April 17, 1951 L. A. MINTON 2,549,700

GUIDE FOR BALL FLUSH VALVES

Filed July 8, 1948

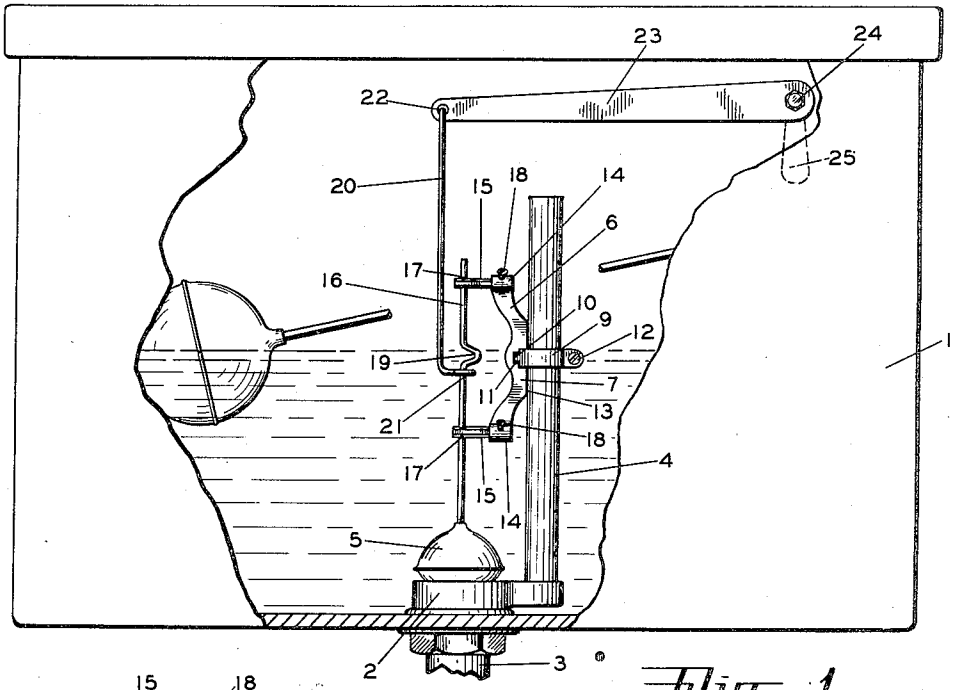


Fig. 1

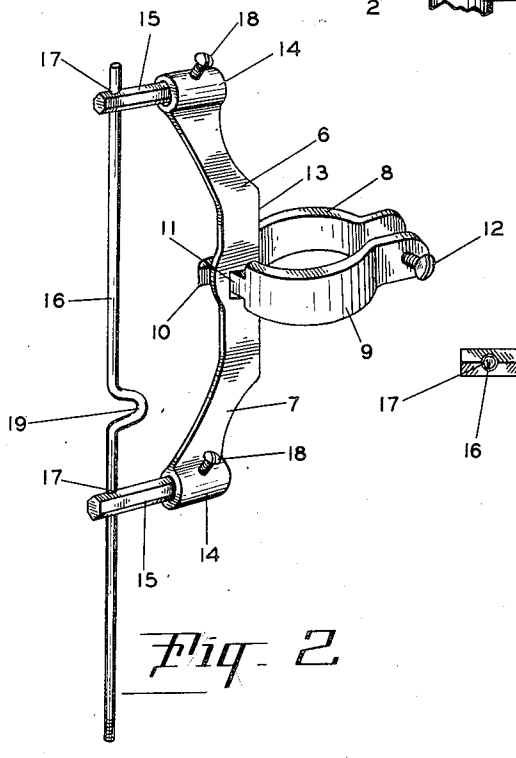


Fig. 2

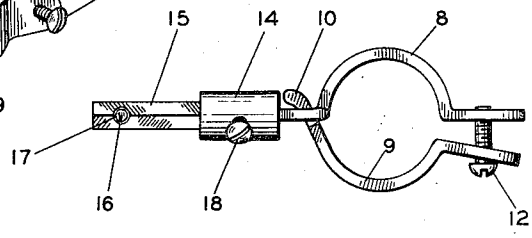


Fig. 3

INVENTOR.
LESLIE A. MINTON
BY
ATTORNEY

Patented Apr. 17, 1951

2,549,700

UNITED STATES PATENT OFFICE

2,549,700

GUIDE FOR BALL FLUSH VALVES

Leslie A. Minton, Portland, Oreg.

Application July 8, 1948, Serial No. 37,699

5 Claims. (Cl. 4—57)

1

My invention relates to improvements in guides for ball flush valves and it is particularly adapted to be used on the ball flush valve used in connection with toilet tanks.

In the operation of ball flush valves considerable trouble is experienced in the reseating of the same, due to the fact that the guide stem of the ball binds within the present form of guide. Also in many cases it is difficult to adjust the stem of the ball valve directly over the valve seat; therefore, it is the primary object of my invention to provide a ball flush valve guide that can be adjusted so as to center the ball directly over the seat of the valve.

Another object of my invention is the provision of the guide that will guide the stem of the valve directly over the valve seat eliminating all binding action of the stem in its up and down operation.

A still further object of my invention is the provision of a guide for guiding the stem of ball valves that can be installed within the toilet without any alterations being performed on the tank itself.

These and other incidental objects will be apparent in the drawings, specification and claims.

