

[54] **FLUSH TANK CONTROL**

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[22] Filed: **Oct. 14, 1971**

[21] Appl. No.: **189,139**

[52] U.S. Cl. **4/67, 4/1**

[51] Int. Cl. **E03d 1/34, E03d 5/02, E03d 5/10**

[58] Field of Search **4/1, 67, 67 A, 57, 57 D, 37; 251/285, 286**

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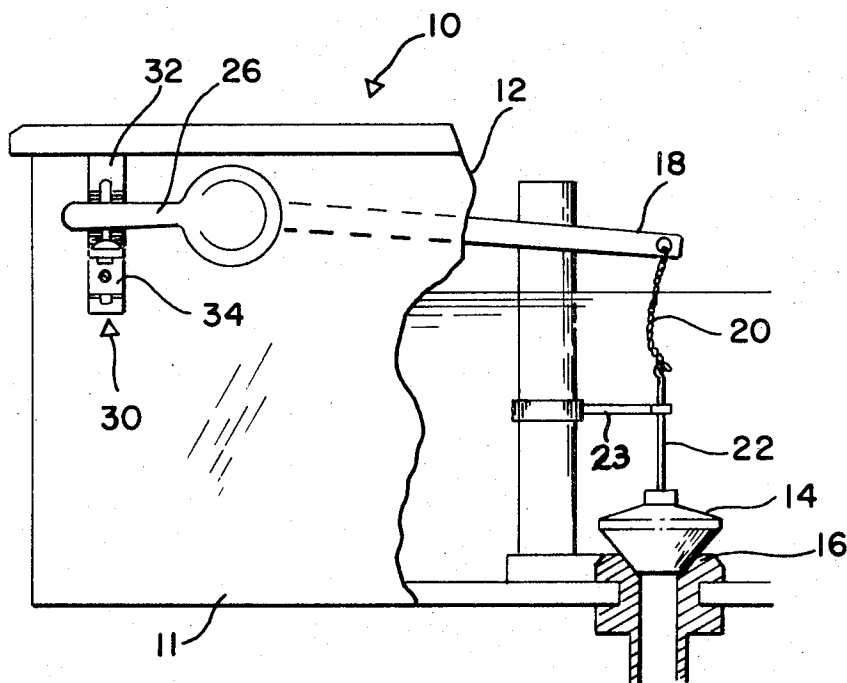
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[57] **ABSTRACT**

A device for controlling and limiting the motion of the handle of the water storage tank of a toilet, such that the handle can be moved only a sufficient distance to bring about the flushing action required in a given instance, thus preventing the entire contents of the tank from being used except when actually needed. The water release valve of the water storage tank does not become free floating in the practice of my invention, but resides closely by its seat during a flushing operation, thus being in a position to readily return to such seat as soon as the handle is released, thereby effecting a daily savings of many gallons of water.

2 Claims, 4 Drawing Figures



FLUSH TANK CONTROL

This invention relates to a flush tank control arrangement for a toilet, such that only the volume of water actually needed for accomplishing the flushing a toilet in a given instance will be used.

In the past, other devices have been proposed for limiting the flow of water from the water storage tank of a toilet, but in each known instance, these have been complex and expensive devices, requiring installation by a professional. Such devices have included arrangements involving the use of primary and secondary floats and accompanying linkages, and also arrangements in which the handle of the tank is substantially modified so as to limit the motion thereof.

In contrast to these and other such elaborate arrangements, I have provided a flush-limiting device that can be easily installed in operative position adjacent the handle of the water storage tank of a toilet, to serve to prevent a waste of water. Advantageously, my device can be installed by an amateur, with only the simplest of tools being required, and without modification or damage to existing components of a tank type toilet.

