Feb. 7, 1961 H. D. LASSITER 2,970,319

FLUSH TANK VALVE ASSEMBLY

Filed March 23, 1959

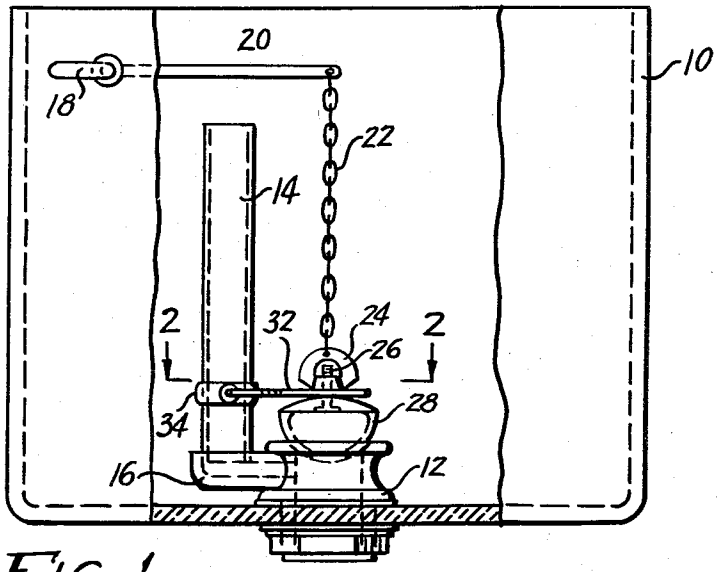



FIG. 1

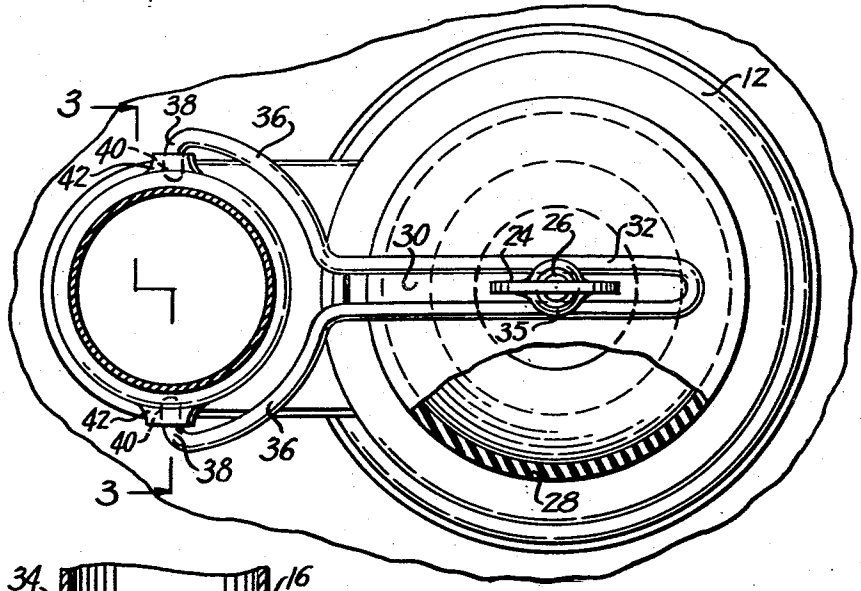



FIG. 2

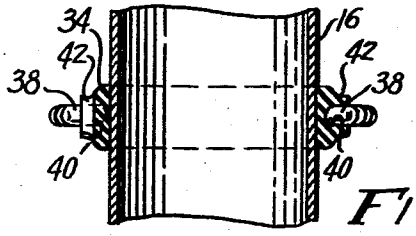



FIG. 3

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United States Patent Office 2,970,319 Patented Feb. 7, 1961



2,970,319

# FLUSH TANK VALVE ASSEMBLY

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Filed Mar. 23, 1959, Ser. No. 801,133

1 Claim. (Cl. 4—57)

This invention relates to a flush control unit for a tank float valve apparatus, and it particularly relates to novel attachment and supporting means for the valve.

As is well known, ball valves of buoyant construction are generally used in flush tanks for closing the outlet pipe of the tank. The ball is lifted by a vertically guided rod attached to a lever operated by a handle on the exterior of the tank to permit the water to flow through the outlet pipe. Then as the level of the water descends, the ball floats down until it seats on the outlet pipe closing it to further outward flow from the tank. However, since the ball must carry the entire weight of the rod during closing movement, the rod must be, of necessity, very light and fragile and easily damaged.

