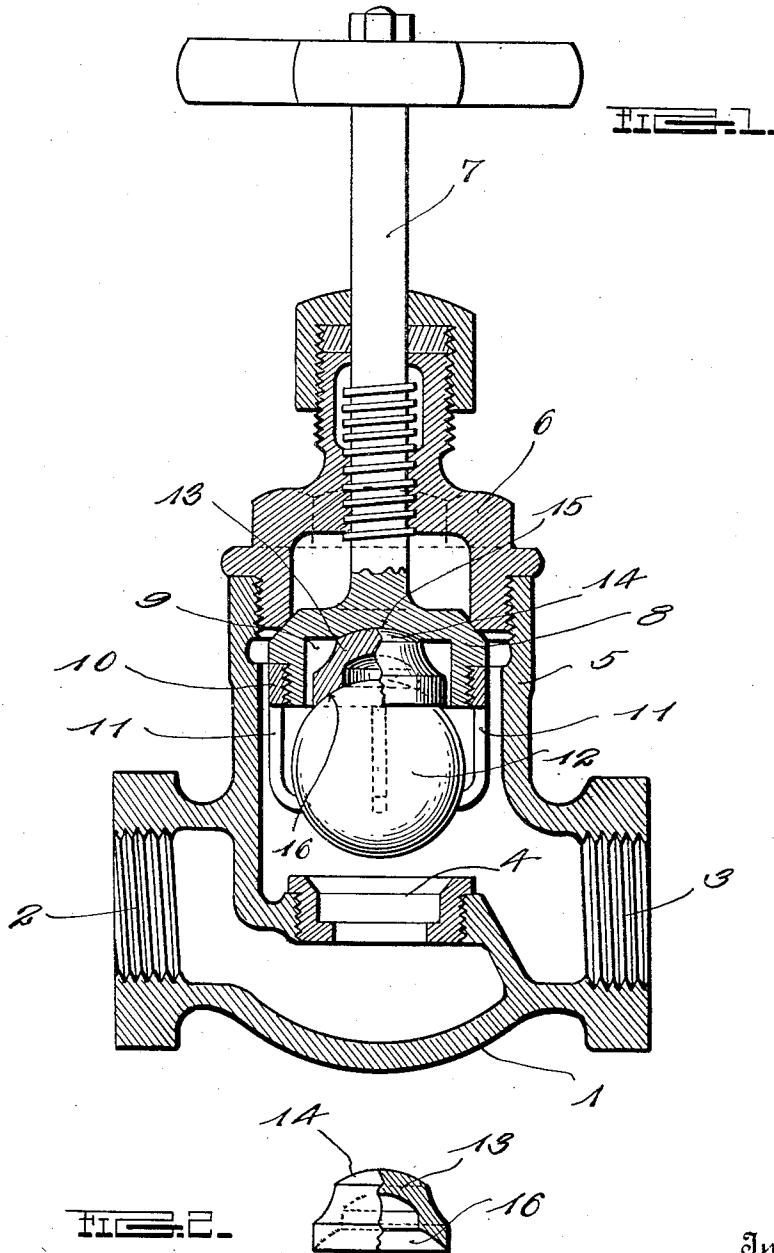


L. WASEM.
VALVE.

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1,409,127.

Patented Mar. 7, 1922.



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VALVE

1,409,127.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LOUIS WASEM, a citizen of the United States, residing at Mount Vernon, in the county of Posey and State of Indiana, have invented certain new and useful Improvements in Valves; and I do 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 an improved valve and one object of the invention is to provide improved means for guiding the valve ball into proper engagement with the valve seat, and further so construct this means for guiding the valve ball that it will serve as a bushing element positioned between the valve ball and the stem thus protecting the valve ball from grinding when the stem is rotated to tightly close the valve.

Another object of the invention is to construct this bushing cup that it may be positioned between the valve ball and the lower end of the stem and permitted to have a certain amount of transverse movement thus permitting the valve ball to be properly seated upon the valve seat.

Another object of the invention is to construct the valve stem that the bushing cup may be contained in a pocket formed in the head at the lower end of the stem, the bushing conforming to the contour of the ball and having its upper end rounded and fitting into a concave or dish seat formed in the head of the stem.

This improved valve construction is illustrated in the accompanying drawings, wherein:

Figure 1 is a vertical sectional view through a valve having the improved construction shown in connection therewith.

Figure 2 is a view showing the bushing cup removed from the valve and shown partially in side elevation and partially in section.

