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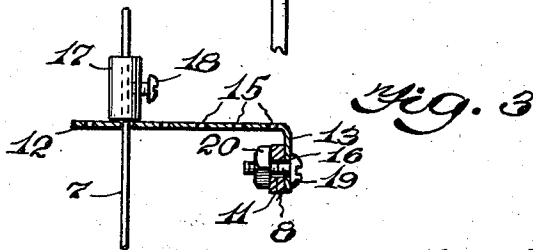
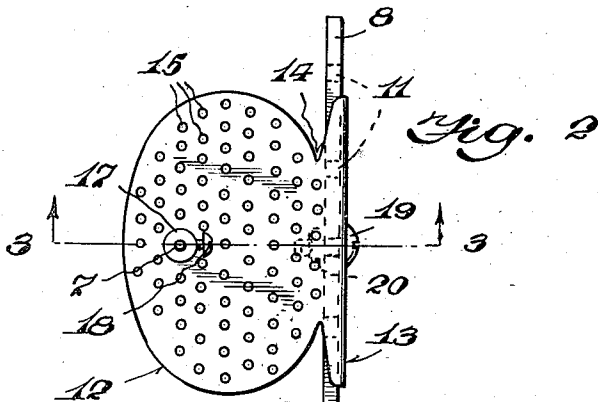
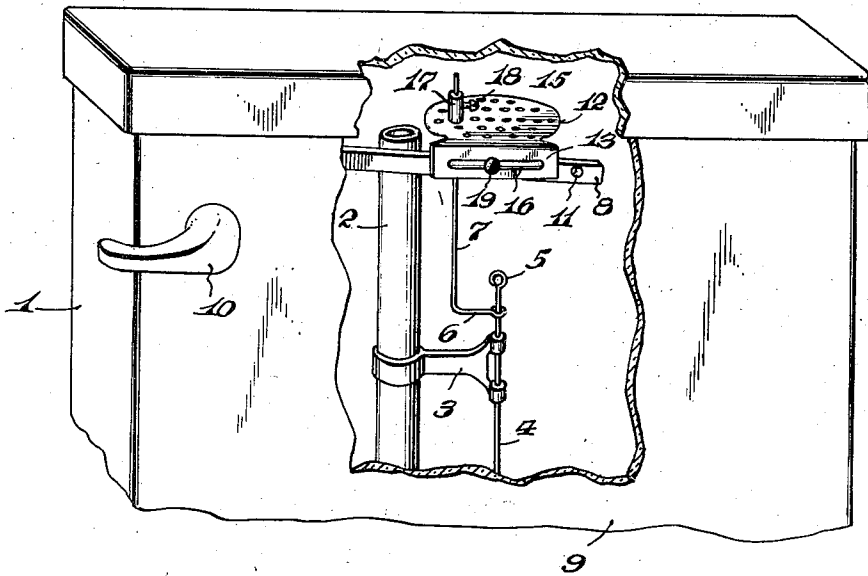
G. G. REIWALD

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LIFT WIRE GUIDE FOR WATER CLOSET FLUSH VALVES

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*Fig. 1*



Inventor

G. G. Reiwald,

By *William T. Geier*

Attorney

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## LIFT WIRE GUIDE FOR WATER CLOSET FLUSH VALVES

Gustav G. Reiwald, San Antonio, Tex.

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7 Claims. (Cl. 4-57)

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This invention relates to a lift wire guide for water closet flush valve and pertains more particularly to a device which is formed for connection to the manually operable flush levers as used in water closet flush tanks, although the same is not restricted to such specific use, it being understood that the same may be readily adapted for grinding and accurately seating all other valves regardless of use.

Present type water closet flush valves are usually operable by a manually actuated lever which is connected at one end to the valve stem or rod by means of a wire rod or link having an offset loop disposed about the valve stem. Due to the fact that improper alinement of the connection between the lever and valve stem is sometimes made at the time of the original installation or occurs from constant or frequent use thereof, great annoyance incident to the noise of running water, inconvenience and unnecessary waste of the flushing water results.

