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Patented Aug. 22, 1899.

W. H. DARRAGH & J. J. DARRAGH, JR.  
VALVE.

(Application filed Mar. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

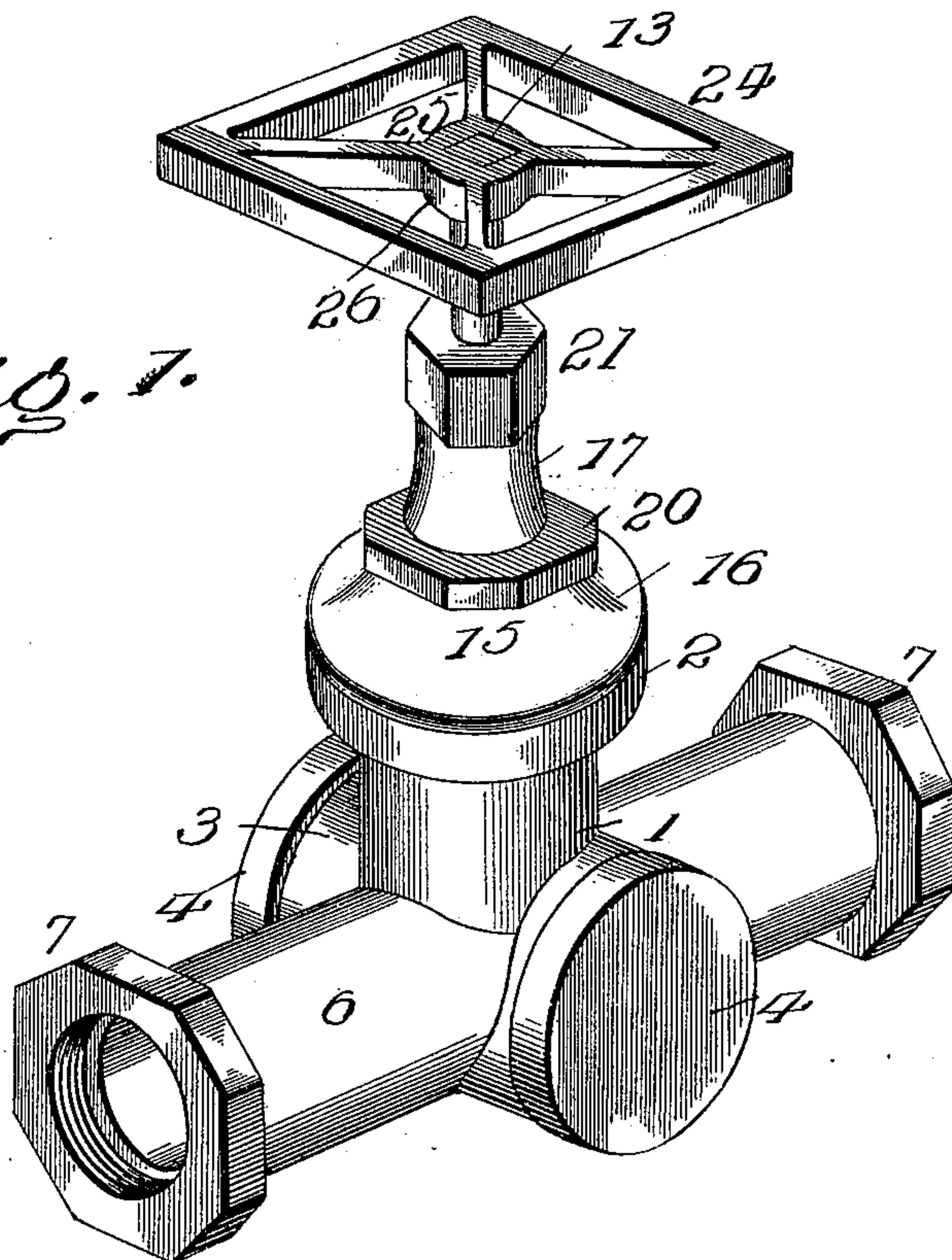
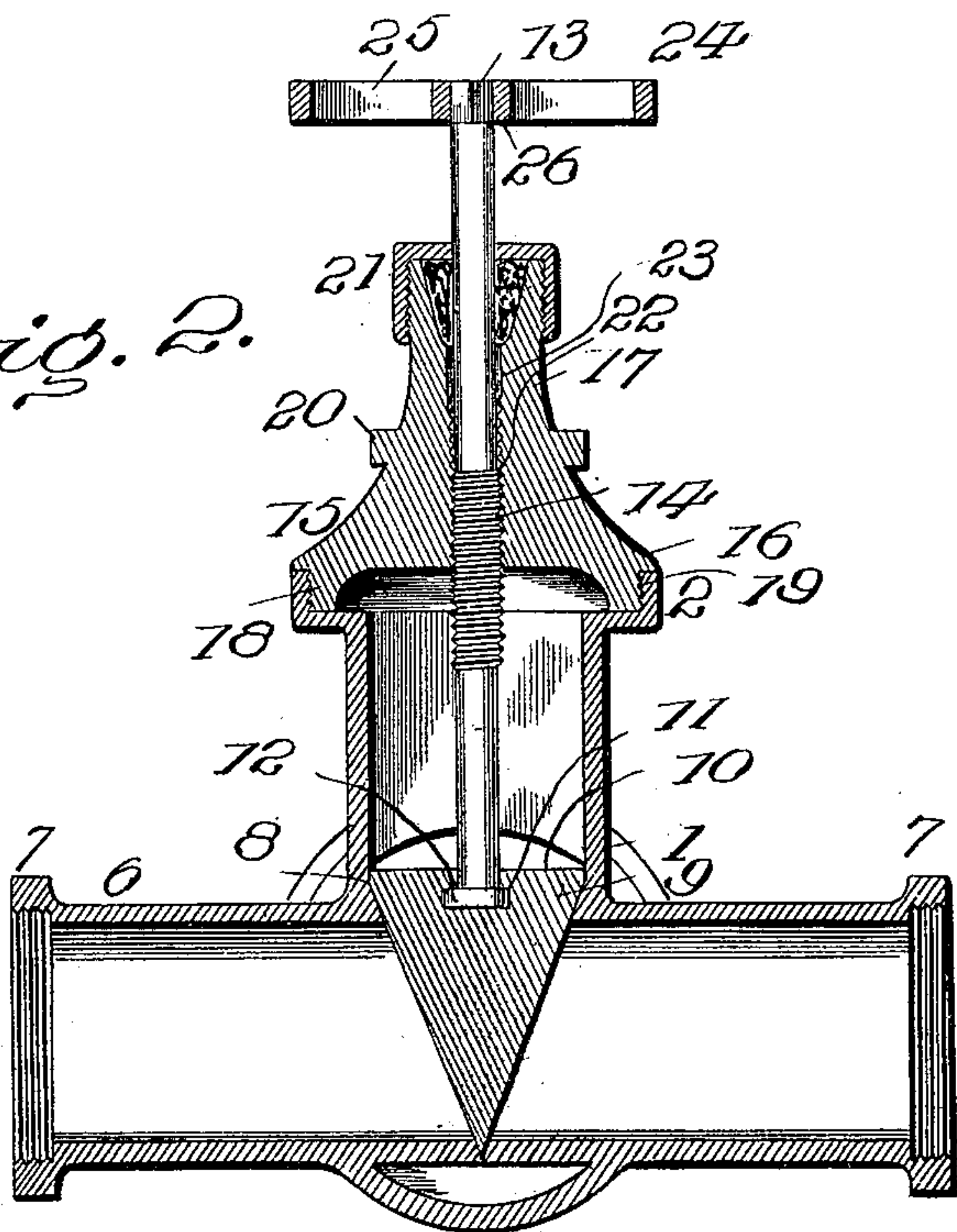


