Aug. 15, 1950 B. O. GRAHAM 2,518,679

GUIDE-BRACKET FOR FLUSH TANK VALVE-STEMS

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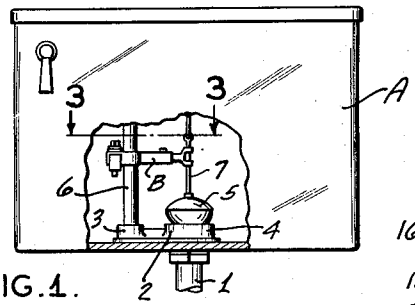


FIG. 1.

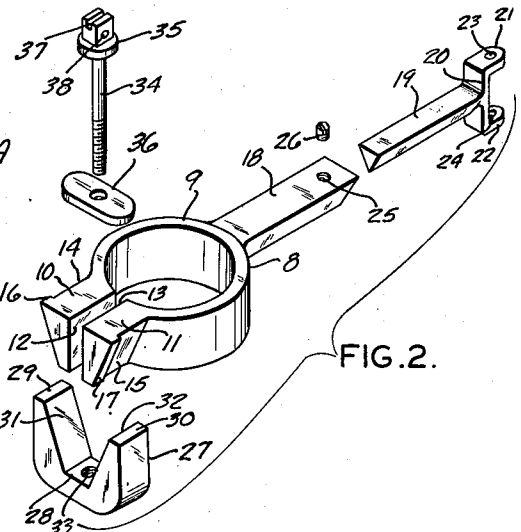


FIG. 2.

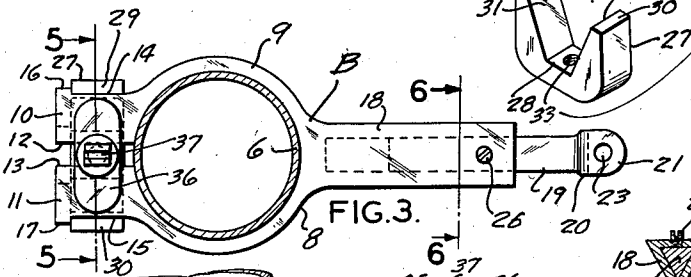


FIG. 3.

FIG. 6.

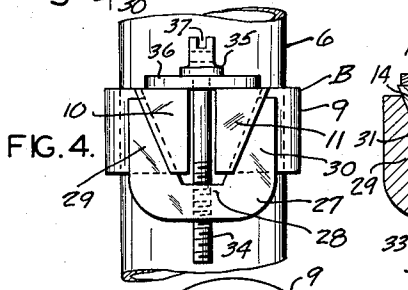


FIG. 4.

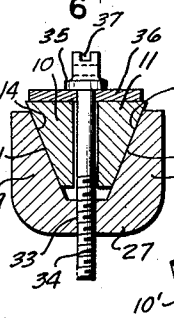


FIG. 5.

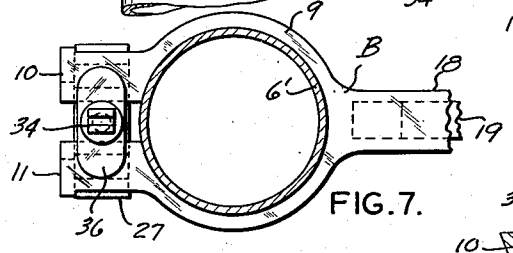


FIG. 7.

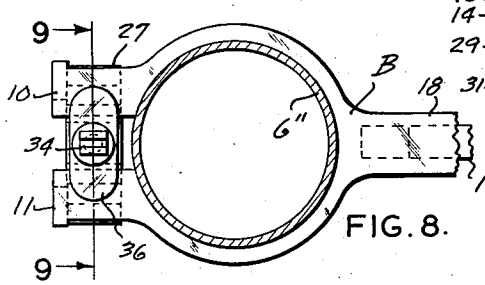


FIG. 8.

