United States Patent [19]

Wilhelm

[11] **3,903,550**

[45] **Sept. 9, 1975**

[54] **WATER CLOSETS**

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[22] Filed: **Oct. 25, 1972**

[21] Appl. No.: **300,655**

[52] **U.S. Cl.** ..... **4/34;** 4/67 A; 4/67 R

[51] **Int. Cl.** **E03d 1/22;** E03d 1/30

[58] **Field of Search** ..... 4/34, 67 R, 67 A, 37, 52, 4/76; 138/89

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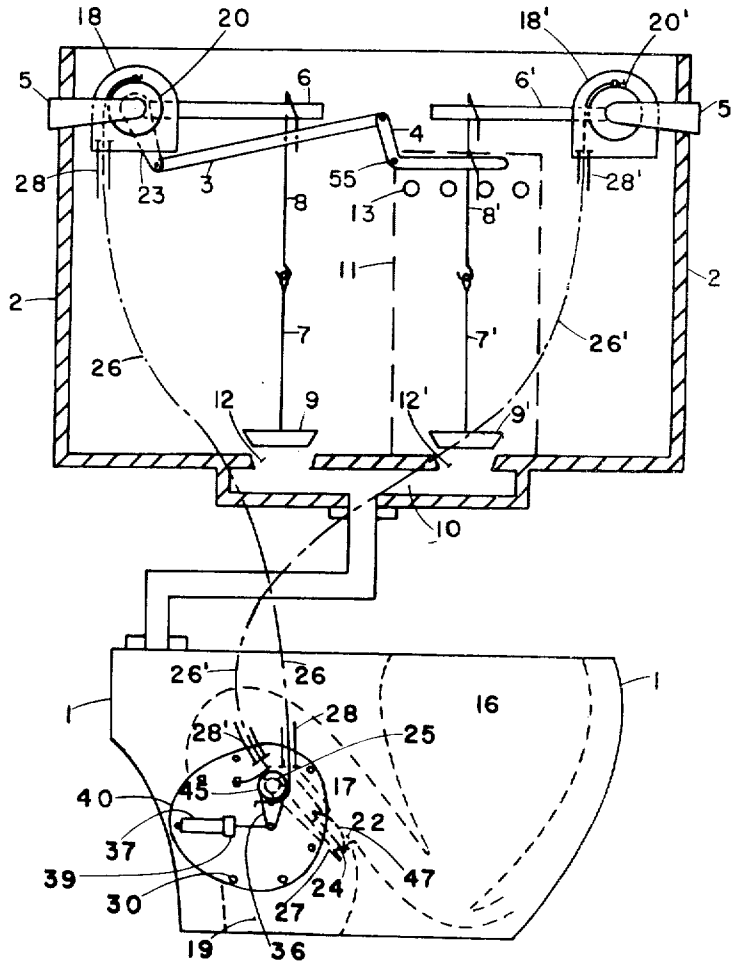
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Primary Examiner—Henry K. Artis

[57] **ABSTRACT**

Means by which a by-pass valve in the trap of an otherwise conventional water closet which is to be utilized with a dual flushing tank, ie., selectively full or fractional flush, is controlled by two flush handles mounted on the front of the tank, the toilet combination otherwise appearing and functioning in a manner identical to conventional techniques, such a toilet to be employed as a very significant water saving device.