In order to solve the aforesaid problem, it was proposed to substitute a flexible chain for the guided supporting rod and to then support the ball on an arm hingedly connected to the conventional overflow pipe. The chain, being connected to the lever operated by the handle, was used to lift the ball from its seat, after which the hinged arm supported the ball while it gradually was moved toward its seat by the descending level of the water in the tank.

The above type of construction was a great improvement over prior flush tank arrangements but was subject to the disadvantages inherent in the relative complexity of the hinged arm structure which tended to become clogged and rusty thereby making it difficult to replace the unit when it became damaged. The rust and dirt also interfered with the effective operation of the device. Furthermore, the construction of this type of mechanism made it necessary to adapt it to the various specific types of flush tanks and overflow pipes so that they had to be made in various sizes and shapes.

It is one object to overcome the above disadvantages by providing a hinge-type flush tank valve apparatus which is free from any tendency to become clogged by dirt and rust and which is selectively utilizable with various sizes and shapes of flush tank and overflow pipe structures.

Another object of the invention is to provide an apparatus of the aforesaid type which is relatively simple in construction and operation and which may be easily installed and replaced.

Other objects of the present invention are to provide an improved flush tank valve construction, of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawing in which:

Fig. 1 is a side view of a tank, said view being partly in elevation and partly broken away to reveal a flush tank valve apparatus embodying the present invention.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.



Referring in greater detail to the drawing wherein similar reference characters refer to similar parts, there is shown a flush tank 10 having an outlet pipe 12, an overflow pipe 14 connected by elbow 16 to pipe 12 and a handle 18 connected to one end of a lever 20. The lever 20 is connected, at its other end, to the flush control unit of this invention including one end of a chain 22 the other end of which is connected to a wing nut 24.

The wing nut 24 is threadedly engaged with a stud 26 extending from the top of a float valve 28 constructed of a resilient material such as rubber or the like. The stud 26 extends through a slot 30 in an arm 32 extending laterally from a collar 34 encircling the overflow pipe 14. The wing nut bears on a washer 35 overlapping the slot 30 to hold the float valve 28 in adjusted position longitudinally of slot 30.

The arm 32 is connected to the collar 34 by a hinge connection formed by lateral extensions 36 which are provided at their free ends with inwardly-extending fingers 38. These fingers 38 are releasably insertable into apertures 40 provided in lateral ears 42 extending from opposite sides of collar 34.

The collar 34 is constructed of a resilient stretchable, contractible, non-metallic material such as rubber or the like, permitting it to firmly engage around overflow pipes of various sizes and shapes. The extensions 36 are constructed of flexible material so that they can exert a spring-like retaining action to hold the fingers 38 in the apertures 40 of ears 42.

The construction of arm 32 and extensions 36, as illustrated, comprises a metal wire bent into the elongated contour of the arm 32 to form the elongated slot 30 and having its ends bent and twisted into the shape shown. However, in addition to the type of construction illustrated, the arm 32 and its extensions 36 may also be constructed of molded material such as a vinyl plastic or the like. It may also be formed of a machined and shaped metal strip or the like.

The function and operation of the above-described construction is obvious from the structure thereof. The float valve 28 is adjustable along the arm 32 to conform to the distance between the overflow pipe 14 and outlet pipe 12 for any particular tank. The releasable hinge construction between fingers 38 and ears 42 of the collar 34 makes it exceedingly simple and easy to disconnect the arm 32 from the collar 34 when repair or replacement is necessary. The flexible nature of the extensions 36, although affording a positive connection between the extensions 36 and the collar 34 permits a severing of this connection with little effort or skill required. Furthermore, the resilient nature of the collar 34 and ears 42 not only permits the collar 34 to adjust to various different types of pipes but also prevents the accumulation of rust or clogging dirt particles in the hinge connections.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

A flush control unit comprising a collar of resilient, stretchable, contractible, non-metallic material arranged for firmly engaging around a flush tank overflow pipe, said collar having a pair of ears offset outwardly thereon at diametrically opposite positions with diametrically aligned pivot apertures in said ears, a yoke member formed with a pair of symmetrical leg portions jointed at one end and extending adjacent the joined ends thereof in relatively closely spaced parallel relation providing a slot therebetween for a substantial length and then spread-

ing to terminate at inwardly angled pivot arm portions releasably fitting into said pivot apertures with the inwardly extending ends abutting the inner ends of said apertures, and a ball valve secured at the closely spaced length of said leg portions by fastening means extending centrally from said ball valve and between said leg portions and seated on a clamping washer overlapping said slot, said fastening means comprising a threaded stud extending centrally from said ball valve through said slot, a wing nut threaded on said stud and clamping said washer against said leg portions, and a lift chain secured at one end centrally of said wing nut.




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