In a preferred embodiment, my device can take the form of a bracket member or anchor clip of non-corrosive material such as plastic, fiberglass, or even stainless steel or the like, which is configured to clip onto the upper sidewall of the water storage tank of a toilet. Preferably, the material is such as to possess a natural springiness, such that the anchor clip will remain in the position in which it is placed, which normally is a position closely adjacent the handle on the upper sidewall of the tank.

The bracket member is configured to receive a handle-contacting member, which is adjustably secured to the bracket member such that it can be moved over a substantial distance. Thus, it is possible for the user to adjust the handle-contacting member to the proper location with regard to the handle of his particular toilet installation. The adjusted position should be such that the handle can be moved sufficiently to cause the water release valve to move far enough off its seat to accomplish a flushing of the toilet, but not so far as to allow the water release valve to move to a free floating position in which it becomes disposed at a location comparatively remote to the valve seat, to which seated position it would return only as the tank empties.

It is therefore a primary object of this invention to provide an easily installed, inexpensive device for minimizing the amount of water used in flushing a toilet, thereby effecting a substantial conservation of water.

It is another object of this invention to provide a device that can be quickly mounted without damage upon the water storage tank of an existing toilet installation in order to limit handle motion in a highly advantageous manner.

It is yet another object of this invention to provide a handle limiting device that can be adjusted to permit sufficient handle motion to enable a minimum flush, while preventing so much handle motion as to allow the water release valve from moving a considerable distance from its seat, and becoming free floating.

These and other other objects, features and advantages will be more apparent from an inspection of the appended drawings in which:

FIG. 1 is a front view of a typical toilet tank installation, with my novel motion limiting device in place adjacent the handle on the water storage tank;

FIG. 2 is a view much like FIG. 1, but showing the handle and the water release valve in motion-limited positions brought about by the employment of my novel handle restraint device;

FIG. 3 is a side elevation view, to a larger scale, of my handle restraint device in substantially the operative configuration; and

FIG. 4 is an exploded view, showing the basic components that constitute my novel device.

DETAILED DESCRIPTION

Turning now to FIG. 1 it will there be seen that I have illustrated a typical flush tank arrangement 10 of the general kind associated with the type of toilet utilizing a water storage tank 11, from which water is released by the user in order to accomplish a flushing of the toilet. In this figure it will be seen that a portion of the sidewall 12 of the tank has been cut away so as to reveal a water release valve 14 that, as depicted in this figure, is normally seated on a valve seat 16 disposed in a lower portion of tank 11. An arm 18 is employed in the usual manner in order to accomplish the vertical movement of the water release valve 14 when such is to be effected, with a linkage arrangement 20 of copper wire or even a small chain being utilized in order to form a connection between the end of arm 18 and the rod 22 that is normally screwed into the top of the water release valve 14. The rod 22 is slidable in a guide 23. These details are conventional and form no part of this invention.

It will be noted in FIG. 1 that I have provided a handle 26 of a conventional type that is rotatable about a pivot point in the tank in order to accomplish a lifting of arm 18. In this instance, the handle 26 is to be moved in the downward direction to accomplish a lifting of arm 18, and thus a flushing of the toilet, which flushing is of course brought about by the movement of valve 14 away from seat 16. Although the direction of movement of the handle happens to be in the counter-clockwise direction in this instance, it is understood that in some toilet tank arrangements, the handle is disposed so as to be moved in the clockwise direction when being moved downwardly to accomplish the flushing of the tank. It will be readily apparent that the handle orientation can be moved in some instances so as to make it compatible with the use of my device, described hereinafter.

In the conventional flush tank arrangement, the manipulation of the handle 26 in the usual manner causes the water release valve 14 to move upwardly against the underside of rod guide 23, and to be sustained by the water in a position a substantial distance above the seat 16 until such time as the water level drops considerably. Then, the valve 14 floats down with the water level as the tank empties, and ultimately moves into sealing contact with the seat 16. Approximately 5 gallons of water are normally expended in this manner.

