Nov. 17, 1931. A. T. LE TARTE 1,832,714

FLUSH VALVE GUIDE ARM

Filed Dec. 6, 1930

Fig. 1.

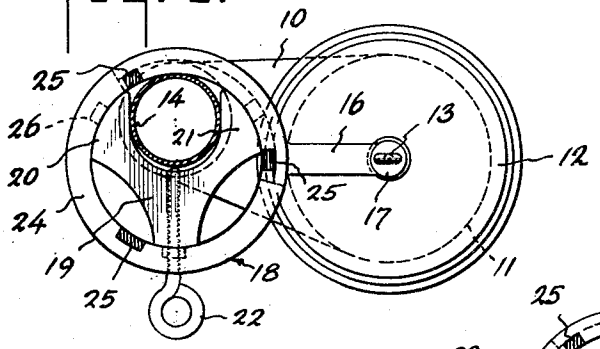
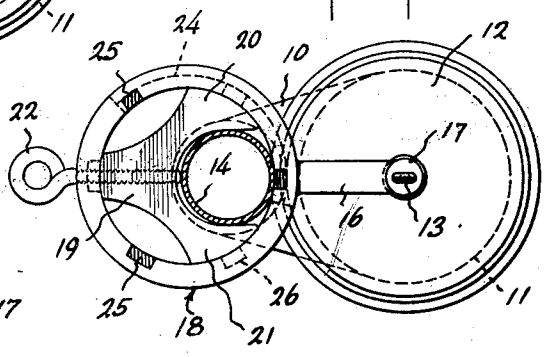


Fig. 3.



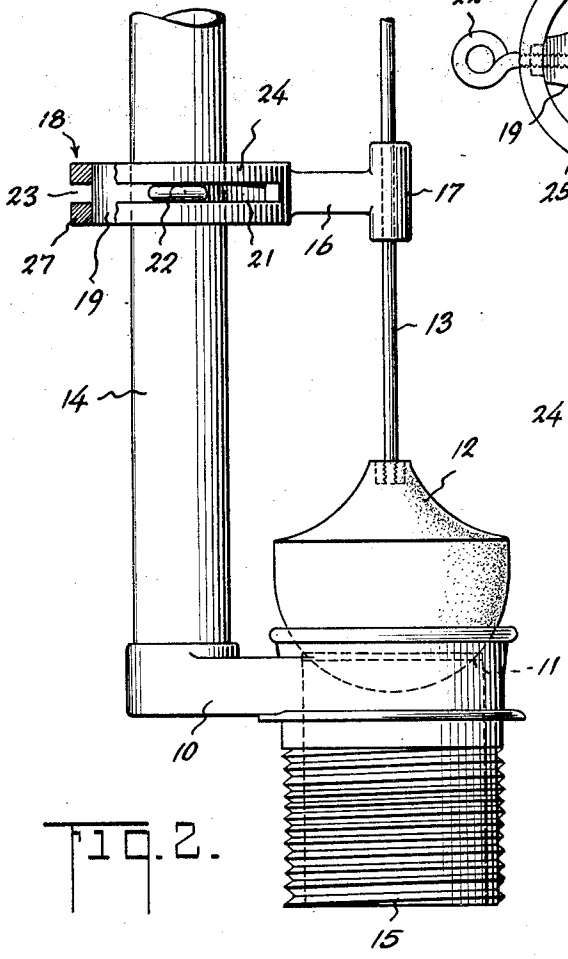


Fig. 2.

Fig. 4.

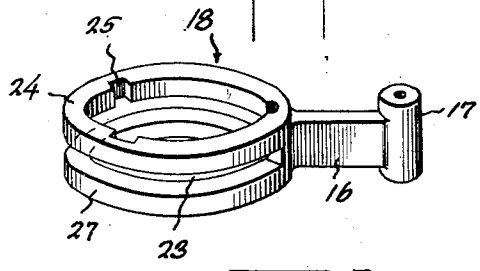
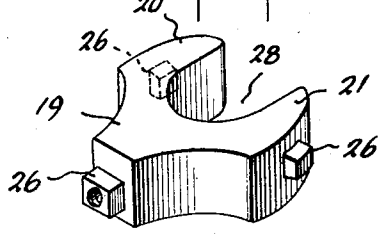


Fig. 5.



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UNITED STATES PATENT OFFICE

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FLUSH VALVE GUIDE ARM

Application filed December 6, 1930. Serial No. 500,637.

This invention relates to plumbing fixtures, and more particularly to float valves and the like as used in flush tanks and similar vessels, as for instance for opening and closing the outflow openings from the flush tanks to the closet bowls.

Flush tanks as used in connection with water closets and the like usually have an overflow pipe within the tank, the overflow pipe usually being employed as a support for the float valve by equipping the overflow pipe with a guide arm to support and guide the float valve stem in its opening and closing movements. It is essential that the float valve rod shall be enabled to move up and down freely and that it be so guided that the valve will surely seat itself tightly on top of the outflow fitting, in order to prevent leakage. The outflow fittings, valves and overflow pipes are usually made in a variety of standard sizes, and difficulty has heretofore been experienced in properly assembling the parts so that the necessary accurate adjustments might be obtained.