10 Claims, 19 Drawing Figures



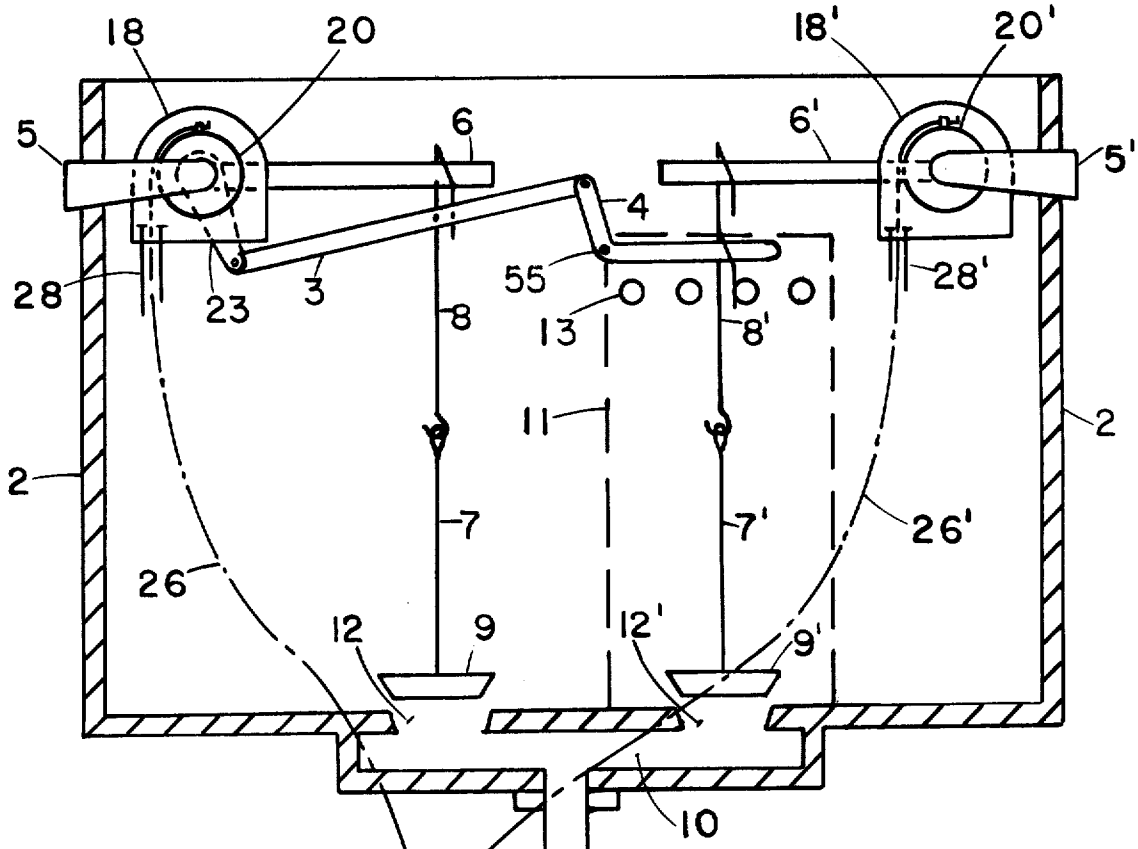
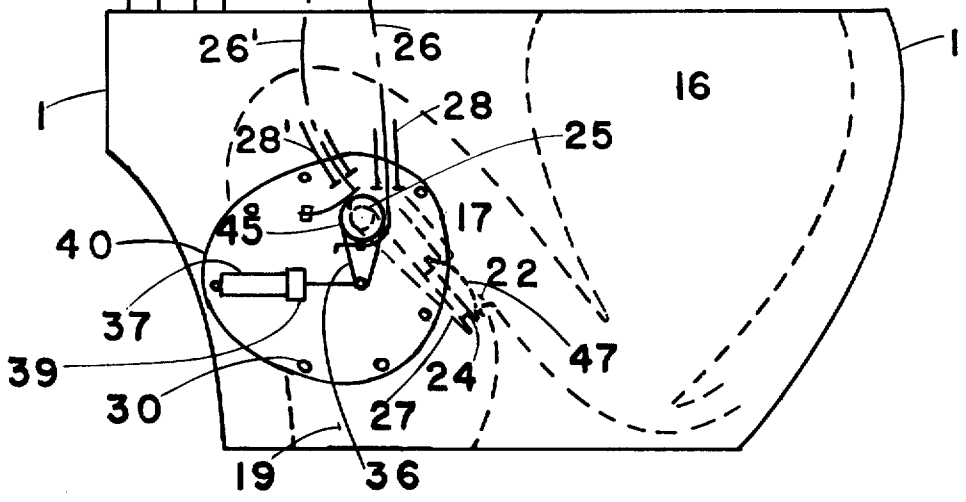