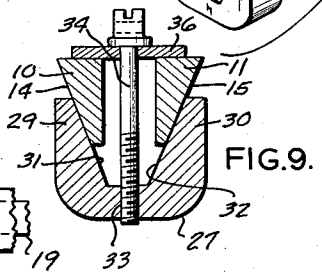


FIG. 9.

FIG. 10.

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GUIDE BRACKET FOR FLUSH TANK VALVE STEMS

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6 Claims. (Cl. 4—57)

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This invention relates generally to flush tanks. More particularly, my invention has to do with the valve-stem guiding bracket of such a tank and has for its object the provision, as a new article of manufacture, of a bracket which is uniquely constructed for attachment upon tank over-flow pipes of different diameters, which may be readily and inexpensively manufactured, which may be easily installed, and which is efficient in the performance of its intended functions.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing—

Figure 1 is a reduced elevational view, partly broken away and in section, of a flush tank equipped with a valve-stem guiding bracket of my invention;

Figure 2 is an exploded perspective view of a flush tank bracket constructed in accordance with and embodying the present invention;

Figure 3 is a top plan view of the flush tank bracket constructed in accordance with and embodying the present invention;

Figure 4 is an end elevational view of the flush tank bracket in association with an over-flow pipe of a flush tank;

Figures 5 and 6 are transverse sectional views of the flush tank bracket taken along lines 5—5 and 6—6, respectively, of Figure 3;

Figures 7 and 8 are fragmentary top plan views of the flush tank bracket as it appears when installed on over-flow pipes of larger diameters than the over-flow pipe shown in Figure 3;

Figure 9 is a transverse sectional view of the flush tank bracket taken along line 9—9 of Figure 8; and

Figure 10 is an exploded perspective view of a modified form of flush tank bracket constructed in accordance with and embodying the present invention.

Referring now in more detail and by reference characters to the drawing, which illustrates practical embodiments of the present invention, A designates a flush tank of any standard or approved type, forming part of which is a discharge pipe 1 held in place within a combination fitting 2 formed preferably of cast brass and integrally including an over-flow pipe connection 3 and a valve seat 4 for operative co-operation with a conventional valve closure element or syphon ball 5. Conventionally mounted in and

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extending upwardly from the over-flow pipe connection 3 is an over-flow pipe 6. The syphon ball 5 is actuated to and from its seat, as is well known, by suitable means, which includes a stem or pull rod 7 which extends upwardly from the syphon ball 5 and should, for proper operation, travel upwardly and downwardly in a straight path.

Provided for removable and adjustable disposition upon the over-flow pipe 6 is a flush tank guide bracket B comprising a main member 8 integrally including a circular C-clamp portion 9 formed preferably of a somewhat soft metal, as annealed bronze, for example, and provided with two spaced end lugs 10, 11, having inwardly presented juxtaposed flat faces 12, 13, and outwardly presented inclined or beveled faces 14, 15, terminating in raised angularly extending stop shoulders 16, 17. Extending radially outwardly from the C-clamp portion 9 on the opposite side thereof with respect to the end lugs 10, 11, is an arm 18 of triangular cross-sectional shape and being hollow for a substantial portion of its length inwardly from its outer end for receiving a complementarily shaped triangular arm 19, which is, in turn, integrally provided at its outer end with a vertically disposed clevis-like element 20 having spaced parallel ears 21, 22, provided with vertically aligned bores or apertures 23, 24, of sufficient size to slidably accommodate the stem or pull rod 7.

Adjacent its outer end, the arm 18 is provided with an internally threaded aperture 25 for accommodating a small set screw 26 by which the arm 19 may be tightly held in any desired position of lengthwise adjustment with respect to the arm 18, so that, within reasonable limits of adjustability, any desired distance between the center line of the C-clamp portion 9 and the center line of the apertures 23, 24, can be obtained for reasons presently more fully appearing.