In order to overcome the foregoing and other annoyances and disadvantages of the prior art it is the primary important object of this invention to provide a device of the above character which may be readily attached to and adjusted with respect to flush valve levers at present in use by all persons regardless of whether they are skilled or unskilled in the plumbing art.

Another important object of this invention is to provide a device of the above character which may be readily adjusted upon the end of a flush lever so as to accommodate the same to flush tanks of different heights.

Another important object of this invention is to provide a device of the above character whereby the upper end of the link connection between the valve stem and the lever, may be adjusted throughout a wide range with respect to the lever end so that said valve stem and link connection may be brought into proper alinement, each with the other so as to prevent binding therebetween and consequent improper seating of the flush valve.

Still another important object of this invention is to provide a device of the above character whereby the link connection between the valve stem and lever end may be readily adjusted toward and away from the latter in varying direc-

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tions both laterally and longitudinally with respect thereto.

A further important object of this invention is to provide a device of the above character which is so constructed that the same may be readily attached to either side of the flush lever or vertically reversed with respect thereto so as to accommodate the same to the available space within the flush tank.

A still further important object of this invention is to provide a device of the above character which is of simple construction easily and quickly applied, efficient and accurate in use, and one which may be readily and cheaply manufactured and placed upon the market at a reasonable cost.

The foregoing and other important objects and advantages will be readily apparent throughout the course of the following description and accompanying drawings, in which,

Figure 1 is a fragmentary perspective view of a water closet flush tank, disclosing the flush lever having the attachment, forming the subject matter of the present invention, connected thereto.

Figure 2 is a fragmentary top plan view of the attachment connected to one end of the flush lever, and

Figure 3 is a fragmentary sectional view taken on line 3-3 of Figure 2, looking in the direction of the arrows.

Referring in detail to the drawings in which like reference characters designate like parts throughout the same, 1 is a flush tank having the usual tubular overflow pipe 2 thereto, to which is connected a valve stem guide or bracket 3 for guiding the valve stem 4 of a flush valve not shown.

The upper end of the valve stem 4 is provided at its upper end with a loop or stop portion 5 which limits the movement of the valve and stem with the guide 3.

Connected to the valve stem 4 as by means of an off-set looped portion 6, is a vertically disposed link or lift rod 7.

A manually operable lever 8 of substantially L-form has one of its ends projected through the front wall 9 of the flush tank and is provided with an actuating handle 10. The opposite or free end of the lever 8 is provided with a plu-

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rality of spaced openings 11 whereby the upper end of the link or lift rod 7 may be adjustably connected thereto along its longitudinal axis as by looping the end of the lift rod 7 in the usual manner, not shown.

The attachment for flush valve levers forming the subject matter of the present invention is intended to replace the usual method of connecting the flush lever 8 and lift rod 7 by looping the upper end of the latter, and also any other equivalent connections now on the market.

The instant invention includes an enlarged plate-like body portion 12 formed of metal, plastic, wood or any other suitable material and the same may be of any suitable design in plan, as desired.

A flange portion 13 extends substantially at right-angles from the body 12 and is connected to the latter by a narrow neck-like portion 14, forming a continuation thereof.

The body and neck portions 12 and 14 respectively, are formed with a plurality of spaced perforations 15 of a size to permit free sliding movement of the lift rod 7 therethrough. The perforations 15 further may be uniformly or non-uniformly spaced with respect to each other, although the uniform spacing thereof is shown in the drawings as a preferred embodiment of the invention.

The right-angled flange 13 is provided with a longitudinally extending slot 15, and is of a width substantially equal to or greater than the width of the flush lever.

The lift rod 7 is provided with a sleeve like stop member 17 which is adjustably secured thereto by a set screw 18, or any other suitable fastening means.