18
20
18'
20'
5
6
6'
5'
4
28
23
3
55
28'
13
8
8'
11
2
2
7
7'
26'
26
12
9
12'
9'
10

FIG. 1


26'
26
1
1
16
28
28'
25
45
17
40
22
37
39
47
24
30
27
19
36

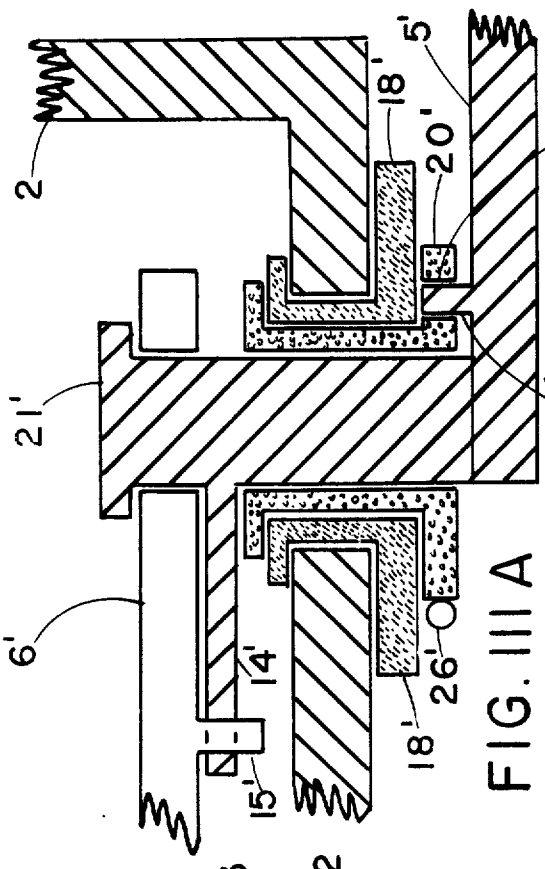


FIG. III A

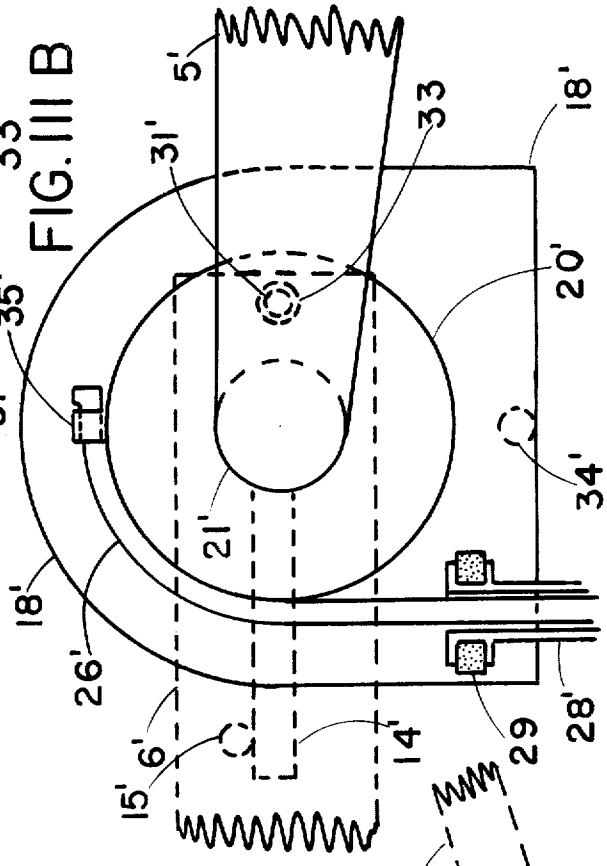


FIG. III B

