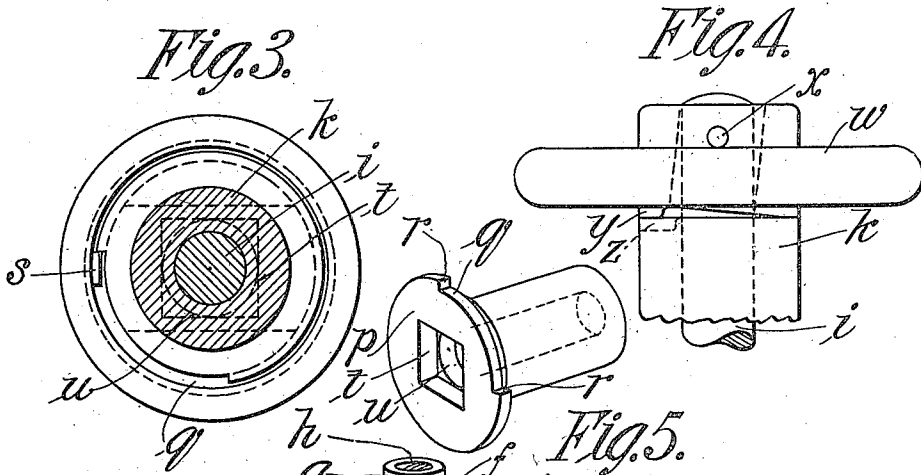
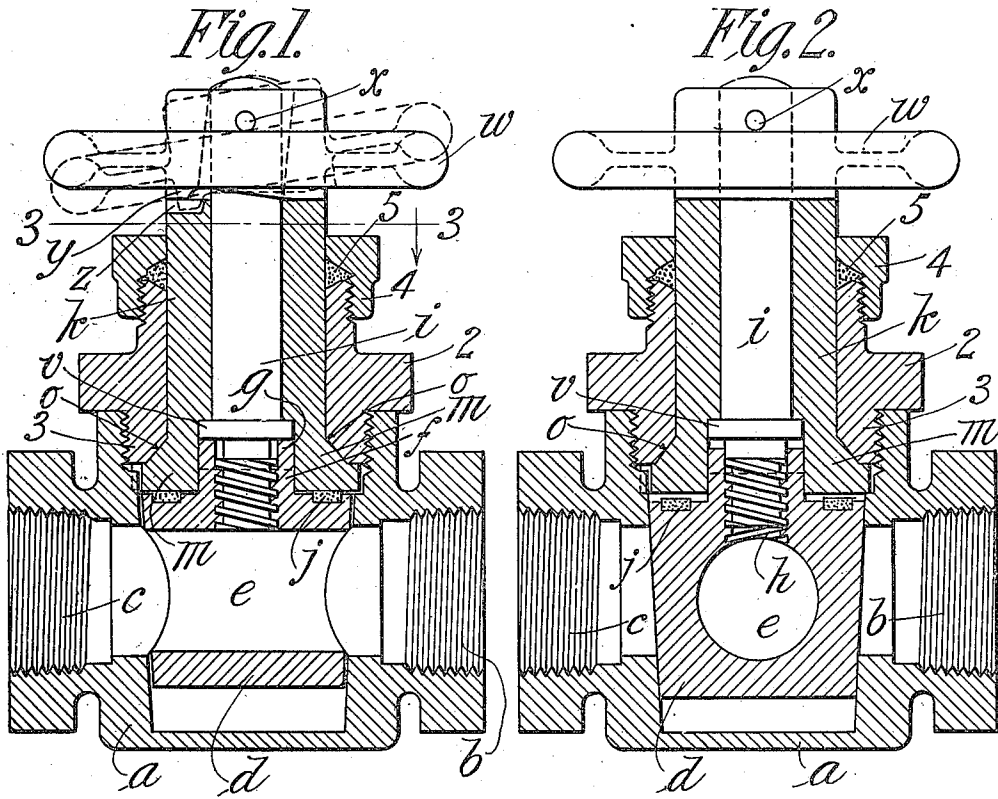


J. H. CHANDLER.
VALVE.
APPLICATION FILED JAN. 18, 1911.

1,013,861.

Patented Jan. 9, 1912.



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VALVE.

