United States Patent

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[54] SELECTIVE CONTROL FLUSH ACTION FOR TOILETS
2 Claims, 3 Drawing Figs.

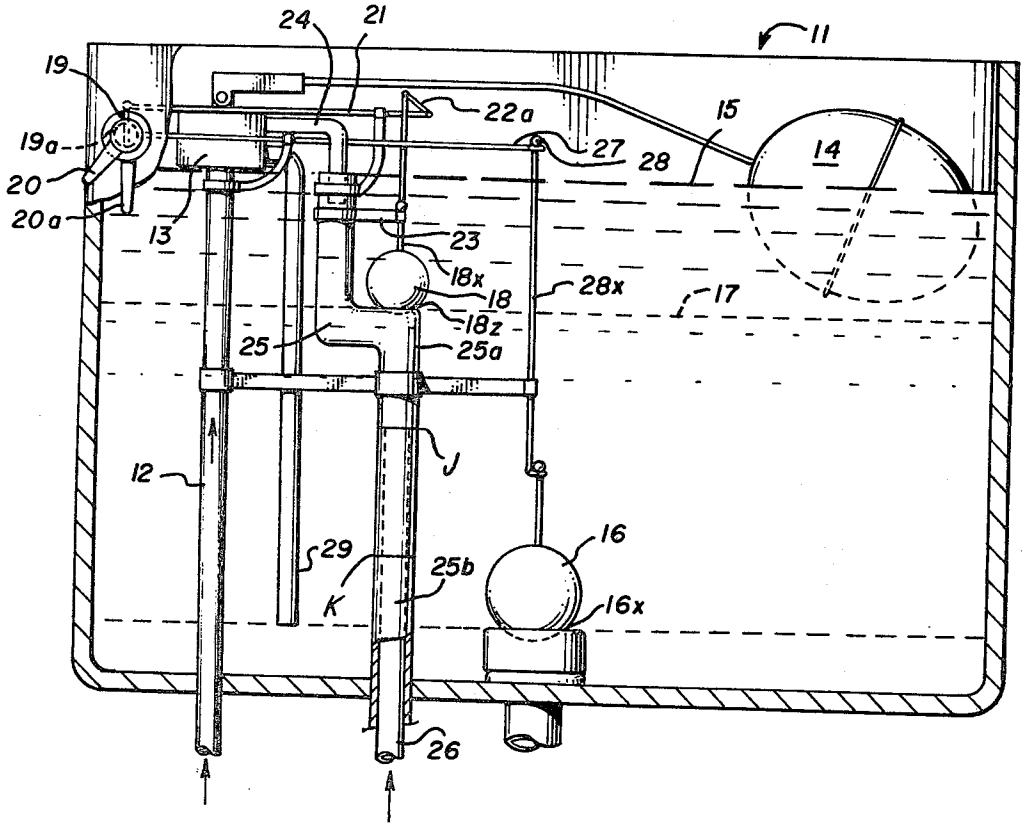
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[56] References Cited
UNITED STATES PATENTS

477,841	6/1892	Harvey	4/15
1,767,043	6/1930	Blaun et al.	4/37
1,780,810	11/1930	Brown	4/37
1,963,211	6/1934	Patterson	4/37
2,803,833	8/1957	Charest	4/34
2,237,294	4/1941	Easley	4/37

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ABSTRACT: Watersaving flush valve controls for toilets having two different capacity discharges from a reservoir. Said control having one opening and valve for lesser capacity outlet when lesser quantity discharge is required and another for using a greater capacity outlet when full discharge is required. Each control is selective and will terminate discharge action after selected discharge.



