Jan. 17, 1950 M. R. GREEN 2,494,655

ADJUSTABLE GUIDE DEVICE FOR FLUSH TANK BALL VALVES

Filed Feb. 16, 1949

Fig. 1.

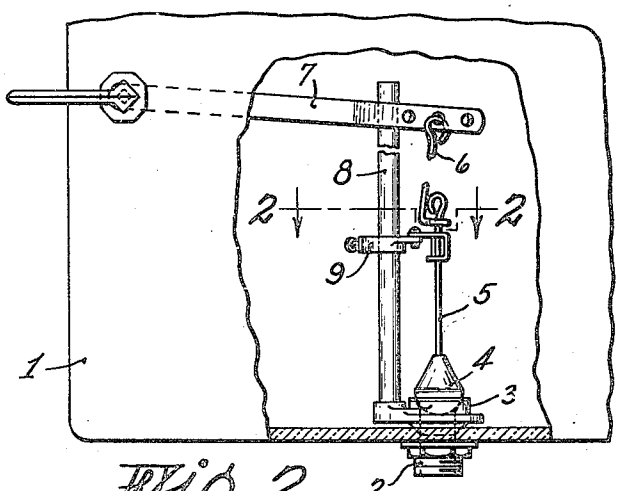


Fig. 2.

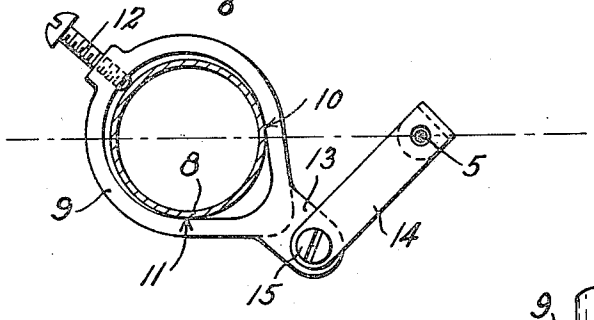


Fig. 5.

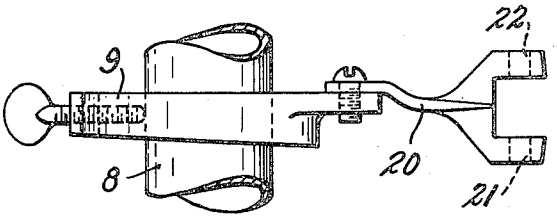


Fig. 3.

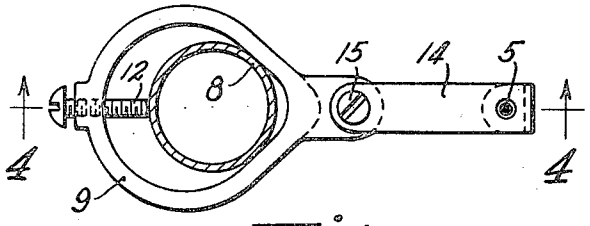
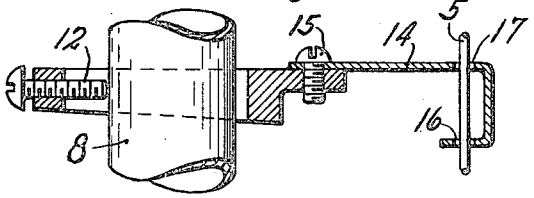


Fig. 4



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Patented Jan. 17, 1950 2,494,655

UNITED STATES PATENT OFFICE

2,494,655

ADJUSTABLE GUIDE DEVICE FOR FLUSH TANK BALL VALVES

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Application February 16, 1949, Serial No. 76,777

1 Claim. (Cl. 4—57)

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This invention relates to improvements in adjustable guides for use in mounting the tank ball valves of water closet flush tanks and has for its object to provide a guide device which may be quickly and easily installed either as an original piece of equipment or as a replacement part on any of the conventional flush tank outlet valve assemblies.

The many advantages of the invention will be readily apparent from the following disclosure of an embodiment of this invention as shown by the accompanying drawings, in which,

Fig. 1 is a view of a tank and an outlet valve assembly therein showing the guide mounted in position on the overflow pipe;

Fig. 2 is a plan view of the guide device as on line 2—2 of Fig. 1;

Fig. 3 is a similar view of the device as clamped on a pipe of smaller diameter;

Fig. 4 is a section on line 4—4 of Fig. 3; and

Fig. 5 is a side elevation of a modified form of guide arm.