1,013,861.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed January 18, 1911. Serial No. 603,248.

To all whom it may concern:

Be it known that I, JOHN H. CHANDLER, a citizen of the United States of America, residing at Indian Orchard, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to improvements in valves of the type in which a plug, provided with openings therein, is adapted to be rotated for opening and closing the passage-way therethrough; the particular object of the present invention being to provide means by which the plug can be first vertically or axially lifted from its seat in the casing upon the initial rotation of the valve-stem, and, upon a continued or further rotary movement of the stem by its hand-wheel, the plug is rotated bodily to open the valve, and a reverse operation closes the same. By means of this construction the initial lifting of the plug axially from its seat before the plug is rotated causes the same to be operated more easily than in the ordinary form of valve of this type in which the plug is turned when it is in engagement with its seat without first being lifted therefrom.

A particular object of this invention is to provide means for locking the hand-wheel (which is carried by the stem of the valve) to a second cylindrical member or stem so that the strain is transferred from the threads on the valve-stem to a positive locking engagement between the cylindrical member and the stem, and means for locking the plug to the cylindrical member whereby the stem, cylindrical member, and plug may be moved as one piece.

In the drawings forming part of this application,—Figure 1 is a vertical section through the stem of the valve showing the valve open for permitting the liquid to flow therethrough. Fig. 2 is a view similar to Fig. 1, but showing the plug seated and the valve closed. Fig. 3 is a sectional plan view on line 3—3, Fig. 1, looking in the direction of the arrow. Fig. 4 is a detailed view of the upper portion of the stem and the hand-wheel pivoted thereto and illustrating a portion of the cylindrical member through which the stem passes and also showing a projection on the hand-wheel and a recess in the cylindrical member for engagement with each other. Fig. 5 is a perspective

view showing the plug and the cylindrical member separated, clearly indicating the rectangular and cylindrical portion of the plug and the correspondingly shaped openings in the lower end of the cylindrical member.

Referring to the drawings in detail, *a* designates the body portion of the valve which is provided with the oppositely located threaded openings *b* and *c* for providing means to connect pipes thereto in the usual manner. The plug is indicated by *d* and is shown in perspective view in Fig. 5, and is provided with the usual passage-way *e* therethrough. The upper portion of the plug is provided with a squared or rectangular portion *f* that is integral therewith and a cylindrical portion *g*, also made integral.

h designates the threaded opening extending downward from the top of the plug to the opening *e*, as clearly shown in Figs. 1 and 2, and receives the threaded end of the stem *i*.

j designates a packing that is placed in the upper portion of the plug *d* in an annular groove thereof, as shown in Figs. 1 and 2.

k is a cylindrical member having an enlarged lower portion *m* and a beveled part *o*, said cylindrical portion being provided with a rim or disk-shaped portion *p* the edge of which is cut out or recessed, as shown at *q*, whereby shoulders at the opposite extremities thereof are provided, as indicated at *r*. The extent of this recessed portion is substantially 90°, and it receives a projection *s* on the body portion *a*, as shown in Fig. 3, the purpose of which construction is to limit the extent of movement of the plug *d* and the cylindrical member *k* in opening and closing the valve.

The stem *i* passes through the axial opening of the cylindrical member *k*, as shown in Figs. 1 and 2, and the rectangular and cylindrical portions *f* and *g* of the plug which engage the correspondingly shaped openings *t* and *u* in the lower part of the cylindrical member *k*, when the parts are assembled as shown in Figs. 1 and 2. The stem *i* is provided with a cylindrical collar *v* which engages a correspondingly shaped recess in the cylindrical member *k*. The upper portion of the stem *i* has pivotally connected thereto a hand-wheel *w* by means of a pin *x*, the lower edge of the hub

portion of which is provided with a projection y for engaging the recess z in the cylindrical member k , whereby when the hand-wheel w is tilted, as shown in Fig. 1, the stem i and the cylindrical member will be locked together when the stem is turned so that the projection and recess are in registration.

2 designates a cap or bonnet member that is provided with a depending annular threaded part 3 which engages a correspondingly shaped threaded opening in the body portion of the valve. The cylindrical member k rotates within the cap portion 2. In order to provide a liquid tight joint between the lower portion m of the cylindrical member k and the plug d , a packing ring 4 is threaded onto the cap 2 and a packing 5 is inserted between the upper end of the cap and the packing ring.