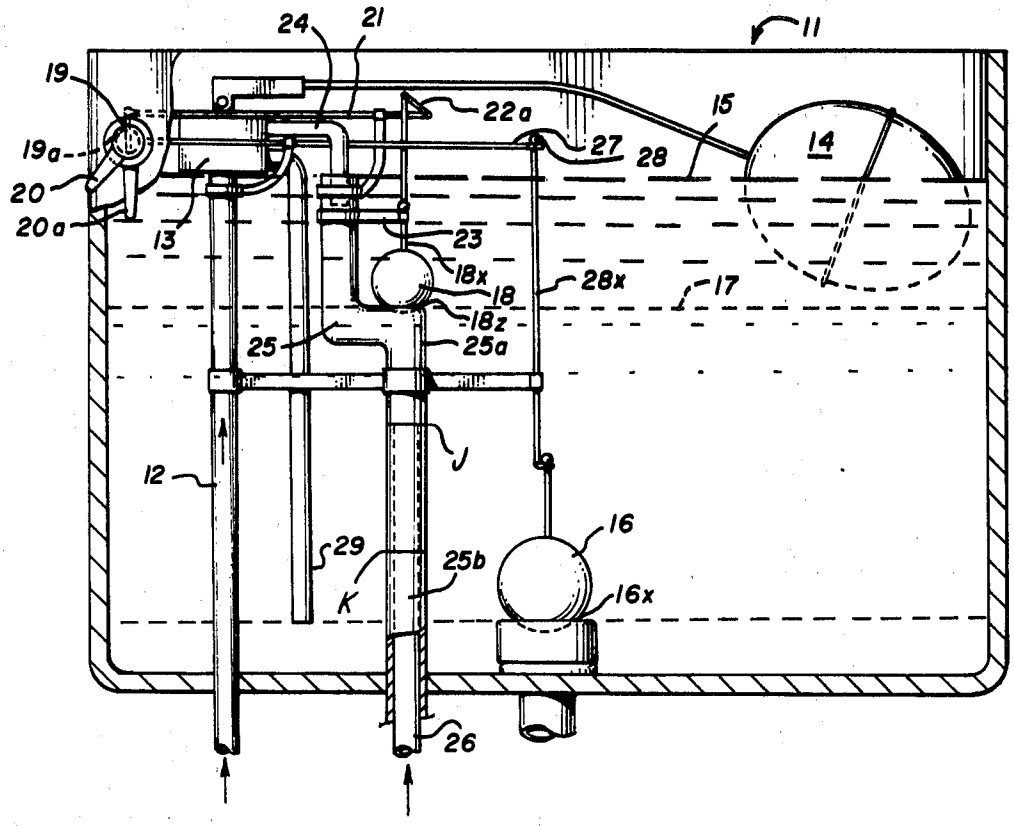


FIG. 1

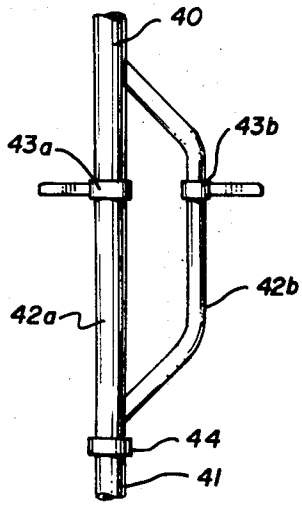


FIG. 2

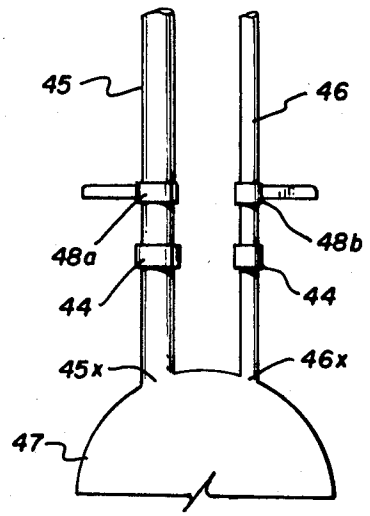


FIG. 3

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SELECTIVE CONTROL FLUSH ACTION FOR TOILETS

This invention relates to the control mechanism for filling the reservoir of toilets and discharge of the stored contents of the reservoir. The present requirements of water use are being tightened in many locations to conserve available water supplies and avoid unnecessary waste of such waters. At the present time, the toilet is wasteful in its water discharge action, in that for many purposes an adequate flush would be obtained by discharge of a much lesser quantity of water than that usually provided, but as the control mechanism operates, there is no way for the user to select lesser or larger quantities of water for discharge.