A threaded bolt 19 is disposed through the slot 16 of the flange 13 and the desired opening 11 of the flush lever 8, and is fastened in position by means of a nut 20, whereby to secure the body 12 to the free end of the flush lever.

As hereinbefore stated, great annoyance, inconvenience and great waste results from the improper seating of water closet flush valves. This has been due to the faulty or improper adjustment and alinement of the lift rods or links forming a connection between the valve rod and the operating lever therefor. In the majority of instances it has been impossible to obtain proper alinement and actuation of the valve due to the lack of means for making the necessary adjustment.

In operation, the attachment of the present invention, is secured to the end of the flush lever by means of the bolt 19 and nut 20.

The upper end of the lift rod, from which the stop member 17 has previously been removed, is then passed through the opening 15 affording the desired alinement of the lift rod and valve stem and the stop member 17 is then replaced and secured in position above the body 12. Subsequent movement of the lever 8 will cause free and alined vertical movement of the valve, stem, and lift rod 7 without undue friction or binding of the parts, resulting in accurate seating of the valve and the consequent elimination of waste and other annoyances.

It is to be understood that the form of my invention herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subjoined claims.

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Having thus described my invention, I claim:

1. In combination with a water closet valve operating lever having a plurality of spaced openings therethrough and therealong, a body member 5 having a plurality of openings therethrough within the confines thereof for the selective reception of a valve stem, said body having an apertured flange extending outwardly therefrom at right angles, and means extending through 10 the apertured flange and through one of the openings in the lever so as to adjustably secure the body member along said lever.

2. A valve and operating mechanism therefor, including a valve, an operating lever spaced from the valve and having a series of spaced openings therethrough and therealong, a body secured to said lever at right angles thereto and having a series of openings therethrough within the confines thereof for the selective reception of a valve stem, a valve stem connected to said valve and extending through a predetermined one of said openings in the body, and detachable means for connecting said valve stem to the body so as to permit relative movement therebetween while preventing separation thereof.

3. A water closet flush tank including an inlet and an outlet, a valve controlling the passage of water through said outlet, a valve stem connected to said valve, a valve operator, a member secured to said operator having a plurality of spaced openings therethrough and within the confines thereof for the selective reception of the valve stem, and detachable means for securing said stem to said member through one of the openings in the latter so as to permit relative movement therebetween, while preventing separation thereof.

4. A valve lift wire guide for attachment to a water closet flush valve lever including a member formed of relatively stiff material and having a body portion adapted to be disposed in a substantially horizontal plane, said body portion having a plurality of spaced openings therethrough each being of a size to slidably receive the lift wire of a water closet flush valve, and said body having a part extending at substantially right angles thereto for connecting the member to a water closet flush valve lever.

5. A valve lift wire guide for attachment to a water closet flush valve lever including a flat body member formed with a plurality of spaced openings therethrough, each being of a size to slidably receive the lift wire of a water closet flush valve, said body being provided with a substantially right angle flange having an opening therethrough, and means extending through the opening in said flange for securing the latter and thereby the body to a water closet flush valve lever.

6. A guide for use between a valve lift wire and the operating lever of a water closet flushing mechanism wherein said lever has its inner free end provided with a plurality of spaced openings, including a right angled body member having one of its arms provided with a plurality of spaced openings, each being of a size to slidably receive a lift wire therethrough, and having its other arm formed with an elongate slot, and securing means extending through said slot and being of a size to be selectively disposed through any one of the openings formed through the inner free end of said operating lever for adjustably connecting said guide to the lever.

7. A valve lift wire guide for attachment to a water closet valve operating mechanism includ-

ing a body having a plurality of spaced openings therethrough, each of said openings being of a size to slidably receive a valve lift wire, and means for adjustably connecting said body to the valve operating mechanism, whereby the lift wire may be selectively disposed between the valve and valve operating mechanism to prevent binding thereof in operation.

GUSTAV G. REIWALD. 10

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