July 22, 1952 O. H. SCHUH 2,603,793

WATER GUARD AND GUIDE FOR BALL VALVES

Filed Feb. 9, 1951

Fig. 1

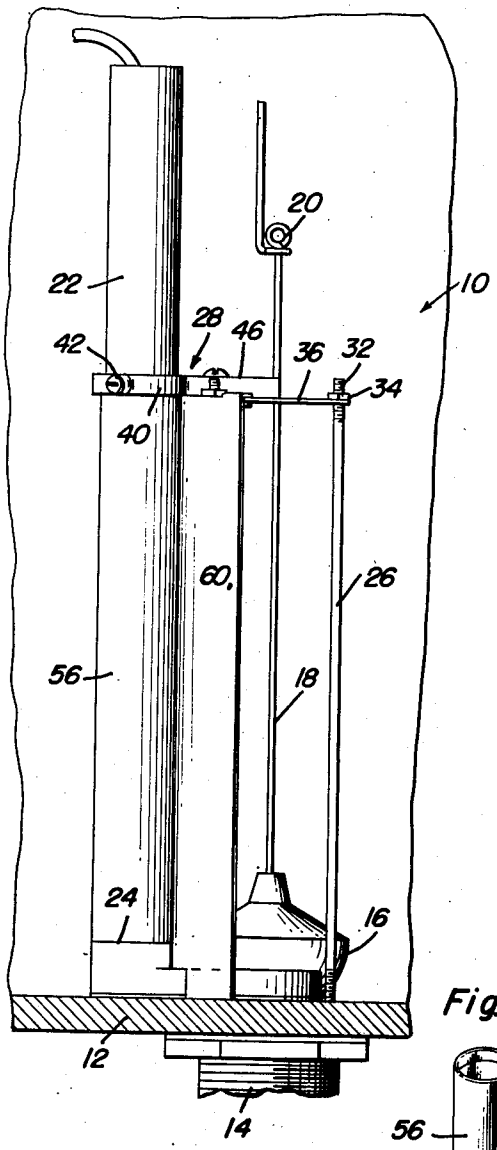


Fig. 3

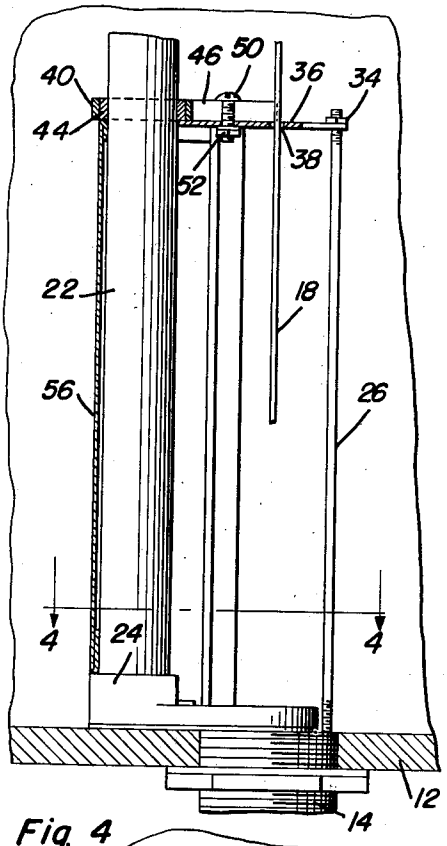


Fig. 4

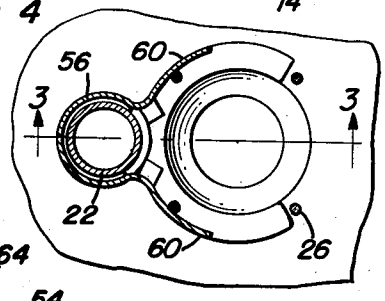


Fig. 5

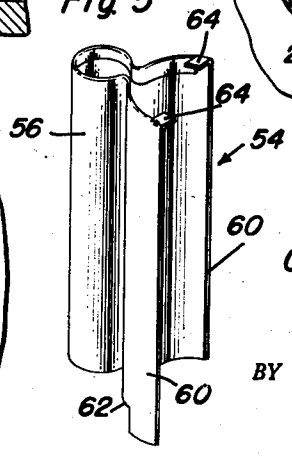
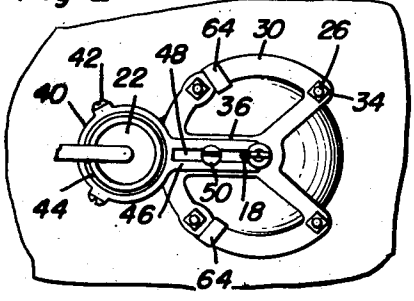


