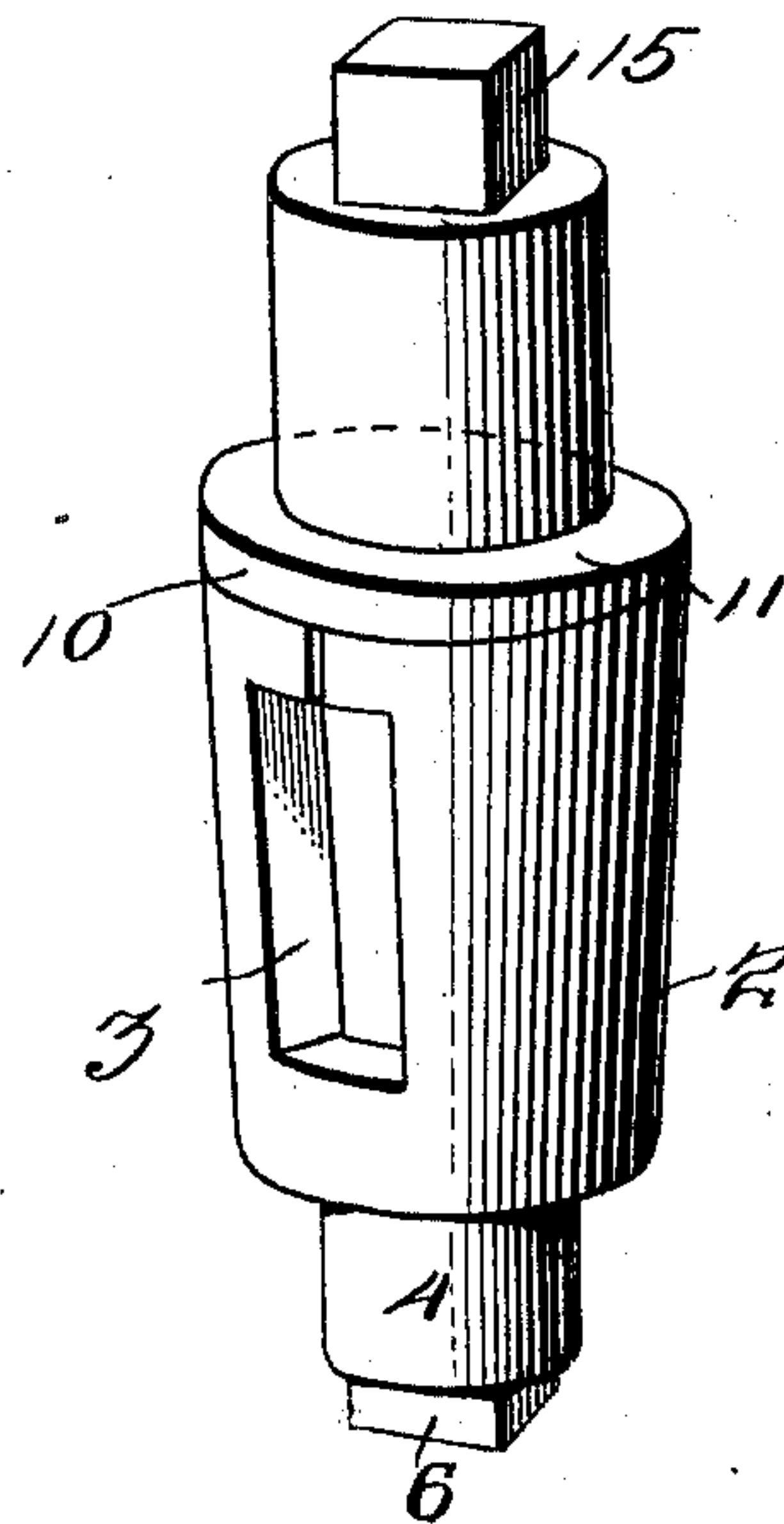


Fig. 3.

