LIFT WIRE GUIDE

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1. Claim. (Cl. 4—57)

This invention relates to plumbing fixtures and more particularly to a toilet flush tank.

It is an object of the present invention to provide a toilet flush tank valve ball stem support that will effectively guide the ball valve between various operative positions during use of the flush tank and which will permit such movement of the valve ball stem without binding or other interfering action.

Another object of the present invention is to provide a guide for a flush tank valve ball valve ball stem of the above type having a plurality of guide apertures, only one of which is used at any one time, so that the normal life span of the guide is substantially increased.

Other objects of the invention are to provide a flush tank valve ball stem support bearing an array of apertures in which each of the apertures is as small in size as possible so as to minimize parts, is inexpensive to manufacture and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevation view of a ball valve support guide made in accordance with one form of the present invention;

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

Figure 3 is a fragmentary side elevation view of a guide made in accordance with the present invention;

Figure 4 is a view similar to Figure 2, showing a modified form of construction; and

Figure 5 is a side elevation view of the device shown in Figure 4.

Having now more in detail to the present invention and more particularly to Figures 1 to 3 thereof, a toilet flush tank valve ball stem support 10 made in accordance with the present invention is shown to include a substantially horizontal base 14 having a vertical riser plate 15 secured at one end to the forward end of the base and terminating in a rearwardly extending flat 16. This flat is provided to provide a vertical web 17 that is further formed to provide an annular portion 18 with a free end or terminal web 19 in spaced apart facing relationship with the web 17. A bolt 20 extends through the terminal web 19 and intermediate web 17 for threaded engagement with an associated nut 21, whereby rotation of the bolt is operative to effect relative movement between the web 19 to vary the diameter of the annular portion 18.

The flat 16 and base 14 are both provided with a plurality of spaced apart apertures 23, 24, respectively, the apertures of the flat 16 being vertically spaced above the apertures 24 in the base. In actual use, the device is secured upon the overflow pipe 13 with one set of apertures 23, 24 in axial alignment with the normal path of movement of the stem 11 of the tank valve ball 12. This adjustment is made by loosening the bolt 20 and rotating the device 10 upon the overflow pipe 13. With the parts in proper assembled relationship, as shown in Figure 3, the apertures 23, 24 in the flat and base members slidably guide the stem 11 for the aforementioned vertical movement between the operating position of the ball valve 12. However, when one set of apertures 23, 24 becomes excessively enlarged, it is only necessary to slightly rotate the device upon the overflow pipe 13, to bring another set of apertures 23, 24 into axial alignment with the stem 11 for slidably receiving it thereby.

It will thus be recognized that the useful life of the device is substantially prolonged providing the additional sets of apertures for alternative use as they become worn.

It has been found that the entire device 10 can be preferably constructed of glass or copper so as to provide the non-corrosive features, as well as the necessary rigidity for satisfactory operation.

Referring now to Figures 4 and 5 of the drawing, a slightly modified form of construction 25 is shown to be constructed from molded plastic material in which an enlarged head 27 is provided with a plurality of spaced apart apertures 28 that are arranged along an arc of a circle having a center concentric with the center of an integral annular ring 33 associated therewith. A bifurcated shank 30 intermediate the head 27 and ring 33 has spaced apart legs that define a slot 31 therebetween. A bolt 34 extends through the legs of the bifurcated shank 30 into threaded engagement with a nut 35. It will thus be recognized that by adjusting the bolt 34, the size of the space 31 between the legs can be adjusted to correspondingly adjust the diameter of the ring 33, whereupon the device may be satisfactorily clamped to the overflow pipe of the flush tank. The operation of this embodiment of the invention is similar to that hereinbefore described in connection with Figures 1 to 3 of the drawing, except that this unit can be constructed of molded plastic material. In addition, as each of the apertures 28 through which the valve stem may be extended becomes worn, it is only necessary to insert the valve stem into another one of the apertures 18 and rotate the device about the longitudinal axis of the overflow pipe in order to bring the next used aperture into axial alignment with the normal movement of the valve stem to prevent any binding action that would otherwise interfere with the normal movement of the valve stem and valve ball.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claim.

What we claim as new and desire to protect by Letters Patent of the United States is:

A toilet flush tank valve ball stem support comprising a laterally-extending horizontal base portion, a vertical riser plate secured at one side to the forward end of the base portion and extending upwardly therefrom, a laterally-extending horizontal flat portion vertically spaced from and overlying the horizontal base and extending rearwardly from the upper end of the vertical riser plate, said horizontal flat portion having an extension that is twisted through ninety degrees therefrom so as to provide a vertically-extending web portion, an annular clamp portion extending from the vertically-extending web portion and adapted to be extended about a drain pipe, said annular clamp portion having a terminal web portion facing the vertically-extending web portion, said terminal web portion extending through said vertically-extending and terminal web portions and serving to tighten the annular portion upon the drain pipe, said horizontal base and flat portions having sets of aligned apertures for slidably receiving the ball valve stem lying in an arc about the axis of the drain pipe and adapted for alternate use.

References Cited in the file of this patent

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