In accordance with this invention, I have provided a handle restraint means 30, comprising a bracket member or anchor clip 32 adapted to be easily attached at the upper sidewall portion 12 of the tank adjacent

the handle 26, and a handle contacting member 34 adjustably attached to the bracket member. These components are shown in the operative position in FIG. 1, and in greater detail in FIG. 3, and serve to prevent the water release valve from moving far off its seat 16 during the flushing of the toilet.

As will be apparent, the tank contacting member 32 has a hook shaped portion 36 whose configuration is such as to enable it to be inserted without modification of the basic toilet installation, upon the upper edge of the tank sidewall 12, with the hook portion preferably having some spring-type action enabling it to be retained without any substantial movement in a desired position. Quite obviously I place the member 32 adjacent the elongate portion of the handle 26, so that the handle-contacting portion 34 will be in a position to be contacted by the handle when the handle is moved in the flushing direction.

As will be quickly apparent to one skilled in the art, it is not the intent of this device to prevent the motion of the handle 26 entirely, but rather to limit the motion such that flushing of the toilet can be accomplished with a substantial saving of water. To this end I arrange the device such that when the toilet handle 26 has been manipulated somewhat in the flushing direction as shown in FIG. 2, the handle will then contact the portion 34, which will prevent the handle and therefore the arm 18 from being moved beyond a limited amount. It should be noted that when the handle has been moved to such a limited extent as depicted in this figure, the water release valve 14 is caused to move away from the seat 16 only for a limited distance, which is nevertheless sufficient to enable the toilet to be flushed. By virtue of this arrangement, the water release valve 14 is prevented from moving into contact with the rod guide 23 and becoming free floating, thus effectuating a substantial saving in water. This is because when the user releases the handle 26 from a position of limited movement, the water release valve descends quickly to its seat, thus causing an almost immediate cessation of the flow of water from the tank.

It has been found that in most instances when a toilet is being flushed, it is being flushed to get rid of substantially liquid waste, in which instance it is unnecessary to hold the handle in the position of limited movement shown in FIG. 2 more than a comparatively short amount of time. Thus, when such waste has been eliminated or neutralized, the user can then release the handle and allow it to return to the position shown in FIG. 1. Since the water release valve seats almost immediately, the amount of water utilized in such an instance typically is two quarts. At this time, the refilling of the tank will be brought about quickly, and in the usual manner.

When, however, solid wastes are being eliminated, it will be necessary to hold the handle in the depressed position of limited movement shown in FIG. 2 for a greater length of time, but it is important to note that even in this instance, the solid waste will be carried away with less water usage than in a regular flush, where the water release valve 14 has been allowed to become free floating. This saving is estimated to be about one-half a tank, or approximately $2\frac{1}{2}$ gallons of water.

Returning to FIG. 3, it will be seen that the handle-contacting member 34 is adjustably attached to the bracket member 32, with the means for securing the handle contacting member to the bracket member typically being bolt 38 and a nut 39.

It will be noted in FIG. 4 that I preferably utilize serrations or teeth 40 on the handle-contacting member 34 and similar serrations or teeth 42 on the bracket member 32, with it being the intent of this arrangement to allow the handle-contacting member to be securely fastened to the bracket member in the desired position, while preventing undesirable movement or slippage thereof during the time the handle-contacting member is being contacted by the handle 26.

It will be noted in FIG. 4 that I have provided a slot 44 of substantial length in member 32, through which slot the bolt 38 extends, with the length of this slot of course making it possible for the handle-contacting member 34 to be adjustable over a substantial distance, as may be necessary in adjusting the member 34 to limit the movement of a given handle 26 to an appropriate amount, such that the water release valve will not become free floating.

If desired to further assure against undesired movement of the handle-contacting member 34 during the flushing procedure, I can configure the portion of the handle-contacting member 34 nearest the bracket 32 to have an elongate rib portion 46 of a dimension that fits within the slot 44 when the members 34 and 32 have been placed together in assembled relation. The rib 46 of course prevents a twisting movement of handle-contacting member 34 when the handle 26 is pushing thereagainst, with the extent of the rib being not so great as to prevent even a substantial heightwise adjustment of the member 34.

