Sept. 9, 1924. 1,508,047

T. BOWLER

VALVE

Filed April 14, 1924

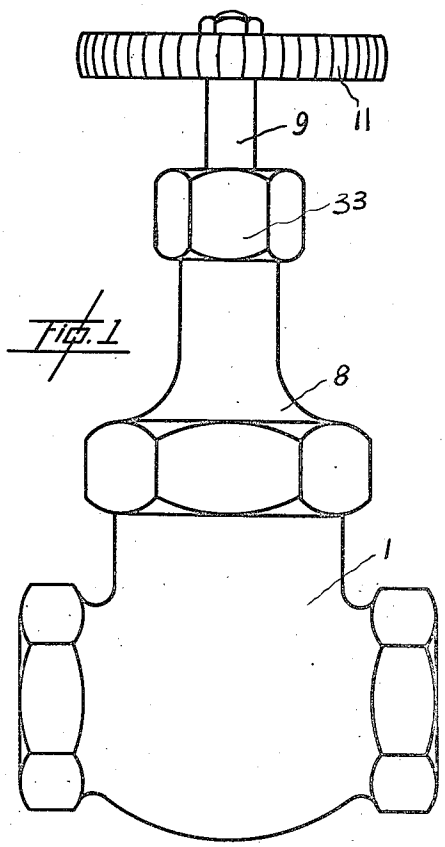


Fig. 1

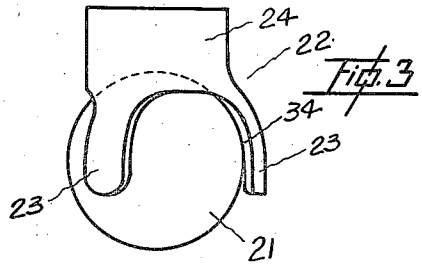


Fig. 3

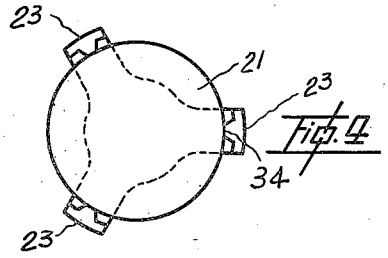


Fig. 4

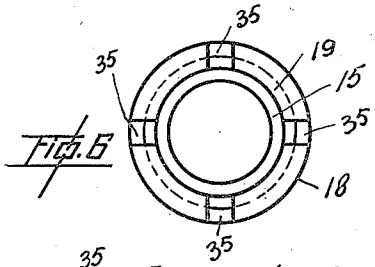


Fig. 6

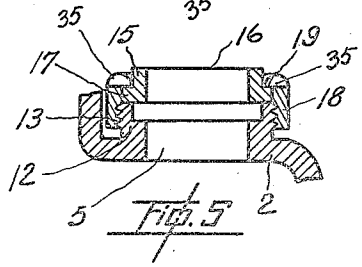


Fig. 5

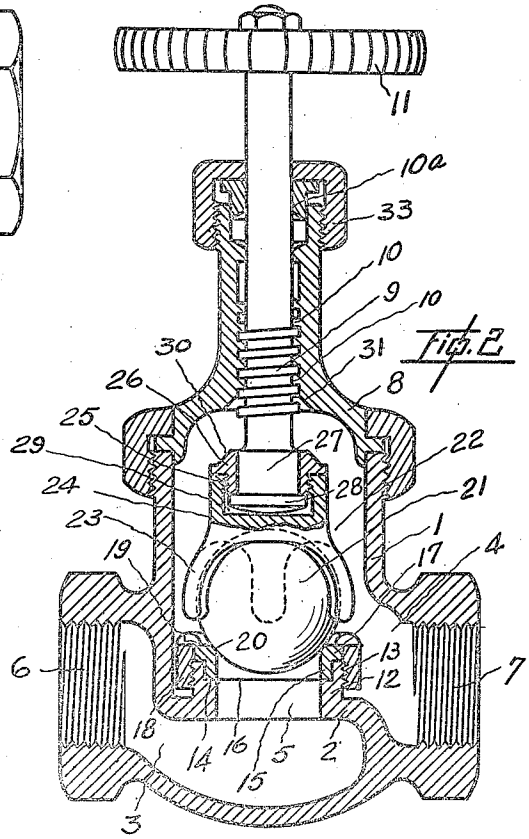


Fig. 2

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Patented Sept. 9, 1924. 1,508,047

UNITED STATES PATENT OFFICE.

THOMAS BOWLER, OF NORTH VANCOUVER, BRITISH COLUMBIA, CANADA.

VALVE.

Application filed April 14, 1924. Serial No. 706,367.

To all whom it may concern:

Be it known that I, THOMAS BOWLER, a subject of the King of Great Britain and a resident of the city of North Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to improvements in valves, with particular reference to what are commonly termed ball valves, and the object of my invention is to devise a valve of this character which is of the simplest construction having a minimum number of parts, which is easy and cheap to manufacture and maintain, and which may be readily assembled in a compact and highly practical manner so that the utmost efficiency is attained while in service. A further object is to provide a valve which is self-cleaning and in which the ball is freely and rotatably connected to the spindle so that undue wear of the ball and seat at any one point is prevented and the possibility of leakage reduced to the minimum. Still further objects are, respectively, to devise a ball valve in which the valve seat is characterized by having two faces and being reversible so that either face may be used as the valve seat as desired, and to provide means for enabling the valve stem to be packed while in operation and without necessitating shutting-down for packing, as is ordinarily required where such valves are not so provided with means as aforesaid.