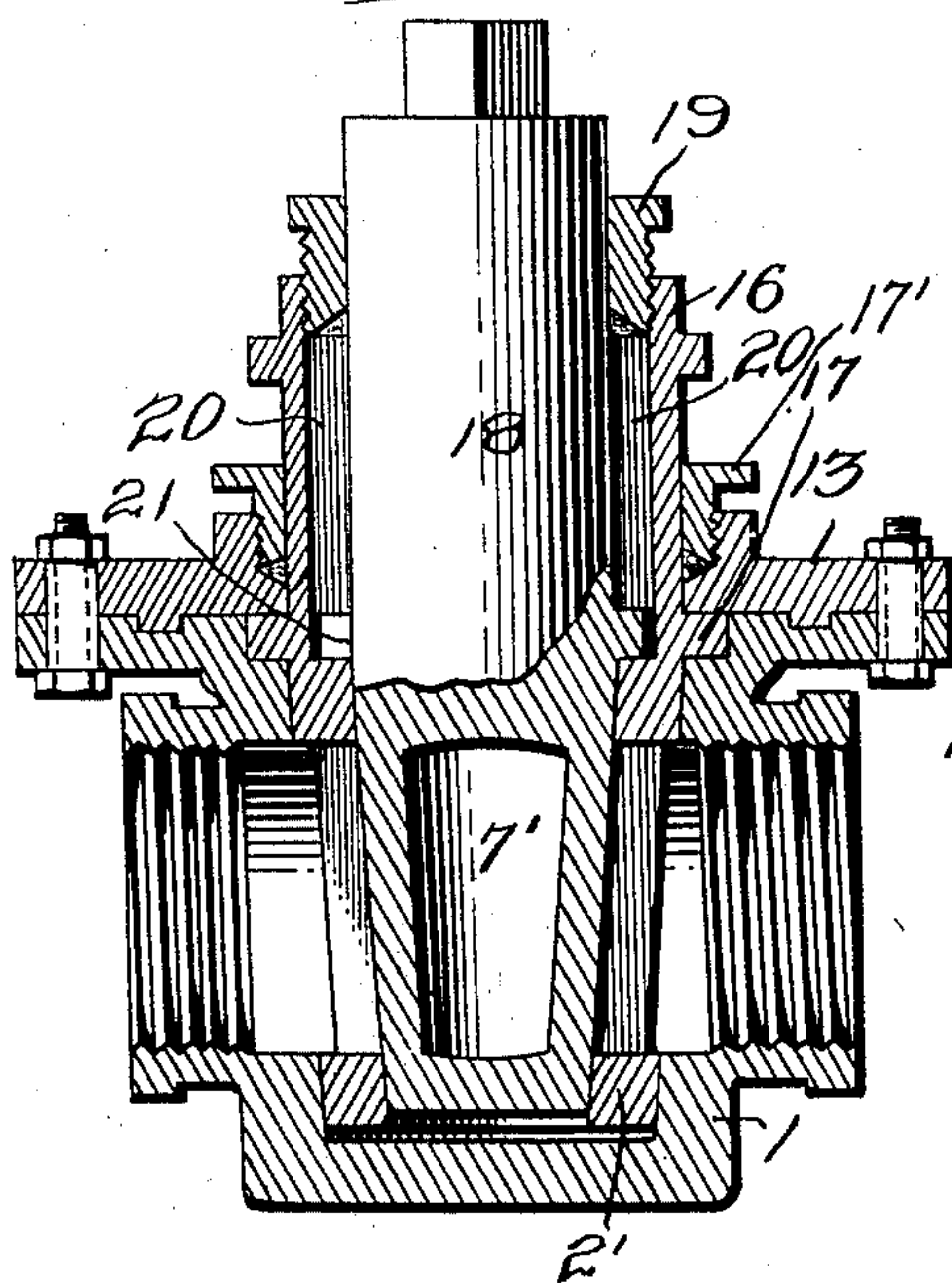


Fig. 4.