The present invention has been devised to provide such convenience and to assist the program of water conservation. The mechanical arrangement for the flushing operations requires intelligent use and selection by the user, but the actual flushing operation is so simple to complete that the selection requirement does not amount to an inconvenience to the user.

The practice of the present invention utilizes several innovations in the operation of toilets. In the first place, a preferred arrangement provides for both large volume and small volume discharges to be directed by the same control mechanism and the initial actuation of the mechanism, for example, may first produce a lesser volume discharge into the flush passage of the toilet, or the actuation of the other part of the control mechanism will result in a full discharge of the contents of the tank.

Another innovation is the provision of a dual control system with separate flow delivery lines or a bypass line between the reservoir outlet and the flush passage of the toilet by which a larger or smaller discharge can be provided selectively without necessitating a following discharge of the remaining quantity and with refilling controlled to provide only the quantity needing replacement.

Another embodiment of my invention provides another innovation in having two separate lines extending from the supply line to separate inlets as the flush passage of the toilet with a separate flush valve controlling each inlet opening so that the operator can selectively provide lesser volume flushing or larger volume flushing according to his preference.

It is an object of my invention to provide simple, durable and efficient flush mechanism for toilets which is easily controlled and provides the user with a choice as between a lesser volume flush and a larger volume flush.

Another object of the invention is to provide separate passages between a domestic toilet reservoir and the flush passage of the associated toilet which may be discharged independently according to the choice of the user.

A further object of the invention is to provide a flushing system for toilets with separate lines between a supply line and the toilet for low volume or higher volume flushing according to the choice of the operator.

Other objects reside in novel details of construction and novel combinations and arrangements of parts, all of which will be set forth in the course of the following description.

The practice of my invention will be described with reference to the accompanying drawings, in the several views of which like parts bear similar reference numerals.

In the drawings,

FIG. 1 is a vertical section through the reservoir of a toilet unit to which one control arrangement according to my invention has been incorporated;

FIG. 2 is a fragmentary schematic view of another type of actuating mechanism for discharge control of a toilet supply line; and

FIG. 3 is another schematic view showing still another control arrangement for regulating the discharge of water from a supply line to flush an associated toilet.

Referring first to FIG. 1, a toilet reservoir **11** is shown in front elevation but with most of the covering structure removed to disclose the internal arrangement of parts. The reservoir has a supply line **12** delivering fresh water on demand and the line **21** discharge is controlled by a valve **13**,

the opening and closing movements of which are controlled by hinged float **14**. In the arrangement shown in FIG. **1**, two liquid levels are maintained, one at **15** determined by the seating of a valve **16** and another level **17** determined by the seating of a second valve **18**. In the operation of the control mechanism it is possible to actuate a mechanism **19** having a grip **20** and through selective manipulation the mechanism will impart movement to a rod **18***x* extending from ball valve **18** and as soon as this ball is raised slightly from its associated seat **18***z*, liquid flows out and allows reservoir **11** to empty to the level shown at line **17**.

A hinged rod member **21** has a link member **22***a* connected to rod **18***x* and pull initiated by a mechanism **19***a* and associated pull **20***a* exerted on rod **21** imparts a swinging movement to link member **22***a* about the pivotal axis, thereby imparting a limited elevating movement to the rod **18***x* and valve **18**. As soon as water from storage passes seat **18***z*, valve **18** moves upwardly away from seat **18***z* until the discharge flow effects a gravity return of valve **18** to its seat guided by the supporting structure **23** shown in FIG. **1**. If the actuating mechanism is not operated further, this opening and closing movement of valve **18** will result in float **14** falling to a submerged position higher than but similar to that shown at level **17** and the intake line **12** will be opened through valve **13** to deliver additional water supply from valve **13** through a feed inlet **24** which extends into an overflow line **25** upon which valve seat **18***z* is located. Line **25** comprises an upper member **25***a* and a lower member **25***b* in end abutting relation and an overflow pipe **26** having conductive connection with a waste line has its upper end terminating at an elevation below seat **18***z* of the upper valve member **18**. Preferably, valve seat **18***z* is disposed at about one-third the distance below the water line **15**. Valve **13** also delivers water from the supply through line **29** to refill reservoir **11**. Consequently, when valves **16** and **18** are seated, if the actuation of valve **13** by float **14** should admit excess liquid to the supply in reservoir **11**, the upper open end of line member **25***a* being at the effective elevation of level **15** will accumulate such excess and deliver it through line **25** into overflow pipe **26** by which it is conducted out of the toilet reservoir, thereby maintaining the trap in the bowl below.

