

May 20, 1924.

K. KAWALLE

1,494,786

BALL VALVE

Filed March 14, 1921

2 Sheets-Sheet 1

Fig. 1.

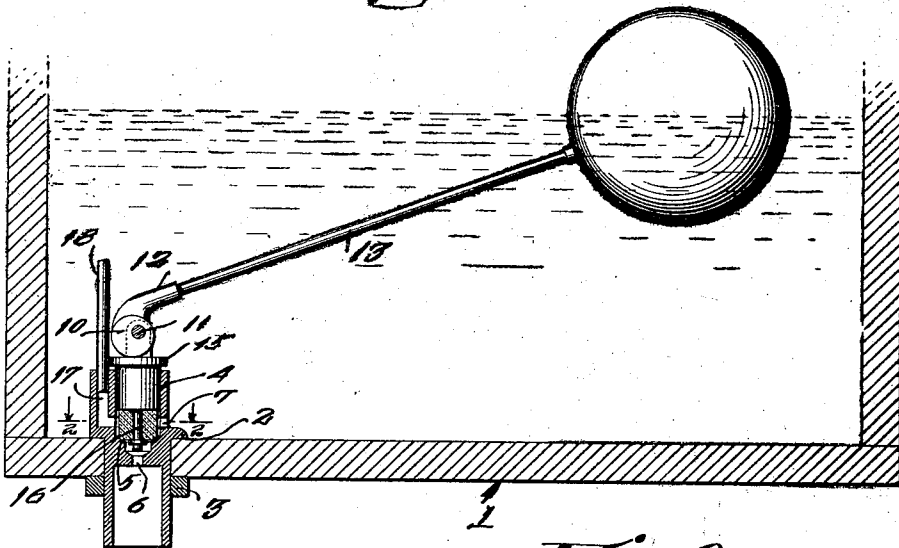


Fig. 2.

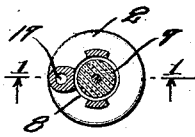
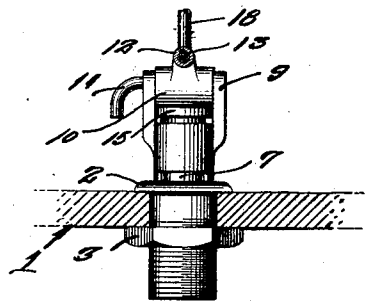


Fig. 3.



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Fig. 4.

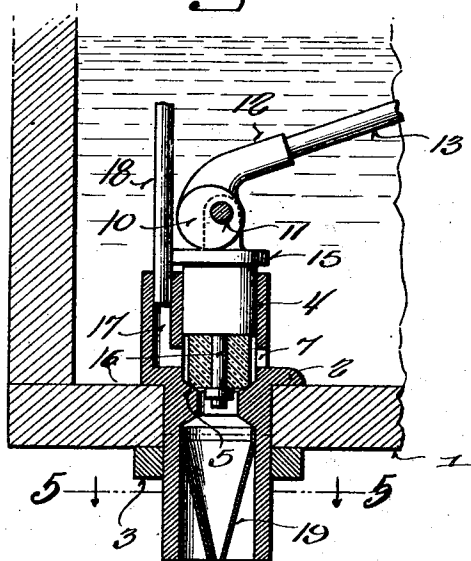
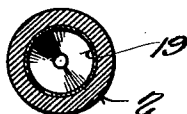


Fig. 5.



Witness:
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UNITED STATES PATENT OFFICE.

KARL KAWALLE, OF MANITOWOC, WISCONSIN.

BALL VALVE.

Application filed March 14, 1921. Serial No. 451,980.

To all whom it may concern:

Be it known that I, KARL KAWALLE, a citizen of the United States, and resident of Manitowoc, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Ball Valves; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to improvements in tank-valves or the like, and particularly to that type which is operated by a cam.

The object of my invention is to provide a valve of the class described, wherein a quick movement is given to the valve located in a casing which is provided with a valve seat, the casing being that adapted to discharge liquid from a suitable source of supply.

A further object of my invention is to provide a tank-valve or the like, whereby the valve is moved to its seat by a cam, the latter being entirely free from all connections therewith.

A further object of my invention is to provide a valve, wherein the operating elements are so arranged that free rectilinear movement of the valve to and away from its seat is obtained, thus eliminating the usual wear and tear of the valve.

Another object of my invention is to provide means arranged within the main waterway of the valve casing that will eliminate the usual "whistling or hissing" sound that is caused by the high pressure under which the water flows through the valve.

Another object is the production of a valve which shall be simple and compact in construction, capable of being readily applied to a supply tank, or the like, and removed therefrom or repaired, and having its parts so arranged that the "hammer action" usually common in valves of this type, is eliminated.