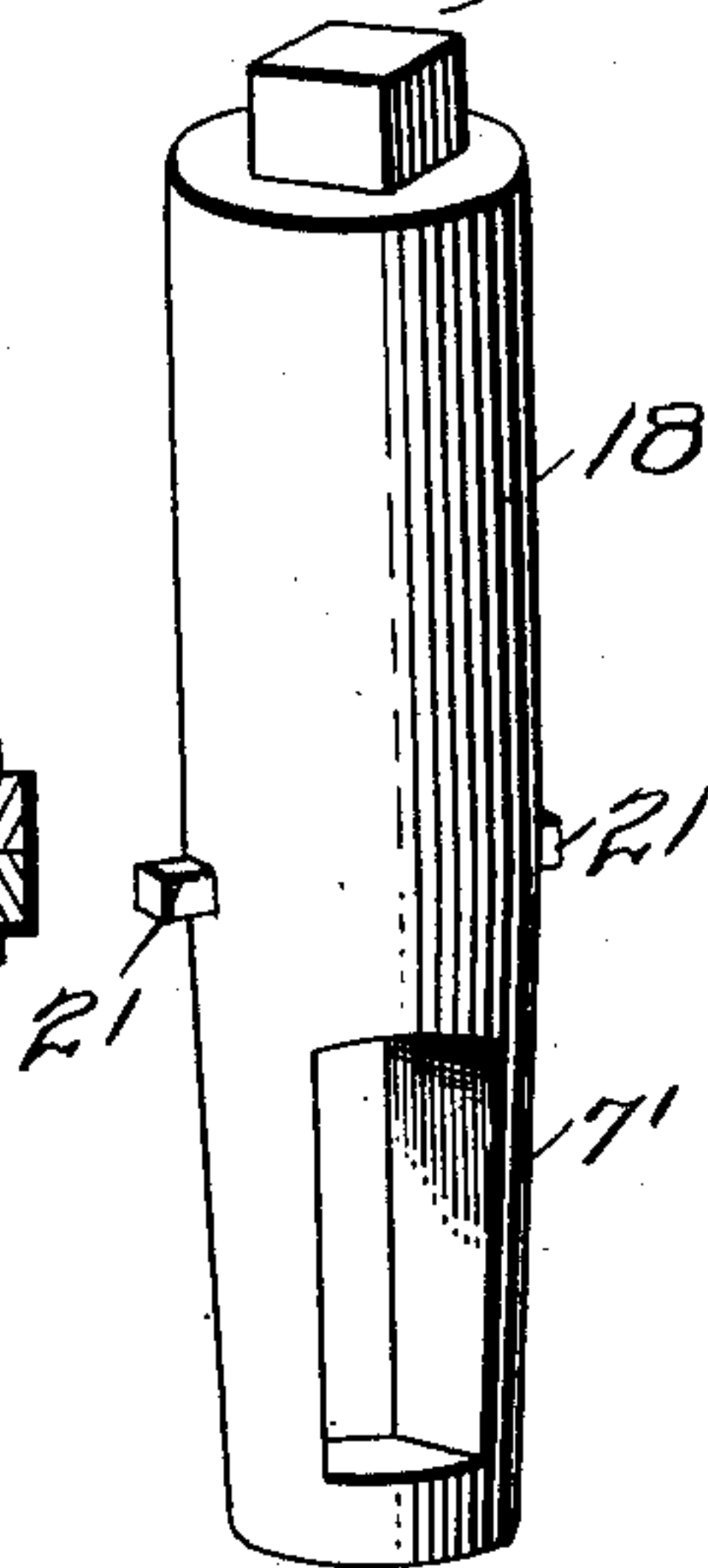
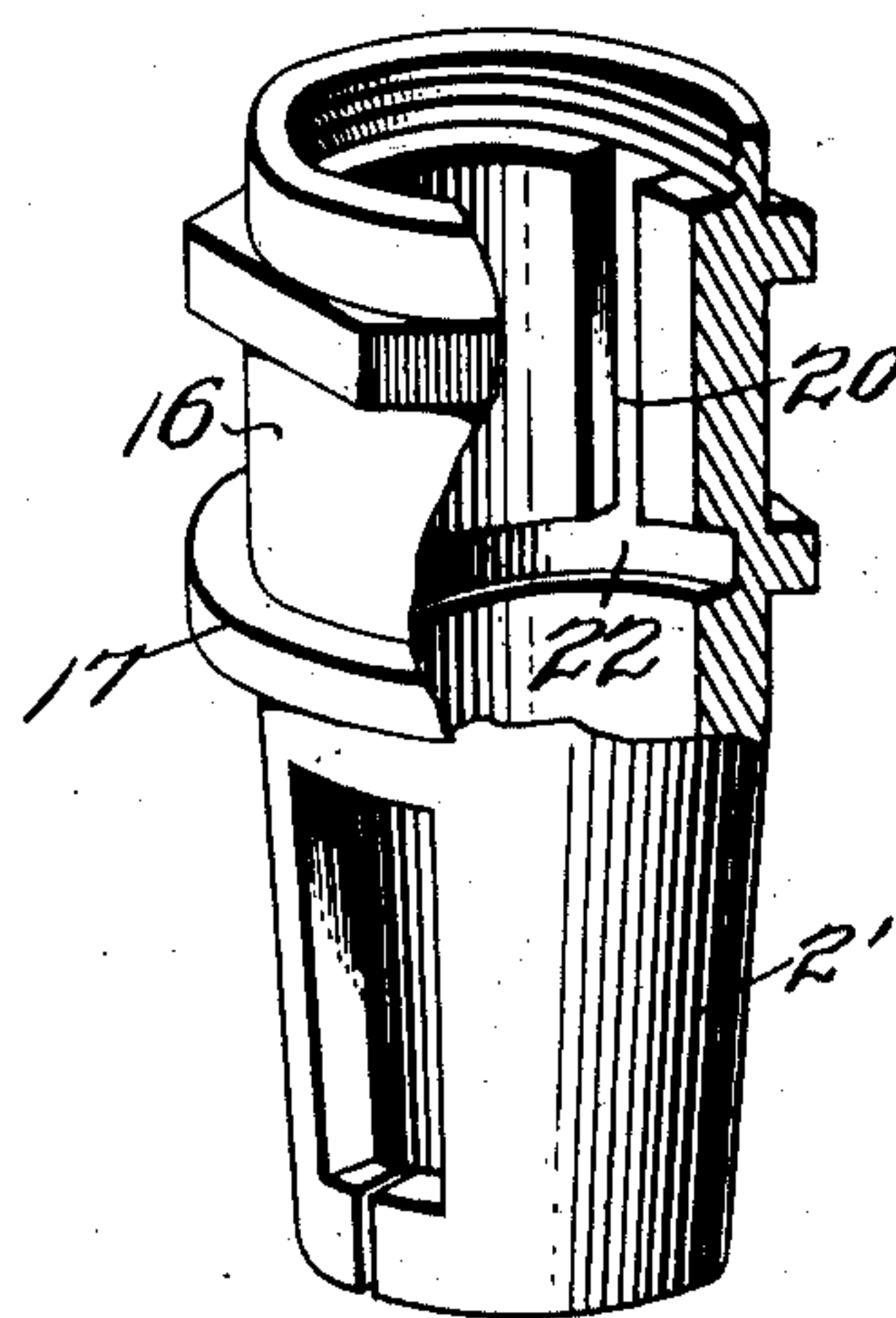