This improved bushing cup is used in connection with a valve of the type disclosed in Patent No. 1,158,483 and also in Patent No. 1,182,166. It has been found that where the valve ball is in direct contact with the head of the valve stem, the ball will become ground and worn thus preventing the ball from having proper engagement with

the valve seat. Therefore after a valve in which the stem directly engages the ball has been used for some time and the ball has become scratched and worn by the grinding engagement of the stem with the ball in screwing the stem tightly into place, the valve will not shut off tightly but will leak. The valve shown is provided with a housing 1 having an inlet 2 and an outlet 3. A valve seat 4 is positioned between the inlet and the outlet and the housing extends upwardly above the seat thus providing a neck 5 having a crown or bonnet 6 removably connected therewith.

A valve stem 7 extends through the crown 6 into the valve housing and has threaded engagement with the crown as shown so that by turning of the stem, the head 8 at the inner end of the stem may be moved towards and away from the seat 4. This head is hollowed from its inner end to provide a pocket 9 and the inner end of the head is reduced and threaded to carry a ring 10 from which extends prongs 11 engaging and thus supporting a valve ball 12 for seating upon the valve seat 4 when the stem is rotated and thus screwed into the housing. This valve ball 12 extends up into the pocket 9 and is engaged by the cup or bushing 13 which fits into the pocket as shown in Fig. 1. This bushing cup is provided with a rounded upper end 14 which fits into a concave seat 15. It will thus be seen that the cup 13 may rotate within the pocket 9 and may also have movement transversely therein. This cup is hollowed from its inner end as shown in Figs. 1 and 2 and is ground to provide a seat 16. It will thus be seen that the lower end of the bushing cup will conform to the contour of the valve ball and may have proper engagement with the ball. Therefore, when the stem is rotated and thus screwed into the housing to bring the valve ball into engagement with the seat 4 continued rotation of the stem to firmly seat the ball upon the valve seat 4 will cause the stem to turn upon the rounded upper end of the bushing cup instead of turning upon the ball itself. Therefore, the ball will not be ground off at one side or scarred and there will be no danger of the valve leaking due to the valve being worn or scratched.

A structure has thus been provided which may be used in connection with a valve hav-

ing a conventional construction such as shown in the patents above mentioned and it is therefore not necessary to provide a special construction of valve in order to permit a valve to be provided with this improved construction.

I claim:

1. In a valve, a housing having an inlet and an outlet, a valve seat in the housing, a bonnet carried by the housing above the seat, a stem extending into the housing through the bonnet and having threaded engagement with the bonnet, a head at the inner end of the stem hollowed and ground to provide a concaved seat within the head, a valve ball, means carried by the head for engaging the ball and limiting downward movement of the ball, and a cup within the head having free movement therein and having a convex upper end seated in the concaved seat, the cup being hollowed from its lower end and having its lower end ground to provide a concaved lower end engaging the ball and conforming to the contour thereof.

2. In a valve, a housing having a valve seat therein, a valve stem extending into the housing above the seat and having threaded engagement with the housing, a head at the inner end of the stem hollowed to provide a pocket and ground to provide a concaved seat, a hollow cup loosely fitting in the pocket and having a rounded upper end fitting into the concaved seat and having its lower end ground to provide a concaved seat, and a valve ball rotatably held in engagement with the concaved seat at the lower end of the cup.

3. In a valve, a housing, a stem extending into and having threaded engagement with the housing, a head for the lower end of the stem having a pocket cut in its lower end, a cup loose in the pocket having a rounded upper end fitting into a concaved seat of the pocket and a valve ball rotatably suspended beneath and engaging the cup, the lower end of the cup being ground to conform to the contour of the ball.

4. A valve structure including a rotatable stem having a head at its inner end hollowed to provide a pocket, a cup loosely mounted in the pocket, and a valve ball rotatably suspended beneath and engaged by the cup, the cup having its lower end ground to conform to the contour of the ball.

5. A valve structure including a rotatable stem, a valve ball rotatably suspended beneath the stem, and a cup loosely fitting between the stem and ball and having its upper end rounded and fitting into a dished seat in the stem, the lower end of the cup engaging the ball and conforming to the contour thereof.

6. A valve structure including a rotatable stem, a head at the inner end of said stem, a valve ball rotatably suspended beneath said head, and a cup loosely mounted between the ball and head and freely rotatable whereby the stem may rotate independent of the ball when the ball is resting upon a valve seat.

In testimony whereof I have hereunto set my hand.

LOUIS WASEM.