Referring to the drawings:

Figure 1 is a rear view of a conventional toilet tank with part of the rear wall broken away to show my new and improved ball valve guide mounted therein.

Figure 2 is a perspective view of my new and improved guide before installation.

Figure 3 is a plan view of Figure 2.

Referring more specifically to the drawings:

As shown in Fig. 1, a standard toilet tank 1, is provided with the usual ball flushing valve seat 2 communicating with the flushing pipe 3, and has the over-flow pipe 4 associated therewith. This valve and over-flow pipe is standard equipment and is found in all toilet tanks including the rubber ball valve 5.

My invention consists of a guide unit 6, comprising a bracket 7 having the clamp member 8 extending therefrom in rigidly fixed relation and adapted to partially embrace the over-flow pipe 4. A companion clamp 9 having a finger 10 adapted to pass through the opening 11 within the bracket 7 also partially embraces the over-flow pipe and is clamped thereto by the adjusting screw 12 extending through the clamp member 9 and threading into the clamp member 8.

A flat edge portion 13 is formed on the bracket 7 and is adapted to engage longitudinally the surface of the over-flow pipe preventing any wobble

2

and securely holding the guide unit to the over-flow pipe. Adjustably mounted within the ends 14 of the bracket 7 are guide members 15 through which the valve stem 16 operates by way of the guide holes 17.

The position of the guide members 15 is determined by the set screws 18. I provide a special valve stem 16, having an offset 19 for engaging the pull rod 20. The pull rod 20 has a loop 21 through which the valve stem 16 operates. This pull rod is pivotally connected at 22 to the lever 23, which is fixedly secured to the shaft 24 passing through the tank and terminating in the trip lever 25. The trip lever 25 already forms part of the toilet tank and previously operated the valve ball mechanism that my guide unit 6 is replacing.

I will now describe the operation of my new and improved ball guide valve unit. When the bracket 7 of the guide unit 6 is secured to the over-flow pipe 4 as above described, the valve stem 16 is adjusted so that the ball 5 will be lined up with the valve seat 2. This is accomplished by adjusting the guide members 15 in the ends 14 relative to the bracket 7 and locking the same in place by the set screws 18. The set screws 18 are set at an incline as illustrated, so that the operator can have access to them with a screw driver.

When the trip lever 25 is tripped, operating the lever 23 through the shaft 24, the pull rod 20 will raise the ball 5 in the usual manner. The two guide members 15 will then allow the ball to reseat in perfect alignment with the seat of the valve. The pull rod 20 is connected to the valve stem 16 beneath the offset 19 in such a manner as to permit the ball valve to seat after the trip mechanism has returned to normal position.

One of the outstanding features of my invention is that the pull rod 20 is slidably connected to the valve stem 16 between the guides 15 of the guide unit 6, insuring smooth operation. By the use of my new and improved guide, the ball valve will always return to its seating position without any binding whatever of the stem 16, and this is the primary object of the construction shown in my new and improved guide for ball valves.

What I claim is:

1. A guide and support for a valve for flush tanks comprising in combination a valve seat, a vertically disposed valve stem and valve cooperating with said valve seat, the valve stem having a lug, a vertically disposed support adjacent said valve seat to be parallel with the valve stem, a bracket, means connected to said bracket for

adjustably securing said bracket to the vertical support, a pair of support elements respectively at the upper and lower ends of said bracket, a pair of guide members each having an opening for slidably receiving the valve stem, said guide members respectively being adjustably mounted on said support elements with their openings in vertical alignment and slidably guiding said valve stem, a pivoted operating lever, and a pull-rod pivoted to the operating lever and loosely embracing the valve stem for engagement with the lug to open the valve.

2. A valve guide and support for flush valves comprising a vertically disposed bracket adapted to be mounted on a vertical support adjacent the valve, a clamp on the bracket for securing the bracket to the support, sockets formed at the upper and lower ends of the bracket, a guide member fitted in each socket, the guide members having corresponding openings for receiving and guiding the valve stem, means for individually securing the guide members in adjusted position to vertically align the openings therein, a valve stem fitted in the aligned openings, a projection formed on the stem intermediate the guides, and a valve operating connection loosely engaging the valve stem below the projection.

3. A valve guide and support for flush valves as defined in claim 2, wherein the bracket is formed with a flat edge portion to engage longitudinally the vertically disposed support, said bracket being formed with a slot, and said clamp fitting in the slot to attach the bracket to the support.

4. A valve guide and support for flush valves defined in claim 2, wherein the bracket is formed with a slot, and said clamp extends from the bracket, said clamp comprising a member rigid with the bracket, a second member having a reduced end engaging in the slot in the bracket, and a bolt engaging the free ends of the members.

5. A valve guide and support for flush valves comprising in combination a valve seat, a valve stem and valve cooperating with said valve seat, the stem having a projection, a vertical support, a bracket having a vertical edge to engage the support and provided at its upper and lower ends with adjustable guides through which the valve stem passes, the bracket having a slot, a clamp comprising a rigidly fixed member extending from the bracket, a loose member having a reduced end to engage the slot, and a screw at the outer ends of the two members to clamp the bracket to the support, and an operating member loosely engaging the valve stem below the projection.

LESLIE A. MINTON.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
868,088	Heap	Oct. 15, 1907
1,576,299	Behrer	Mar. 9, 1926
1,991,907	Platt	Feb. 19, 1935
2,004,504	Lyons	June 11, 1935
2,206,235	Powers	July 2, 1940