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## VALVE.

SPECIFICATION forming part of Letters Patent No. 631,699, dated August 22, 1899.

Application filed March 16, 1899. Serial No. 709,363. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. DARRAGH and JOHN J. DARRAGH, Jr., citizens of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Valves; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a combination-valve, and the purpose of the same is to obtain the advantages of both a gate and globe valve by using a wedge-shaped or conical valve to secure the full opening of a gate-valve and also the downward pressure of a globe-valve; to provide a double seat for the valve; to provide for conveniently grinding the valve or valve-seat while said parts are on the pipe-line; to replace the valve when necessary at a very small cost; to lessen the liability of cutting the valve or valve-seat by steam or water by the establishment of a clear opening, so that trash or any foreign matter will not congregate or stop within the confines of the valve; also, to have a construction for ready conversion into a three or four way valve, and otherwise add structural features for positively operating the valve and insure a proper seating thereof.

The invention consists of the construction and arrangement of parts hereinafter more fully described and claimed and subject to such variations in proportions, dimensions, and minor details as are within the purview of the invention.

In the accompanying drawings, Figure 1 is a perspective view of a valve embodying the invention. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse vertical section. Fig. 4 is a perspective view of the valve, showing an additional part. Fig. 5 is a detail perspective view of the preferred form of plug. Fig. 6 is a similar view of a modified form of plug.

Referring to the drawings, wherein similar numerals are employed to indicate corresponding parts in the several views, the numeral 1 designates a vertical barrel or body having an upper circumferential offset or