As a further option, I may provide the upper portion of the handle-contacting device 34 with a slot 50, as indicated by dashed lines in FIG. 3, so as to enable a rounded member 52 to be secured to the upper portion of the device 34, such as by a bolt 54 and a nut 56. Because of the adjustment made possible by the slot, it is but a simple matter to slide the component 52 outwardly from the tank sidewall 12 as may be necessary in order for the underside of a given handle 26 to be contacted. After the member 52 has been properly positioned, the nut 56 is tightened on the bolt.

It should now be apparent that by the use of my device, a considerable saving in water can be brought about, for instead of the user bringing about the utilization of a full tank of water, involving say 5 gallons each time a flushing of the toilet is to be brought about, he or she can by the use of this device limit the amount of water used to only that amount actually required in a given instance. Over a period of a day with a given toilet and a two person use, a savings of 20 to 25 gallons of water can be effected. It must be borne in mind that the use of my device does not prevent as much water being used as may be necessary, but only causes the user to limit or control the water used to that actually required.

The installation of my device is but a simple matter, for the user need only remove the cover from the top of the water storage tank, and then place the bracket member or anchor clip 32 in position on the upper sidewall of the tank, adjacent the handle. The handle-

contacting member 34 is then moved vertically along the slot 44 until such time as the uppermost portion of the handle-contacting member is in such position as to allow the handle 26 to be depressed sufficiently to cause the water release valve to leave its seat slightly, but not so far as to allow the valve to become free floating, and supported by the water in the tank at a location remote from seat 16. At this point the nut 39 is tightened on the bolt 38, thus to restrain the handle-contacting portion against undesirable slippage or movement.

As already explained, the member 52 can be adjusted outwardly or inwardly with respect to the tank sidewall as may be necessary in order for the underside of the handle 26 to be properly contacted by the upper portion of the handle contacting member.

A wide range of materials can be used in the manufacture of my device, but I prefer a non-corrosive material such as plastic to be used in the construction of the bracket member and handle-contacting member, with those members held together with nuts and bolts of stainless steel. However, I am not to be limited to such materials, and the bracket and handle-contacting members could of course be of fiberglass, stainless steel, or even some other metals or non-metals.

Other configurations within the spirit of this invention will be apparent to those skilled in the art, and I am not to be limited except as required by the scope of the appended claims.

I claim:

1. A device for preventing the utilization of an unnecessary amount of water in the flushing of a toilet of the type having a water storage tank and a handle

movable to bring about a lifting of a water release valve from its seat, to accomplish a flushing of the toilet, said device comprising a bracket member adapted to be attached to an upper sidewall portion of the tank adjacent the handle, and a handle-contacting member adjustably attached to said bracket member, said handle-contacting member being disposed in the path of travel of said handle for controlling the motion of said handle, such that it will allow the controlled release of water from the tank, but preventing the handle from being manipulated so far during the toilet-flushing procedure as to permit the water-release valve from becoming free floating, such that it becomes supported by the water in the tank at a position comparatively far from the valve seat.

2. A device for saving water during the flushing of a tank-type toilet, by preventing the water-release valve from becoming free floating, comprising a bracket member configured for installation on the upper sidewall of the toilet tank, adjacent the handle, and a handle engaging member attachable to said bracket in an adjustable manner, so as to be disposed in the path of travel of said handle, and means for securing said handle-engaging member to said bracket member, said means enabling said handle-engaging member to be adjusted so as to be contacted by said handle when being manipulated in the flushing of the toilet, to limit the movement of the handle so as to allow some flow of water but preventing the water-release valve from becoming free floating and supported by the water of the tank at a position comparatively far from the seat of the valve.

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