Provided for clampwise co-operation with the end lugs 10, 11, is a U-shaped clamp member 27 integrally including a normally horizontal bight portion 28 and two upstanding legs 29, 30, having angularly disposed inner faces 31, 32, for slidable co-operative abutment against the faces 14, 15, of the end lugs 10, 11. The bight portion 28 of the clamp member 27 is centrally bored and tapped, as at 33, for receiving the threaded end of a clamping screw 34 having an integral head portion 35 and being adapted to extend loosely through an elliptical washer 36, which is, in turn, adapted to rest flushwise upon the upper face of the end lugs 10, 11. The head por-

tion 35 of the clamping screw 34 is provided with a diametral nick 37 for conventionally receiving a screw driver and is additionally provided with a transversely extending aperture 38 through which a nail, awl, or similar instrument may be inserted where it is inconvenient or impossible to employ a screw driver.

When being installed for actual use, the clamp member 27 of the flush tank guide bracket B is loosely slipped up around the end lugs 10, 11, which are spread sufficiently far apart to slide freely around the particular over-flow pipe upon which the guide bracket B is being mounted. The clamping screw 34 is slipped through the washer and pushed downwardly between the juxtaposed faces 12, 13, of the end lugs 10, 11, and threaded into the aperture 33 of the clamp member 27. Thereupon, the guide bracket B is slipped down over the free upper end of the over-flow pipe 6 until it is located at the desired or proper height above the floor or bottom wall of the tank A, whereupon it is clamped securely and tightly in place by turning the clamping screw 34, thereby drawing the clamp member 27 upwardly, so that the inner faces 31, 32, slide camwise against the complementary faces 14, 15, of the end lugs 10, 11, forcing them together and drawing the C-clamp portion 9 into tight embracing engagement around the over-flow pipe 6. It should be noted in this connection that the transverse width of the clamp member 27 is slightly smaller than the distance between the shoulders 16, 17, and the point of juncture of the end lugs 10, 11, with the C-clamp portion 3. Consequently, the clamp member 27 will be retained by the shoulders 16, 17, and thereby prevented from slipping radially outwardly and off of the end lugs 10, 11, during clamping action.

When the guide bracket B is securely clamped to the over-flow pipe 6, the set screw 26 may be loosened and the arm 19 adjusted inwardly or outwardly as the case may be to bring the axial line of the apertures 23, 24, into precise coincidence with the axial line of the valve seat 4, so that, when the stem 7 is operatively disposed through the apertures 23, 24, it will be guided for accurate travel in a vertical line coincident with such axial line and the syphon ball 5 supported thereby will function properly.

It will be noted by comparison of Figures 3, 7, and 8 that the guide bracket B may be readily adapted to, and mounted upon, over-flow pipes having a substantially wide range of different diameters. In actual practice in the plumbing trade, over-flow pipes usually range in diameter from one inch to one and three-eighths inches and the flush tank guide bracket B will fit equally well upon a small over-flow pipe 6, as shown in Figure 3, or upon an intermediate size over-flow pipe 6', as shown in Figure 7, or a large size over-flow pipe 6'', as shown in Figure 8, and it will, of course, be understood that the guide bracket B will equally well fit upon over-flow pipes of any intermediate sizes.

If desired, I may provide a modified form of flush tank guide bracket B', as shown in Figure 10, which is substantially similar to the previously described flush tank guide bracket B, except that the C-clamp portion 9' is provided with an outwardly extending arm 18' of somewhat smaller triangular cross-sectional shape than that of the arm 18 of the previously described guide bracket B and the adjustable arm 19' is of somewhat larger triangular cross-sectional shape. Furthermore, the arm 18' is solid whereas

the adjustable arm 19' is hollow for slidable disposition around and upon the arm 18'. In addition, the arm 19' is provided with a threaded aperture 25' for receiving a set screw 26'. Furthermore, the C-clamp portion 9' is provided with end lugs 10', 11', having inclined or beveled outer faces 14', 15', which are not only inclined downwardly, but also converge inwardly with respect to the body of the C-clamp portion 9' for co-operation with a modified form of clamp member or element 27', which is, in turn, provided with downwardly and inwardly inclined inner faces 31', 32'. By reason of the inward convergence of the matching surfaces 14', 15', and 31', 32', the clamp member 27' will not tend to slide outwardly and off of the end lugs 10', 11', during clamping action and the shoulders 16, 17, of the previously described flush tank guide bracket B may thus be omitted.