seat 2 formed with internal screw-threads, and at the lower portion of said barrel or body are opposite integral screw collars or rims 3, adapted to receive blind caps 4, as shown by Figs. 1 and 3. The object of these collars or rims is to facilitate the removal and inspection of the plug and the conversion into a valve having a plurality of ways greater than two, and, as shown by Fig. 4, a three-way valve is formed by means of a pipe 5, coupled to one of said collars or rims 3. To provide a four-way valve, the other collar or rim is likewise supplied with a pipe attachment and this would be an obvious arrangement, in view of the illustration furnished by Fig. 4. This conversion of the valve can be temporary or permanent, as found necessary. For the purpose of a straight through-way-valve a pipe or tube 6 is secured to or formed with the lower part of the barrel or body 1 in a plane at a right angle to the relative direction of the collars or rims 3. The outer ends of said pipe or tube 6 are internally screw-threaded and have external hexagonal or analogous gripping-flanges, as at 7, for the engagement of suitable implements in setting or connecting up the valve. In the central part of the pipe or tube 6 is cut out a V-shaped seat 8 to receive a plug 9, the latter having a lower body of like form and ground to snugly fit the said seat at both sides of the casing. The upper part 10 of the plug is of such contour as to movably fit in and be regularly guided by the inner portion of the upper part of the barrel or body 1, and extending transversely from end to end thereof and opening out centrally through the top is an inverted-T slot 11 to removably and loosely receive a foot flange or button 12 on the lower end of a stem 13, having screw-threads 14 on a portion of its length. In opposite ends of the body of the plug, also below said slot, are screw-threaded openings or holes 15<sup>a</sup> to receive bolts or similar devices (not shown) to serve as grips or handholds during the operation of grinding the plug.

On the upper end of the barrel or body 1 is a cap 15, which is broadened at the base 16 and tapers toward the upper portion 17, which is of equal diametric extent and forms a surrounding casing for the upper part of



the stem. The lower end of the base 16 has a circumferential shoulder 18 and screw-threads 19 to removably fit and form a close joint with the seat 2 at the upper end of the barrel or body 1, and on the said cap, at a point about where the upper portion 17 begins, a nut lug or surface 20 is located for convenience in removing or applying the cap. The upper end of the cap has a stuffing-box 21 thereon, and in the interior, near the bottom, a screw-threaded opening 22 is also formed in said cap in alinement with an upper vertical smooth-bore 23, through which the stem has movement. On the upper end of the stem a square turning device 24 is secured and has diametric spokes 25, running to a central collar 26, with an angular opening therein to fit over the upper end of said stem. The advantage of this square turning device 24 is that it gives a better purchase in operating the stem, and the grip of the operator against the opposite straight sides will obviate slipping, as in the use of a wheel or even a polygonal device having short faces.

In Fig. 6 the valve-plug 27 is similar in all respects to the plug heretofore described with the exception that the surfaces are curved instead of angular; but the general wedge shape is preserved. In forming a seat for this plug the lines would be correspondingly curved, and the operation of both forms of plug is exactly the same.

In articulating or disconnecting the plug with or from the stem 13 the cap 15 is disconnected and said plug drawn upwardly through the barrel or body 1 by means of the foot flange or button 12 on the lower end of the stem, and after the plug has been elevated a sufficient distance above the offset 2 said foot flange or button can be moved transversely in or out of the inverted-T slot 11 in the upper end of the plug. This is a very convenient mode of connecting and disconnecting the stem and plug, as the delay incident to the removal and application of screws or other fastenings is avoided and a stronger and more durable means of engagement is substituted therefor.

In operation the turning device 24 is grasped and the stem 13 rotated first in one direction to elevate the plug 9 and open the valve and then reversely to close the same. When the plug is elevated, it moves up into the barrel or body 1, the parts being so proportioned as to allow the plug to entirely clear from its seat. The plug is moved down regularly during the operation of closing the same and snugly enters the seat. The movable attachment of the lower end of the stem with the upper end of the plug permits the stem to have a further downward movement after the plug may have been fully seated, and thus

serve as a firm lock to hold said plug immovably down to its seat. The opening of the throughway of the valve is gradual in view of the lower reduced portion of the plug arising from its wedge shape, and the water or liquid begins to be liberated from one side of the plug to the other of the latter as soon as the lower edge is raised above the bottom wall of the said throughway. The opposite inclined faces of the plug cause sediment or other foreign matter to be easily washed off, and collection of the same in or about the seat is avoided. Further, the inclined faces of the plug obviate wear or cutting of the water or liquid and grit carried thereby, as in the use of a vertical resisting surface.

An important function of the lateral openings in the sides of the body or casing 1 in line with the collars 3 is to enable the removal of the valve 9 from either side of the barrel, as may be found most convenient; also, to enable the valve and the interior of the casing to be inspected from time to time, as desired. The valve-seat is ground by reciprocating the valve thereon, ample play for the valve being had by reason of the lateral openings. When the valve is at its lowest position, it clears the top and bottom walls of the collars 3, so as to pass freely therethrough.

Many other advantages will become apparent by the use of the improved valve, and its general efficiency and durability also will be fully demonstrated.

Having thus described the invention, what is claimed as new is—

1. In a valve, the combination of a barrel or body having a lower pipe or tube forming a throughway with a valve-seat therein and provided with rims projecting at a right angle to the said pipe or tube of a diameter sufficient to admit of the insertion and removal of the valve and adapted to receive pipe connections for adding to the number of ways or caps to admit of the removal of the plug and the inspection of the interior of the valve, a plug in the barrel or body, and an operating-stem detachably connected with the said plug.

2. In a valve, the combination of a body having a seat in a part thereof, a plug removably mounted in said body and having openings in opposite ends for the application of holding devices to assist in grinding the said plug, and a stem removably attached to said plug.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. DARRAGH. [L. S.]  
JOHN J. DARRAGH, JR. [L. S.]

Witnesses:

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