I attain these objects by the construction illustrated in the accompanying drawings in which—

Fig. 1 is an outside view of the valve.

Fig. 2 is a vertical sectional elevation taken through the center line.

Fig. 3 is a detail view of the valve ball and claw, prior to bending the fingers.

Fig. 4 is a bottom plan view of Fig. 3.

Fig. 5 is a detail view of the valve seat reversed from the position shown in Fig. 2.

Fig. 6 is a plan view of Fig. 5.

Similar figures of reference indicate similar parts throughout the several views.

1 indicates the valve chest preferably of the well-known globe valve design, having the usual partition 2 dividing the valve chamber into the inlet and outlet chambers 3 and 4 communicating with each other through the opening 5, which chambers are provided with the usual threaded orifices 6 and 7 respectively, to which the inlet and outlet pipes (not shown) may be connected. 8 indicates the cover which is detachably secured to the valve chest and is provided with the threaded spindle 9 which passes through the correspondingly threaded bore 10 and the stuffing box 10^a and is fitted on its outer end with an operating handle or wheel 11. Up to this point the construction described is similar to that of such valves at the present time.

According to the present invention, the partition 2 is provided on its upper face with an upstanding portion 12 forming an integral ring concentric with the opening 5, which portion is exteriorly threaded as at 13 and is formed in its upper face with a concentric annular recess 14 in which recess is removably fitted a valve seat ring 15 the bottom edge 16 of which bears against the bottom of the recess when assembled while at its upper edge the ring is flanged outwardly as at 17 and the flange bears on the upper edge of the upstanding portion 12, as shown in Fig. 2, and the ring 15 is removably held in place by an interiorly threaded collar 18 adapted to screw on to the thread 13 of the portion 12 and flanged inwardly as at 19 to bear on the valve seat ring 15. The upper end of the bore of the ring 15, which registers with the opening 5, is mitred to form a valve seat 20, with which seat co-operates the ball valve 21, as shown more particularly in Fig. 2.

The valve 21 is held freely and rotatably in a substantially claw-like member, indicated generally by the numeral 22, which member consists of three or more fingers 23 depending integrally from a socket-shaped upper end 24, which socket is interiorly threaded as at 25 to receive a correspondingly exteriorly threaded nut 26 having a bore adapted to pass over the valve spindle and engage freely a plain portion 27 on the lower end of the spindle and bear at its lower end on a head 28 formed integrally with the spindle of greater diameter than the nut bore and of less diameter than the socket recess 29, from which it will be seen that the socket 24 and fingers 23 are freely connected to the lower end of the spindle 9 by the engagement of the nut 26 in the socket. The nut is provided on its upper face with a mitred portion 30 forming a valve which when the spindle is screwed upwardly as far as it will go co-acts with a valve seat 31

formed in the lower end of the bore 10 of the cover 8 and shuts off the pressure from the bore so that the packing nut 33 may be unscrewed and the spindle repacked without necessitating shutting off the pressure from the pipe line controlled by the valve.

The fingers 23 are preferably formed T-shaped in cross section, as shown more particularly in Fig. 4, with the narrow edge 34 of the T bearing on the ball. In length they extend below the transverse axis of the ball and prior to assembly the portions below the axis are straight, as shown in Fig. 3, the material of which the fingers are composed, however, being specially formed sufficiently ductile to permit of the fingers being bent inwardly to the same curvature as the ball periphery after the latter is seated in place so that the ball is then freely retained within the finger construction and may then be operated in the well-known manner to open or close the valve by the respective screwing up or down movements of the spindle.

Should it become desirable at any time to substitute a disc valve for the ball valve the socket 24 may be disconnected from the lower end of the spindle 9 by unscrewing the nut 26 and the disc valve may be then attached thereto, the ring 15 being in that event turned upside down so as to present its plain un-mitred edge to the disc. This is easily effected by unscrewing the collar 18, reversing the valve seat ring and placing it on the upper edge of the upstanding portion 12, and replacing the collar 18, which is provided with slots 35 for the insertion of a suitable key by means of which the collar may be tightened down on the ring, all as shown more particularly in Figs. 5 and 6.

From the foregoing it will be seen that I have devised a simple, practical, and efficient ball valve which may be employed with great advantage and utility.

What I claim as my invention is:—

A valve comprising a valve chest, a valve seat therein, a ball valve co-operating with said seat, and a vertically movable valve spindle provided at its lower end with fingers T-shaped in cross section between which the said ball is seated extending below the ball axis, the part of said fingers below the axis being originally straight and then bent inwardly to hold the ball as in a claw with the rib of the T facing inwardly.

Dated at Vancouver, B. C., this 28th day of March, 1924.

THOMAS BOWLER.