It has been found in actual practice that flush tank guide brackets constructed in accordance with the present invention are entirely universal and can be readily adapted to fit any style or type of flush tank commonly used in the plumbing trade. Furthermore, flush tank guide brackets constructed in accordance with the present invention may be readily and quickly installed and can be tightened, if necessary, by a screw driver inserted vertically into the tank, thereby making it possible to secure the flush tank guide bracket tightly in place even in the most cramped quarters. In addition to this, flush tank guide brackets of the present invention can be tightened much more securely because of the greater clamping action which can be imposed upon the clamp-forming members thereof.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the guide bracket may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A flush tank guide bracket including a fixed arm, an extension arm adjustably mounted on one end of the fixed arm, a C-clamp formed on the other end of the fixed arm, said C-clamp being provided with radial extension lugs having inclined faces, a U-shaped clamp element having inclined faces complementary to the inclined faces on the lugs, and screw means for drawing the clamp element wedgewise upwardly upon the lugs whereby to draw the lugs together.

2. A flush tank guide bracket including a fixed arm, an extension arm adjustably mounted on one end of the fixed arm, a C-clamp formed on the other end of the fixed arm, said C-clamp being provided with radial extension lugs having inclined faces, a U-shaped clamp element having inclined faces complementary to the inclined faces on the lugs, and screw means for drawing the clamp element wedgewise upwardly upon the lugs whereby to draw the lugs together, said lugs being provided adjacent their outer extremities with outwardly projecting elements for preventing the clamp element from slipping off of the lugs while being drawn up into clamped position.

3. A flush tank guide bracket including a fixed arm, an extension arm adjustably mounted on one end of the fixed arm, a C-clamp formed on the other end of the fixed arm, said C-clamp being provided with radial extension lugs having inclined faces, a U-shaped clamp element having inclined faces complementary to the inclined

faces on the lugs, and screw means for drawing the clamp element wedgewise upwardly upon the lugs whereby to draw the lugs together, said inclined faces on the lugs and the complemental inclined faces on the clamp element being further converged in the plane of the C-clamp to prevent the clamp element from slipping off of the lugs while being drawn into clamped position.

4. A flush tank guide bracket including a fixed arm, an extension arm adjustably mounted on one end of the fixed arm, a C-clamp formed on the other end of the fixed arm, said C-clamp being provided with radial extension lugs having inner flat faces and outer inclined faces, stop shoulders provided on said lugs adjacent the inclined faces, a clamp element having opposed upstanding legs having inclined faces complementarily inclined to the inclined faces of the lugs, and screw means for drawing the clamp element wedgewise upwardly upon the lugs whereby to draw the lugs together.

5. A flush tank guide bracket including a fixed arm, an extension arm adjustably mounted on one end of the fixed arm, a C-clamp formed on the other end of the fixed arm, said C-clamp being provided with radial extension lugs having inclined faces, a U-shaped clamp element having inclined faces complementary to the inclined faces of the lugs, a washer member adapted to rest flushwise upon the upper face of the end lugs, and screw means adapted to extend through

said washer member and the clamp element for drawing the clamp element wedgewise upwardly upon the lugs to draw them together.

6. A flush tank guide bracket including a fixed arm, an extension arm adjustably mounted on one end of the fixed arm, a C-clamp formed on the other end of the fixed arm, said C-clamp being provided with radial extension lugs having inner flat faces and outer inclined faces, a U-shaped clamp element having inclined faces complementary to the inclined faces on the lugs, a washer member adapted to rest on the upper surfaces of the lugs, a screw member adapted to extend downwardly through the washer and the clamp element for drawing the clamp element wedgewise upwardly upon the lugs to draw them together, and shoulders provided on said lugs to prevent radially outward slipping of the clamp element during clamping action.

BENJAMIN O. GRAHAM.

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