Fig. 2



Otto H. Schuh

INVENTOR.

BY Thomas A. Robinson and Harvey B. Jackson

Attorneys

Patented July 22, 1952 2,603,793

UNITED STATES PATENT OFFICE

2,603,793

WATER GUARD AND GUIDE FOR BALL VALVES

Otto H. Schuh, San Francisco, Calif.

Application February 9, 1951, Serial No. 210,218

2 Claims. (Cl. 4—57)

1

This invention relates to an attachment for a flush-type water closet.

The conventional flush-type water closet includes a discharge flush pipe which is selectively opened and closed by a ball valve suspended upon a lift rod actuated by a manually operated trip mechanism. The closet also includes an overflow or stand pipe and a float valve which fills the closet with water after the ball valve has descended and has closed off the discharge flush pipe. It is frequently found that because the ball valve is not guided in its vertical ascent and descent and because of the water entering the closet and exerting lateral pressure on the ball valve, the latter does not effectively close off the discharge flush pipe. It is, therefore, the primary object of this invention to provide an attachment in the form of a combined water guard and guide which will effectively overcome this disadvantage.

Another important object of this invention is to provide a device of the character described which is adjustable to accommodate various water closets in which the overflow or stand pipes differ in diameter and also where the distance between the stand pipes and the discharge flush pipes vary.

A further object of this invention is to provide a device of the character described which is relatively simple in design and construction, inexpensive, and easy to assemble and adjust within a conventional water closet.

These, together with various ancillary objects and features of the invention which will later become apparent as the following description proceeds, are attained by the device, a preferred embodiment of which has been illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a side elevational view of the device shown assembled in a water closet;

Figure 2 is a top plan view of the device shown in Figure 1;

Figure 3 is a sectional view taken substantially on the plane of section line 3—3 of Figure 4;

Figure 4 is a sectional view taken substantially on the plane of section line 4—4 of Figure 3; and

Figure 5 is a perspective view of the guard per se.

Specific reference is now made to the drawings. In the several views in the accompanying drawings and in the following specification reference characters indicate corresponding elements throughout.

Indicated generally at 10 is a conventional water closet provided with a bottom member or

2

floor 12 through which extends and to which is secured in a conventional manner a discharge flush pipe 14. A conventional ball valve 16 is provided to which is secured a vertically extending lift rod 18 connected at its upper end as at 20 to any manually operable trip mechanism (not shown) for raising the ball valve from its seating engagement with the inner end of the discharge flush pipe 14. An overflow or stand pipe 22 is secured in the water closet spaced from the flush pipe 14 and is provided at its lower end with a shoulder 24. The present device is constructed and designed to guide the vertical movement of the ball valve 16 and to prevent its displacement from the flush pipe by the lateral pressure of the water coming out of the ball cock or float valve (not shown) when the ball valve is descending and moving into seating engagement with the flush pipe.

The device comprises a plurality of vertically extending guide rods 26 which rest at their lower ends on the bottom 12 of the water closet and are circumferentially spaced about the inner end of the flush pipe 14 and the ball valve 16 as shown clearly in Figure 1. A clamp means 28 is provided for adjustably and removably securing the upper ends of the rods to the overflow pipe 22 and for guidingly receiving the lift rod 18.