The primary object of the present invention is to provide a simple and cheap guide arm for flush tank valves and the like which guide arm includes novel features of adjustability whereby the same may be used with different types or sizes of flush tanks, the guide arm being capable of adjustment so that the valve stem perforation of the guide arm may be positioned in exact alignment with the centre of the outflow fitting regardless of the distance of the fitting from the overflow pipe, thus insuring exact register of the valve with its seat when the valve closes.

To this end the guide arm may be constructed so that it may be clamped at any desired height upon an overflow pipe and turned so as to project radially therefrom above the center of the outflow fitting. This arm may include a revolvable block to fit the overflow tube so that the guide arm itself may be so adjusted that the valve stem perforation will be in exact alignment with the center of the outflow fitting. To this end, the guide arm may desirably include an annular portion adapted to surround the overflow tube, a revolvable block being mounted within the annular portion, and this revolvable block having an eccentrically located tube engaging portion, whereby revolution of the block within the annular portion will cause the valve stem perforation to approach or recede from the overflow tube, and hence increasing or decreasing the effective length of the guide arm to obtain proper registry of the valve stem perforation with the center of the outflow fitting. To this end, the guide arm may desirably include an annular portion adapted to surround the overflow tube, a revolvable block being mounted within the annular portion, and this revolvable block having an eccentrically located tube engaging portion, whereby revolution of the block within the annular portion will cause the valve stem perforation to approach or recede from the overflow tube, and hence increasing or decreasing the effective length of the guide arm to obtain proper registry of the valve stem perforation with the center of the outflow fitting. Thus the valve can be centered with various sizes of outflow fittings regardless of the size of the valve seat or its distance from the overflow tube. Also, the revolvable blocks may be of different character so as to accommodate the guide arm to different sizes of overflow pipes by inserting in the annular portion a block suited to the size or other characteristics of the overflow tube. The guide arm is thus also rendered capable of interchangeable use with different sizes of flush valves; and the guide arm can be attached to practically any style of overflow tube, whether straight or with a flared top, without removing the overflow pipe from the valve, which is a great convenience and time saver, since it is made possible to install a new valve and guide arm, when necessary, economically and conveniently without disturbing the outflow fitting.

Other objects and advantages of the invention will be hereinafter specifically pointed out, or will become apparent, as the specification proceeds.

With the above indicated objects in view, the invention resides in certain novel constructions and combinations and arrange-

ments of parts, clearly described in the following specification and fully illustrated in the accompanying drawings which latter show embodiments of the invention as at present preferred.

In the accompanying drawings, forming part of the present specification:

Figure 1 is a top plan view of an overflow tube and flush tank valve showing the guide arm in one position of adjustment;

Figure 2 is a side elevation of the device as shown in Figure 1;

Figure 3 is a view similar to Figure 1 showing the guide arm in another position of adjustment;

Figure 4 is a perspective view of the guide arm; and

Figure 5 is a perspective view of the revolvable block.

In the present preferred form of the invention shown in the drawings the device is shown in connection with a more or less conventional type of outflow fitting 10 as used with a water closet flush tank, which latter is not illustrated since the same is well understood in the art.

This outflow fitting 10 includes a seat 11 for the usual float valve 12, this float valve having an upwardly extending rod or stem 13. An overflow tube 14 also forms part of the outflow fitting 10, this overflow tube having communication with the outflow opening 15 of the outflow fitting when the valve 12 is off its seat 11.

To support the valve stem 13 in a vertical position, and in the exact center of the valve seat 11, I provide, in this instance, a guide arm 16 having a perforated portion 17 to receive the stem 13, and an annular portion 18 to surround the overflow tube 14. This annular portion 18, it will be seen is of larger internal diameter than the external diameter of the overflow tube, so that the annular portion is spaced from the overflow tube; and a spacing block 19 is adapted to be positioned within the annular member, this spacing block having an eccentrically located yoke portion including arms 20 and 21 which yoke portion is adapted to embrace the overflow tube while a portion of the overflow tube between the arms 20 and 21 is adapted to be engaged by the inner side of the annular member 18. The arm 16 is adapted to be rigidly secured in adjusted position by means of a thumb screw 22 which extends through the body portion of the block 19, the inner end of the thumb screw being adapted to engage the overflow tube 14 and thus securely hold the arm 16 in the desired position of adjustment.

The annular member 18 is preferably split transversely through the major part of its circumference to produce an annular slot 23 in which latter the outer portion of the thumb screw is slidable as the block 19 is revolved within the annular member. This also enables the block and annular member to be maintained in assembled relationship. Additional means are, however, desirably provided to support and guide the block 19 within the annular member 18, and for this purpose the upper ring portion 24 of the annular member is preferably provided with a plurality of slots 25 adapted to receive projections 26 on the block 19 when the block is put in place. The projections 26 rest on the lower ring 27 and thus the block is prevented from falling out of annular member and is made to revolve true at all times.

