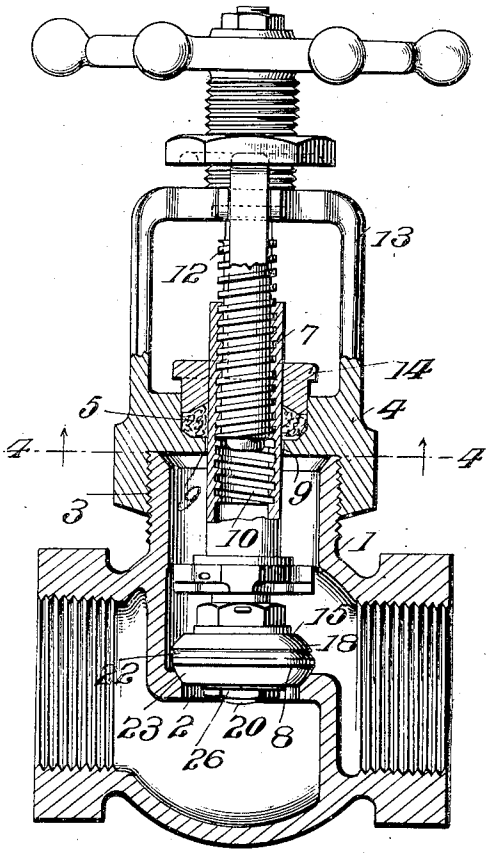
No. 831,468. PATENTED SEPT. 18, 1906.

J. POWELL.

GLOBE VALVE.

APPLICATION FILED JULY 20, 1905.

Fig. 1.



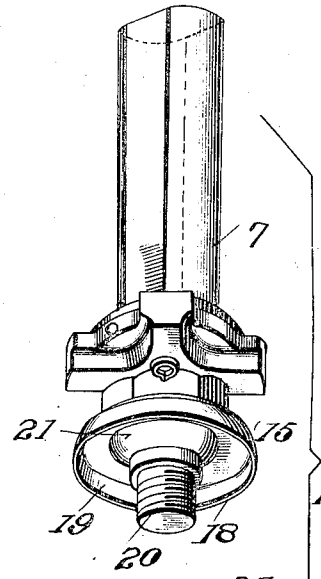


Fig. 2.

Fig. 4.

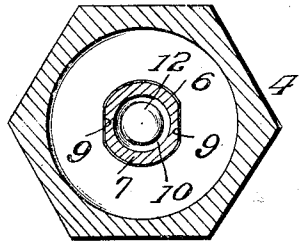
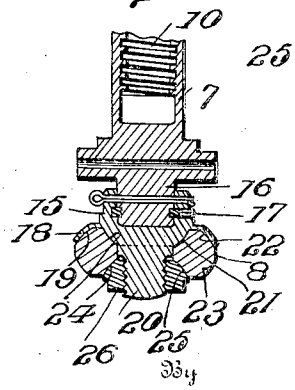
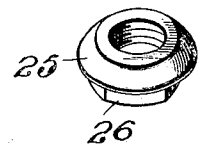


Fig. 3.





Witnesses

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JAMES POWELL, OF CINCINNATI, OHIO.

GLOBE-VALVE.

No. 831,468. Specification of Letters Patent. Patented Sept. 18, 1906.

Application filed July 20, 1905. Serial No. 270,539.

To all whom it may concern:

Be it known that I, JAMES POWELL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Globe-Valves; and I 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.

The primary object of this invention is to provide improved means for reducing the friction upon the packing through which the valve-stem of a globe-valve extends; and a further object is to provide in connection with a reversible valve-disk improved means for securing a perfectly fluid-tight joint between the disk and its holder.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of a globe-valve embodying my invention, the valve and its housing being shown in elevation. Fig. 2 shows in perspective the valve-disk holder, its spindle, the valve-disk, and the retaining-nut. Fig. 3 is a sectional view of the valve, its housing, and a portion of the spindle. Fig. 4 is a sectional view on line 4 4, Fig. 1.

Referring to the drawings, 1 designates the valve-casing, having a centrally-arranged port 2 and in line therewith an exteriorly-threaded neck 3, whereon is screwed a bonnet 4. This bonnet has in its base portion a central chamber to accommodate packing 5 and an opening 6, through which extends the hollow spindle 7, carrying at its lower end valve-disk 8. The opening 6 is formed with opposite straight parallel walls 9, while the spindle 7 is flattened on its sides so as to conform to and be guided by said straight walls. This spindle is provided with a female thread 10, with which engages the exteriorly-threaded operating-rod 12, working in a yoke 13, superposed on bonnet 4. The packing is held in the chamber of bonnet 4 by an ordinary packing-gland 14, which causes the packing to accommodate itself to the flattened sides of the spindle, thereby securing a perfectly tight joint. By rotating the valve-rod 12 the spindle and valve will be moved toward or away from the valve-seat surrounding port 2, and said spindle being prevented from rotating by the opposite straight parallel walls of the bonnet causes but little friction upon the packing, and in consequence frequent repacking is unnecessary.