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES S. STEVENS, OF BARBERTON, OHIO.

VALVE.

SPECIFICATION forming part of Letters Patent No. 719,528, dated February 3, 1903.

Application filed August 11, 1902. Serial No. 119,349. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. STEVENS, a citizen of the United States, residing at Barberton, in the county of Summit and State of Ohio, have invented a new and useful Valve, of which the following is a specification.

This invention relates to certain improvements in valves, and particularly to plug-valves of that class employed for use in connection with boiler blow-off cocks and in other places where the valves are subjected to heavy pressure, and has for its principal object to provide an improved construction of valve in which a preferably tight joint may be secured even after the valve becomes worn from constant use.

A further object of the invention is to provide a plug-valve in the nature of a plug and sleeve, both provided with ports and operable independently to thus form a double valve capable of resisting heavy pressures; and a still further object is to construct a valve of this character in such manner that the auxiliary or sleeve valve may be employed to cut off the flow of fluid while the plug-valve proper is removed for repairs.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a sectional elevation of the valve constructed in accordance with my invention. Fig. 2 is a detached perspective view of the main and auxiliary valves removed from the valve-casing. Fig. 3 is a view similar to Fig. 1, illustrating a modified construction of valve. Figs. 4 and 5 are detached perspective views of the main and auxiliary valves removed from the valve-casing.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The main-valve casing 1 is provided with internal threads at each end for attachment to pipe-sections in the usual manner, and at its central portion is formed a frusto-conical valve-seat for the reception of the auxiliary valve 2, which is in the form of a tapering sleeve having diametrically-opposed ports 3, which may be turned into or out of

alignment with the passage through the body of the valve. The lower portion of the auxiliary valve is cylindrical in form, as indicated at 4, and passes through a stuffing-box, in which is a gland-nut 5 of the usual character. The lower end of the cylindrical portion 4 is rectangular or polygonal in form and adapted for engagement by a wrench or operating-handle. This valve may in itself be employed to close communication between the passages at the opposite sides of the valve-body in case it becomes necessary to remove the inner valve.

The main plug-valve 7 is tapering in form and is adapted to a seat in the interior of the auxiliary valve or sleeve 2, and the plug is provided with a transversely-disposed port 8, which may be turned into or out of alignment with the port 3 of the auxiliary valve. At the upper portion of the tapering valve-body is an enlarged annular flange 10, having its upper surface inclined or of cam shape, as indicated at 11 in Fig. 2, the cam-surface being adapted for engagement with a similar cam-surface 12, formed on the under side of a cap-piece 13, which is bolted to the main-valve body. Above the flange 10 the valve is cylindrical in form, passing through a suitable stuffing-box having a gland-nut 14 and terminating in a rectangular or polygonal wrench-engaging surface 15.

It will be noted on reference to Fig. 2 that the valve 2 is split from its ports 3 to its upper end, the split portions of the valve spreading when the plug-valve 7 is so turned as to cause the cam-faces 11 and 12 to coact and the valve to be forced down within the auxiliary valve or sleeve 2. The valve or sleeve 2 is forced out and binds firmly against its seat, while the main plug-valve, being forced down within the tapering seat formed in the valve 2, will also bind firmly within said auxiliary valve, the whole forming a perfectly steam-tight joint.