It should be stated that the inclined portion o is a ground joint fit between the cylindrical part and the cap 2 and that the packing j serves to prevent any liquid flowing past the plug and into the opening occupied by the valve-stem when the plug is elevated, as shown in Fig. 1.

Referring to the operation of the valve, and particularly to Fig. 2 in which the plug d is shown seated in the body a of the valve, in a closed position: the first movement of the hand-wheel w rotates the stem i , and the threads at its lower end which engage the threaded opening h of the plug d cause the same to be axially lifted from its seat in the casing. The packing j then engages the lower end of the cylindrical part k to effect a tight joint between the plug and the cylindrical member k . The operator next places the handle w so that the projection y engages the recess z of the cylindrical member k , and a continued rotation of the hand-wheel will rotate the cylindrical member k and the plug d in unison by reason of the fact that the rectangular part f is in engagement with the rectangular opening t of the cylindrical member k . The length of the rectangular part f is such that it is always in engagement with the rectangular opening t both when the plug is down and when elevated, as a comparison of Figs. 1 and 2 will show. The valve, as a whole, may therefore be considered a double stem structure. The cut-out portion q in the edge of the cylindrical part p limits the rotation of the plug to practically 90° . The valve may be closed by the reverse operation, that is the wheel w , when in a tipped position, rotates the cylindrical member k and the plug in a reverse direction, and when the stop s engages the opposite end of the recess q , the hand-wheel w is tipped back to the full line position shown in Fig. 2, and when the stem i is rotated the plug d is axially forced down to its seat

again in closed position, as shown in Fig. 2. The plug d , therefore, moves toward and away from the cylindrical member k during the seating and unseating operations, and with the same, when the valve is opened or closed; that is, it is rotated to its open or closed position. The cylindrical portions g and v of the plug and stem have a bearing in the correspondingly shaped recess u in the cylindrical member to form a bearing for these portions when the plug and stem are turned.

What I claim, is:—

1. A valve having in combination with the plug thereof, a cylindrical member provided with a recessed opening in the lower portion thereof, a projection on the plug for engaging the opening in the cylindrical member, a stem having threaded engagement with the plug for moving the projection with the plug, and means for connecting the stem and cylindrical member together to move the plug and cylindrical member and stem as one piece.

2. In a plug valve, means for lifting the plug from its seat prior to its rotation, said means comprising a stem having a threaded connection with the plug, a disk-shaped portion having a recess therein, and a projection on the plug entering the recess.

3. In a valve, the combination with the plug thereof, a stem having a threaded engagement with the same, a cylindrical member inclosing the stem and provided with a recess in its lower portion, the upper part of the plug having a projection corresponding in shape with the recess and normally in engagement with the same, means for locking the stem and cylindrical member together subsequent to the vertical movement of the plug, whereby the plug and cylindrical member may be rotated together in opening or closing the valve.

4. In a valve, the combination with the plug thereof, a valve stem having a threaded connection therewith for imparting a vertical or axial movement thereto prior to the opening of the valve, a cylindrical member provided with a disk-shaped lower end and having a recess in the edge thereof, a projection on the valve-body for engaging the recess for limiting the rotative movement of the plug and cylindrical member, and means for locking the stem and cylindrical member together for effecting such movement.

5. In a valve, the combination with the plug thereof, the upper portion of which is provided with a packing, a projection on the plug, a cylindrical member having a recess in the lower portion thereof for receiving the projection, the portion around the recess being engaged by the packing on the plug when an axial movement is imparted to the plug, a stem, and means be-

tween the stem and the cylindrical member for locking the two together, whereby the plug may be operated, substantially as described.

5 6. In a valve, the combination with a plug, of a cylindrical member having an opening therethrough to receive a valve-stem, and a circular recess adjacent the lower portion of said member, said stem being threaded at its lower end for engagement with the plug, a collar on the stem for

engaging the circular recess, a cylindrical bearing portion on the plug adapted to enter the circular recess of the cylindrical member below the collar on the stem where- 15
by a bearing for the upper and lower portion of the plug and stem is provided, substantially as described.

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Witnesses:

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