In the use of the device, a block 19 having a yoke opening 28 of proper size to embrace the overflow tube 14 is slipped in place from the side of the tube 14 after the annular member has been placed over the overflow tube. The thumb screw 22 is then inserted through the annular slot 23 and into the block 19, and screwed home into engagement with the tube, the block 19 having been first revolved to shorten or lengthen the distance between the overflow tube and the perforated portion 17 of the guide arm, to properly center the stem 13 with the valve seat 11. It will be seen that the annular member 18 can be readily slipped over the top of the overflow tube whether the latter is straight or has a flared top; and thereby it is not necessary to remove the tube 13 from the outflow fitting 10 when making the installation.

The block 19 can be formed in any desired shape so long as the same meets the requirement of an eccentrically located yoke portion which is movable within the annular member so as to increase or decrease the distance between the tube and the annular member in the longitudinal plane of the arm 16.

Considerable particularities of description, as to materials, part details, dimensions, capacities and utilities may have been herein indulged in, but it will be understood that these statements, made with particular reference to that one, and the one now preferred, of the many possible embodiments of the invention which is illustrated in the drawings, are not in any way to be taken as definitive or limitative of the invention. Inasmuch as many changes could be made in the above constructions, and many apparently widely different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language contained in the following claims is intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the invention

which, as a matter of language, might be said to fall therebetween.

In other words, the scope of protection contemplated is to be taken solely from the appended claims, interpreted as broadly as is consistent with the prior art.

What is claimed is:

1. The combination with an outflow fitting for flush tanks and the like including an overflow pipe, a valve seat and a valve positioned on said seat, said valve having a stem, of an adjustable guide arm for said valve stem, said guide arm including a portion surrounding said overflow pipe and a portion to receive and guide said valve stem, and a block cooperative with said annular member, said block including a portion engaging said overflow pipe, said block being movable within the overflow-pipe surrounding portion of said guide arm to increase and decrease the distance between the valve stem supporting portion of said guide arm and said overflow pipe, and means to secure said guide arm and spacing block in adjusted position upon said overflow pipe.

2. The combination with an outflow fitting for flush tanks and the like including an overflow pipe, a valve seat and a valve positioned on said seat, said valve having a stem, of an adjustable guide arm for said valve stem, said guide arm including a portion surrounding said overflow pipe and of larger diameter than said overflow pipe, and a portion to receive and guide said valve stem, and a spacing block cooperative with said annular member, said spacing block including an eccentric yoke portion having arms to embrace said overflow pipe, said spacing block being revolvable within said annular portion to increase and decrease the distance between the valve stem supporting portion of said guide arm and said overflow pipe, and a thumb screw extending through the overflow pipe surrounding portion of said guide arm, through said spacing block and into engagement with said overflow pipe to secure said guide arm and spacing block in adjusted position.

3. The combination with an outflow fitting for flush tanks and the like including an overflow pipe, a valve seat and a valve positioned on said seat, said valve having a stem, of an adjustable guide arm for said valve stem, said guide arm including an annular portion surrounding said overflow pipe and of larger diameter than said overflow pipe, and an apertured portion to receive and guide said valve stem, and a spacing block cooperative with said annular member, said spacing block including an eccentric yoke portion having arms to embrace said overflow pipe, said annular portion being split transversely to form a pair of upper and lower ring members integral with said guide arm, said spacing block being revolvable within said annular portion to increase and decrease the distance between the valve stem supporting portion of said guide arm and said overflow pipe, and means to secure said guide arm and spacing block in adjusted position upon said overflow pipe.

4. The combination with an outflow fitting for flush tanks and the like including an overflow pipe, a valve seat and a valve positioned on said seat, said valve having a stem, of an adjustable guide arm for said valve stem, said guide arm including an annular portion surrounding said overflow pipe and of larger diameter than said overflow pipe, and an apertured portion to receive and guide said valve stem, and a spacing block cooperative with said annular member, said spacing block including an eccentric yoke portion having arms to embrace said overflow pipe, said annular portion being split transversely to form a pair of upper and lower ring members integral with said guide arm, said spacing block being revolvable within said annular portion to increase and decrease the distance between the valve stem supporting portion of said guide arm and said overflow pipe, and a thumb screw extending between said upper and lower ring members, through said spacing block and into engagement with said overflow pipe to secure said guide arm and spacing block in adjusted position.

5. The combination with an outflow fitting for flush tanks and the like including an overflow pipe, a valve seat and a valve positioned on said seat, said valve having a stem, of an adjustable guide arm for said valve stem, said guide arm including an annular portion surrounding said overflow pipe and of larger diameter than said overflow pipe, and an apertured portion to receive and guide said valve stem, and a spacing block cooperative with said annular member, said spacing block including an eccentric yoke portion having arms to embrace said overflow pipe, said annular portion being split transversely to form a pair of upper and lower ring members integral with said guide arm, the upper ring member having a plurality of slots along its inner circumference, said spacing block having a plurality of projections to enter said slots and to rest upon the lower ring member, said spacing block being revolvable within said annular portion to increase and decrease the distance between the valve stem supporting portion of said guide arm and said overflow pipe, and means to secure said guide arm and spacing block in adjusted position upon said overflow pipe.

In testimony whereof I hereby affix my signature.

ALEXANDER T. LE TARTE.