This clamp means includes an arcuate plate 30 somewhat in the form of a spider which is provided with a plurality of spaced apertures tightly receiving the upper ends 32 of the guide rods 26, closure nuts 34 being provided upon the upper ends of the rods. The spider-like plate 30 is provided with a laterally extending central portion 36 having an aperture 38 slidably and guidingly receiving the lift rod 18. A substantially circular collar 40 embraces the overflow or stand pipe 22 and is secured thereto by appropriate set screws 42. Inasmuch as the overflow or stand pipes of different water closets differ in external diameter, the internal diameter of the clamp collar 40 is made relatively large to permit the use of a shim or sleeve 44 which is interposed between the inner surface of the collar and the outer surface of the stand pipe. The collar is further provided with an integral laterally extending arm 46 which extends over and bears against the central portion 36 of the plate 30. A headed screw 50 extends through the slot 48 and through a suitable aperture in the central portion 36 of the plate 30 and receives a lock nut 52 at its free end. Thus it will be seen that the relative distance between the collar 40 and the plate 30 may be adjusted laterally to accommodate the varying

distances between the stand pipe and the flush pipe in different water closets.

To prevent the water flowing into the closet from the float valve from unseating or preventing the ball valve 16 from properly seating on the flush pipe, a suitable guard 54 is provided which is shown in detail in Figure 5. The guard 54 is an elongated, vertical, preferably metallic member including an elongated split tube 56 which is made to embrace the overflow or stand pipe 22, the upper edge of the split tube abutting the lower edge of the collar 40 and the lower edge of the split tube abutting the collar or joint 24 at the bottom of the stand pipe. Extending from the split tube 56 at the split portion thereof is a pair of divergent arcuate legs 60 which open toward thet ball valve 16. In other words, the divergent arcuate legs 60 are interposed between the ball valve 16 and the stand pipe 22 as shown clearly particularly in Figures 1 and 4. The lower edge of one of the legs 60 has a cut-out portion 62 to allow the proper positioning of the guard 54. The upper free edges of the divergent legs 60 are provided with inwardly extending hooks or lugs 64 for suspending the guard 54 from the clamp plate 30 as shown more specifically in Figure 2.

In practical operation, the combined water guard and guide of the present invention is assembled in a conventional water closet in a manner which will be readily apparent to one skilled in the art. By virtue of the adjustability of the clamping means 28, the device can be assembled in a variety of water closets where the distance between the stand pipe and the flush pipe varies and there is variability in the diameter of the stand pipe itself. Because of the aperture 38 in the plate 30 slidably receiving the lift rod 18 and because of the position of the guide rods 26, it will be readily understood that the vertical movement, both ascent and descent, of the ball valve 16 will be properly guided. Also, because of the shape and arrangement of the guard 54 and the position of the legs 60 thereof between the ball valve and the stand pipe, it will not be possible for water entering the closet from the float valve to exert enough pressure on the ball valve 16 to unseat the same or even prevent the same from properly seating upon the inner end of the discharge flush pipe.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a water closet having a discharge flush pipe, an overflow pipe, a lift rod, and a ball valve carried by the lift rod and adapted to open and close the flush pipe, a water guard and guide means comprising vertical guide rods positioned at their lower ends in the closet and spaced about the flush pipe and ball valve, laterally adjustable clamp means securing the upper ends of said guide rods to said overflow pipe and slidably receiving said lift rod, and a guard comprising an elongated vertical split tube embracing said overflow pipe, elongated, vertical arcuate, generally divergent legs carried by said tube at the split portion thereof, said legs opening toward said ball valve and being disposed between the latter and said overflow pipe, and hooks carried at the upper ends of said legs for suspending the latter on said clamp means.

2. The combination of claim 1, wherein said clamp means includes a plate removably secured to the upper ends of said guide rods, said plate having an aperture slidably receiving said lift rod, a collar, means for securing said collar on said overflow pipe, said collar including a lateral arm having an elongated slot and bearing against said plate, and a headed set screw extending through said slot and plate.

OTTO H. SCHUH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,470,179	Metzger	Oct. 9, 1923
2,130,719	Heath	Sept. 20, 1938
2,189,345	Hillegas	Feb. 6, 1940
2,429,485	Pleasant	Oct. 21, 1947
2,482,970	Garratt	Sept. 27, 1949
2,494,655	Green	Jan. 17, 1950