For ordinary purposes the valve 2 may be allowed to remain in open position at all times and the flow of fluid governed by manipulating the main plug-valve 7; but where an extremely tight joint is desired the auxiliary valve is first turned to closed position in advance of the similar movement of the main valve. The construction also permits of the

closure of the fluid-passage by the valve 2, rendering it possible to remove and renew or repair the main valve and at the same time to grind the valve-seat in the interior of the auxiliary valve while the latter is still in position in the valve-casing.

In Fig. 3 is illustrated a modified construction for accomplishing the same result, the wrench-engaging ends of both valves extending from the same side of the valve-casing. The valve-casing 1 and its cap-piece 13 are the same as that shown in Fig. 1. The auxiliary valve 2' is open at its lower end and is split from thence to the lowermost walls of its diametrically-opposed ports. The upper end of the auxiliary valve is in the form of a cylindrical sleeve 16, provided with an annular flange 17, adapted to a suitable groove formed in the valve-body and confined in place therein by the cap-piece 13. The cylindrical sleeve passes through a stuffing-box formed in the cap-piece and provided with a gland-nut 17'. The main valve 7' has a lower tapering portion in which is formed a transversely-disposed port and an upper cylindrical portion 18, passing through and guiding by the cylindrical sleeve 16, said sleeve being provided with a stuffing-box having a gland-nut 19. At diametrically opposite points in the inner walls of the sleeve 16 are grooves 20 to permit the passage of lugs 21, projecting from the cylindrical portion of the main valve, the upper faces of said lugs being slightly inclined and adapted for engagement with the cam-shaped walls of annular groove 22, formed within the sleeve 16.

In using the valve shown in Figs. 3, 4, and 5 the sleeve 16 and the plug-valve proper may be turned independently of each other and one or both be moved to closed position. When the main valve is turned to closed position, its inclined lugs 21 engage the cam-faces of the walls of groove 22 and force the plug-valve down within the auxiliary valve, the split lower end of the latter spreading slightly and being forced into intimate contact with the tapering valve-seat formed in the body of the valve. In this case also the auxiliary valve may be employed to close the fluid-passage while the main valve is removed for renewal or repairs.

The valves are of especial value as blow-off cocks for boilers and may be used in place of the two separate valves ordinarily employed. When used in this connection, both valves being closed, the auxiliary valve is first opened and then the main plug-valve is opened, allowing the water and steam to escape, as long as necessary. The main plug-valve 7 is then closed to stop the escape of mud and scale and permitting the free closing of the auxiliary valve without danger of cutting the valve-face by contact with hard scale, the valve 7 being then turned to force

it down tightly into the auxiliary valve, and in this connection the cam-surfaces may be so arranged with respect to each other as to force the valve 7 downward only at such times as the auxiliary valve is closed.

While the construction herein described, and illustrated in the accompanying drawings, is the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim is—

1. The combination with a valve-casing, of a pair of concentrically-disposed independently-operable valves located within said casing and each provided with ports, both of said valves being tapering in form and the outer valve being split, and means operable by the turning movement of the valve for effecting longitudinal movement of one of said valves.
2. The combination with the valve-casing, of a split and tapering sleeve provided with ports and forming an auxiliary valve, a tapering plug-valve fitted within said sleeve, and means operable by the turning movement of the valve for effecting longitudinal movement of the plug-valve.
3. The combination with a valve-casing, of a split and tapering sleeve provided with ports and forming an auxiliary valve, a tapering plug-valve disposed within the sleeve, and cams adapted to force the plug-valve into the sleeve during the rotative movement of said plug-valve.
4. The combination with a valve-casing, of a pair of concentrically-disposed and independently-operable valves having their stems disposed at diametrically opposite sides of the casing, and means operable by the turning movement of one of said valves for effecting the longitudinal movement thereof.
5. The combination with a valve-casing having a tapering valve-seat and provided with a packing-box, of a split and tapering sleeve adapted to the seat and having its stem projected through the packing-box, said sleeve being provided with ports and forming an auxiliary valve, a tapering plug-valve adapted to a seat within the sleeve, a cap secured to the valve-casing and provided with a stuffing-box for the reception of the plug-valve stem, and a cam-shaped collar forming part of the plug-valve and adapted to bear against said cap.

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

JAMES S. STEVENS.

Witnesses:

A. L. RICH,
CLARENCE CLASON.