A conventional flush tank 1 is shown by Fig. 1 with the usual outlet valve assembly mounted therein. Briefly, the valve outlet pipe 2 in the bottom of the tank is provided with a valve seat 3 on which a movable tank ball valve 4 is adapted to rest. The ball 4 has a vertical lower lift wire 5 attached thereto for lifting the ball off its seat when pulled upwardly by an upper lift wire 6 attached to the end of a trip lever 7. The tank ball 4 is lowered onto the seat 3 when the supply of water is exhausted from the tank chamber.

An overflow pipe 8 of the conventional valve is, as shown, vertically attached in the tank, the base of the pipe being attached to the assembly adjacent the outlet pipe and leading into the same below valve seat 3.

The tank ball 4 is adapted to be guided in the vertical raising and lowering of the same with respect to the seat 3 by its lift wire 5 which is held for vertical sliding movement in a guide bracketed to the overflow pipe 8. The guide as will be understood is for centering the ball valve 4 on the seat so that closure of the valve opening is complete.

Many forms of guide devices are to be found on the market. Yet, because of dimensional variations in the different parts of various valve assemblies as made by a great many manufacturers such devices are generally adaptable only to one type of installation or to a small number of conventional installations. As an original piece of equipment for the valve it is generally satisfactory. However, when one or more of the parts

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of a valve assembly is replaced the original guide device may or may not be adapted for the repaired assembly. And as often occurs, the ball valve will not seat properly, thus permitting water to leak through to the outlet 2. In any such instance where the guide is not functioning properly to seat the tank ball the additional replacement of the guide itself may be necessary.

The guide device of my invention is designed to eliminate the need for replacement if it is used as original equipment, and, if used as a replacement part, to be adapted for such replacement use where an overflow pipe of standard size is used.

As shown by the drawings the device is in the form of a collar 9 having an egg shaped opening with two converging sides as at 10 and 11. Collar 9 fits over the overflow pipe and is received for slidable adjustment vertically and rotatively on the pipe. In the actual embodiment of the device the opening is designed for any size of pipe 8 up to one and a quarter inches diameter, the largest size known to me as used for this purpose.

Opposite the point of convergence of sides 10 and 11 a clamp screw 12 is threaded in the collar wall, projecting into the opening so as to be turned against the pipe thus fixing the collar securely in position. Thus, as seen best in Fig. 3, at least a three point clamping contact of the collar with respect to a pipe 8 is had so as to effectively prevent any rocking or swaying of the collar when in clamped position on any size of pipe.

Opposite said clamp screw a lug 13 is provided on the periphery of the collar and on the lug is mounted one end of a horizontal arm 14 held for horizontal pivoting movement as by a retaining screw 15 threaded into the lug. The screw 15 also serves as a clamping means to hold arm 14 fixed in any angular position to which it may be adjusted with respect to the collar 9 and pipe 8. The outer end of the arm, as in Fig. 4, is provided with a reverse bend to form vertically spaced outer portions in which are provided two vertically aligned openings 16 and 17. In said openings lift wire 5 is slidably mounted to hold the wire in alignment with the axis of the valve outlet opening and thus center the tank ball valve over the seat 3.

As will be appreciated by consideration of Figs. 2 and 3, the device is adapted for adjustment to register the sleeve guide formed by aligned openings 16 and 17 in the arm with a lift wire 5 rising vertically at any point adjacent the overflow pipe. While the axis of the overflow pipe 8 is

usually on a line parallel to the axis of the valve outlet opening, in different assemblies the spacing between the two axis lines may vary to a considerable extent depending on the particular construction. It will be seen that by rotating the collar on the pipe and swinging arm 14 the openings can be centered at any desired point and be securely fixed for operation with wire 5.

The arm 14 may be made from a stamping as shown by Figs. 1 to 4 or it may be cast or forged. The arm 20 of Fig. 5 shows a cast part and in this form the outer portion is bifurcated to provide in the spaced portions of the end the aligned openings 21 and 22.

Having disclosed my invention, I claim:

A tank ball guide device adapted for mounting on the overflow pipe of a flush tank valve the latter being opened and closed by a tank ball having a lift wire for vertically raising and lowering the ball adjacent said pipe, said device comprising, a collar having an opening for slidable and rotative adjustment of the collar on said overflow pipe, said opening having two angular converging sides with a clamp screw threaded in the collar

wall opposite said converging sides and projecting into the opening in a direction toward said point of convergence, a horizontally disposed arm pivotally mounted at its inner end on the periphery of the collar for horizontal swinging movement, said arm at its outer end having a reversely bent portion thereof provided with vertically aligned guide openings to receive said lift wire for vertical guided movement of said tank ball.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,832,714	Le Tarte	Nov. 17, 1931
1,949,092	Van Dyke	Feb. 27, 1934
2,098,687	Kinsfather	Nov. 9, 1937
2,217,320	Romaine	Oct. 8, 1940
2,412,398	Engman	Dec. 10,1946