The valve-disk 8 is removably and reversibly secured in its housing or holder 15, which latter is mounted on the lower reduced end 16 of the valve-spindle, being retained thereon preferably by means of a wire key 17, fitted in coincident grooves in the holder and the spindle end 16. The holder is formed in one piece, having a central cavity to receive the spindle end 16 and an outer overhanging flange 18, which latter is concaved on its lower inner face, as shown at 19, Fig. 2. It may be integral with the holder or detachably fitted thereon. It also has a central exteriorly-threaded reduced portion 20, and at the inner end of the latter the body portion of the holder is convexed, as at 21, Fig. 2, such convexed portion being surrounded by the flange 18.

The valve-disk 8 is reversible, and has double convexed outer surfaces, as at 22 23, that which is exposed being designed to conform to the valve-seat surrounding port 2, while the other convexed surface conforms to and has a fluid-tight contact with the concaved face of the overhanging flange 18. This valve-disk has a central opening to accommodate the reduced portion of the valve-disk holder, and said central opening has double concaved surfaces, as at 24, one of which surfaces is designed to conform to and have a fluid-tight contact with the convexed portion 21, while the lower concaved portion is engaged by the convexed surface 25 of a nut 26, screwed onto the threaded portion of the holder and extending into the disk. Thus it will be seen that although the valve is reversible, yet by reason of the double convexity of its outer surface and the concavities of its central opening no matter which face is presented outwardly a fluid-tight joint is secured between the valve and its holder, such valve being held on the latter by the nut 26, the tightening of which not only binds its convexity against the lower inner concavity of the disk, but forces the upper concavity of the latter against the convexity of the holder, while the upper convexity of the disk is held tight against the concaved surface of the overhanging flange.

The advantages of my invention will be apparent to those skilled in the art. It will be seen that I have provided a globe-valve in the operation of which friction between the valve stem or spindle and the packing there-

for is reduced to a minimum, the means employed for that purpose being manifestly simple and inexpensive. It will also be observed that I have provided simple and highly-efficient means for obtaining reversibility in a valve-disk and at the same time insuring a fluid-tight joint between the disk and its holder.

I claim as my invention—

1. A valve having, in combination, a valve-casing, a bonnet removably secured thereon and having a yoke integral therewith, said bonnet having in its base portion a central chamber and an opening formed with two parallel flat sides, a packing-gland for holding packing in said central chamber adjacent to said opening, a valve, a hollow spindle carrying said valve and extended through said opening in the bonnet, opposite sides of said spindle being flattened to engage with and be guided by the straight sides of said opening, said packing-gland causing the packing to accommodate itself to the flattened sides of the spindle, and a valve-stem working in said yoke and engaging said spindle so that by turning the valve-stem the spindle and its valve will be caused to move toward or away from the valve-seat.

2. In a globe-valve, in combination, the casing having a valve-seat, a spindle, a valve-holder secured to said spindle concaved on its lower inner face, and also having a depending exteriorly-threaded reduced portion, said holder being convexed at the inner end of said reduced portion, a valve-disk having double convexed outer surfaces, a central opening and double concaved inner surfaces surrounding said opening, said valve being reversible so that the side not in use will conform to the concavity of the holder and to the convexity thereof and the nut fitted on said reduced portion, and having a convexed portion for fitting snug against the lower concavity of the valve-disk.

3. In a globe-valve, in combination, the casing having a valve-seat, the spindle, the valve-holder secured to said spindle having an annular overhanging flange concaved on its lower inner face, and also having a central depending exteriorly-threaded reduced portion, said holder being convexed at the inner end of said reduced portion, a valve-disk having double convexed outer surfaces, a central opening and double concaved inner surfaces surrounding said opening, said valve being reversible so that the side not in use will conform to the contour of the overhanging flange and to the convexity of the holder adjacent the reduced portion thereof, and the nut fitted on said reduced portion, and having a convexed portion for fitting snug against the lower concavity of the valve-disk.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES POWELL.

Witnesses:
C. SPENGEL,
C. MEYER.