My invention consists of the improvements which I will now proceed to describe and claim.

In the accompanying drawings:—

Figure 1 represents a sectional view on the line 1—1 of Figure 2, of my improved valve, as applied to a supply tank.

Figure 2, a section on the line 2—2 of Figure 2.

Figure 3, a front elevation of the valve.

Figure 4, an enlarged view similar to Fig-

ure 1, showing the means within the lower chamber for reducing the water pressure in the valve body, and

Figure 5, a section on the line 5—5 of Figure 4.

Referring to the drawings in detail, the numeral 1 designates a supply tank of any preferred construction, having arranged therein in any place my improved valve, the same adapted to function upon the upward or downward movement of a float-actuated arm connected therewith.

As shown in the drawings, the tank 1 has provided in its bottom portion an opening through which the lower portion of the valve casing projects. The valve casing has in its intermediate portion a flange 2, which rests upon the inner surface of the tank bottom, while its lower end is threaded to receive the securing nut 3 and the usual water-main connections.

The upper part of the casing has therein a valve-receiving chamber 4, while its intermediate interior portion has provided therein the valve seat 5, through the central portion of which is the water passage-way 6. The upper portion of the casing has formed therein diametrically opposite and in a plane with the horizontal face of the flange 2, water outlets 7 and 8. Formed on the exterior of the upper portion of the casing and diametrically opposite are upwardly extending arms 9, between which the operating cam 10 is pivoted, the latter being removably held therein by a pin or bolt 11, one end of which is curved, thus eliminating the necessity of using a wrench when repairing the valve. The cam 10 has formed thereon an arm 12, having therein a socket in which the arm 13 is fitted, the outer end of which has secured thereto the float 14.

Vertically movable within the chamber 4, is a valve composed of a head 15, which overlies the upper edge of the valve casing and prevents any water that might leak by the valve body, hereinafter described, from being squirted against the top of the tank or ceiling.

The head 15 has secured to the central part thereof the depending shank 16, upon which a suitable valve is fitted and held thereon in any desired manner. The valve is of such a length that when its end is properly seated upon the valve seat, its upper end or head is

slightly spaced from the casing, the purpose of which is to provide for the wearing of the valve.

Formed upon the upper surface of the flange 2, and midway of the outlet 8, is a vertically disposed passage 17, the lower end of which is in communication with the valve chamber 4, while its upper end has connected thereto the overflow pipe 18, the purpose of which is to fill the trap after the bowl has been flushed.

In order that the usual whistling or hissing sound which is common in valves of this type may be eliminated, I have arranged within the lower portion or chamber of the casing, as disclosed in Figure 4, a conical shaped member 19, the purpose of which is to reduce the pressure of the water before it reaches the valve and its outlets. The member 19 is arranged within the chamber with its small end extending downward, while its enlarged end is pressed outwardly against the inner surface of lower chamber and adjacent the valve seat. If desired, the enlarged end of the member may be provided with a rib which will be resiliently held within a groove formed in the lower chamber and adjacent the valve seat.

I believe that the operation of my improved valve will be clearly understood from the hereinbefore description, but by way of explanation, the operation may be briefly stated as follows. Assuming the supply tank 1 to be full and the supply valve closed, as shown in Figure 1, as the outlet valve (not shown) is opened, the float will descend as the water passes from the tank, rotating the cam upon its pivot and thus permitting the valve to be forced from its seat by the water pressure in the main, thereby permitting the tank to be refilled. As the float rises with the water in the tank, the cam bears upon the head of the valve and closes the same. Thus it will be seen that the

valve has a free rectilinear movement and is not in any way connected to the cam, thereby reducing all wear and tear upon the valve. Furthermore, by the placing of the funnel shaped member within the lower chamber the pressure of the water is reduced considerably before it reaches the valve and its outlets, thereby eliminating the whistling or hissing sound. It is to be understood that the pressure of the water after it passes through the member 19 will be sufficient to operate the valve under all conditions.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

A valve of the class described comprising a casing having upper and lower chambers, a passageway between said chambers and a valve seat surrounding the same, a valve movable within the upper chamber and adapted to rest on said seat, operating means for said valve, means within the lower chamber for reducing the pressure of the water prior to its entry into said passageway, said means comprising a cone shaped member having its base adjacent to and surrounding said passageway, and said cone shaped member having its base pressed outwardly against the inner surface of the lower chamber.

In testimony that I claim the foregoing I have hereunto set my hand at Manitowoc, in the county of Manitowoc and State of Wisconsin.

KARL KAWALLE.