Valve **16** has its seat **16***x* in close proximity to the bottom of reservoir **11** and when it is moved off of its seat by a selected actuation of mechanism **19***a*, usually involving the lift of a rod **27**, such rod will engage head **28** on the lift rod **28***x* of valve **16**. Any such elevating movement causes rapid discharge of water past valve seat **16***x* because of the hydrostatic head maintained in the tank and this elevation of valve **16** causes the tank to empty. As soon as the quantity of water in storage is reduced appreciably, valve **13** is actuated by the lowered position of float **14** and reseating of valve **16** to cause supply water to flow again into valve **13**. The action-raising valve **16** from its seat **16***x* also will have caused the liquid supply to be delivered through the tank filling pipe **29** into reservoir **11** after valves **16** and **18** are again seated. As previously explained, any surplus delivered into reservoir **11** is discharged through overflow pipe **26**.

Other types of control valves may be employed. FIG. **2** illustrates one arrangement in which a main supply line independent of a reservoir has a flush valve loop as shown at **40** and **41** with divided pipes or conduits **42***a* and **42***b* between. Conduit **42***a* is of greater volume or capacity than conduit **42***b* and the flow through each is controlled by valves **43***a* and **43***b*, respectively, controlling a pressure flow and a vacuum breaker **44** is installed in the discharge portion beyond the junction of lines **42***a* and **42***b*. Visual identification is provided for the user's selection of valve to operate for the desired flow.

As shown in FIG. **1**, the regular overflow pipe **26** is used from the bottom of the tank up to the point J, over which a section of pipe is slipped over **26** up to the point K. Another piece of the same size, L-shaped **25***a*, is slipped over **26** that extends to the upper water line **15**. Member **25***a* has a valve

seat at 18z upon which a ball valve 18 is seated. This ball valve is actuated from 19 along rod 21 to 22a which imparts movement of rod 18x attached to ball valve. This allows a small flush of about one-third of the tank contents. Ball valve reseats and the tank is again filled to line 15. This operation does not affect the full flush and operation of full flush does not affect the small flush. The construction of this overflow line is such that it is adjustable to meet any code requirement in regard to that of a minimum flush.

FIG. 3 illustrates another arrangement in which separate lines 45 and 46, respectively, have separate discharges 45x and 46x, respectively, into a toilet bowl. Each line is equipped with a vacuum breaker 44 of the type shown in FIG. 2 and the toilet bowl is shown schematically at 47. Valves 48a and 48b provide separate operation of the lines 45 and 46 so that a selective volume may be discharged into toilet bowl 47.

I claim:

1. In a water system for delivering a flow of water in a selective volume to a conduit outlet, communicating with a conventional flush toilet bowl, a first conduit for conducting a flow of water between a source of supply and an outlet from said first conduit, a branch line extending from an upstream portion of said first conduit and returning to a downstream portion of said first conduit, a valve controlling flow positioned in said first conduit between the point of departure of said branch line upstream of said valve and the point of return of said branch line to a juncture with said first conduit downstream of said valve, a valve controlling flow in said branch line between said point of departure and said juncture, and a vacuum breaker in said first conduit downstream of the branch juncture and upstream of the conduit outlet.

2. The combination with a toilet bowl, of two conduits supplying flush water to said bowl, one said conduit supplying a lesser flow, and the other said conduit supplying a greater flow, and a separate manually operable valve in each conduit for establishing the flushing flow therethrough, whereby a person operating said valves may selectively determine the volume of a given flush by actuation of either of said valves separately.