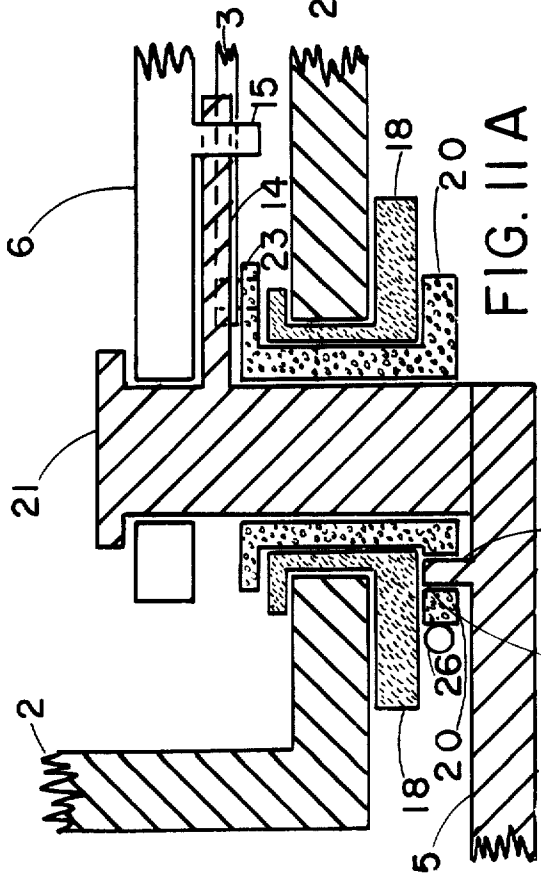


FIG. II A

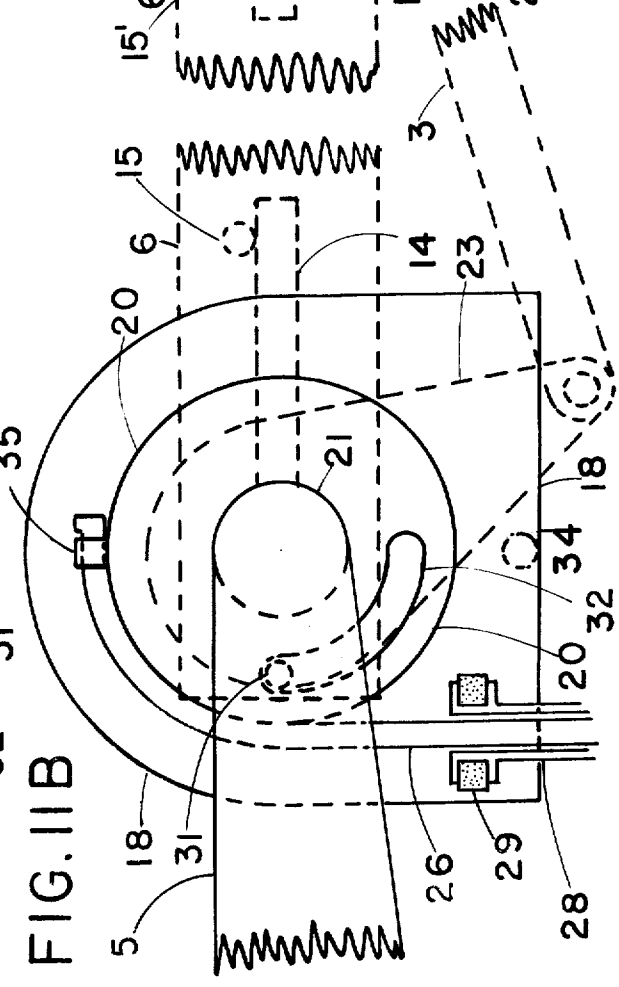
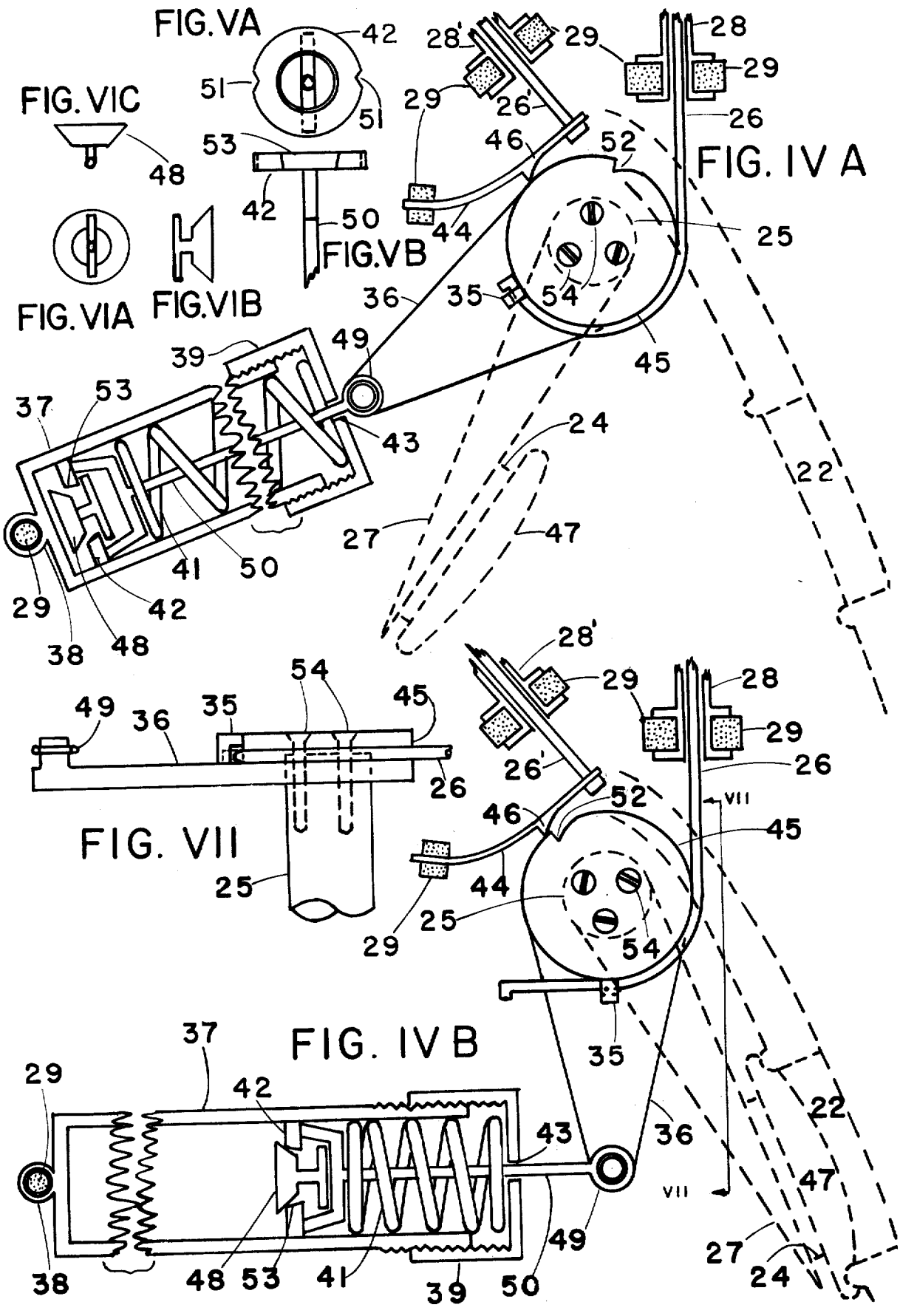
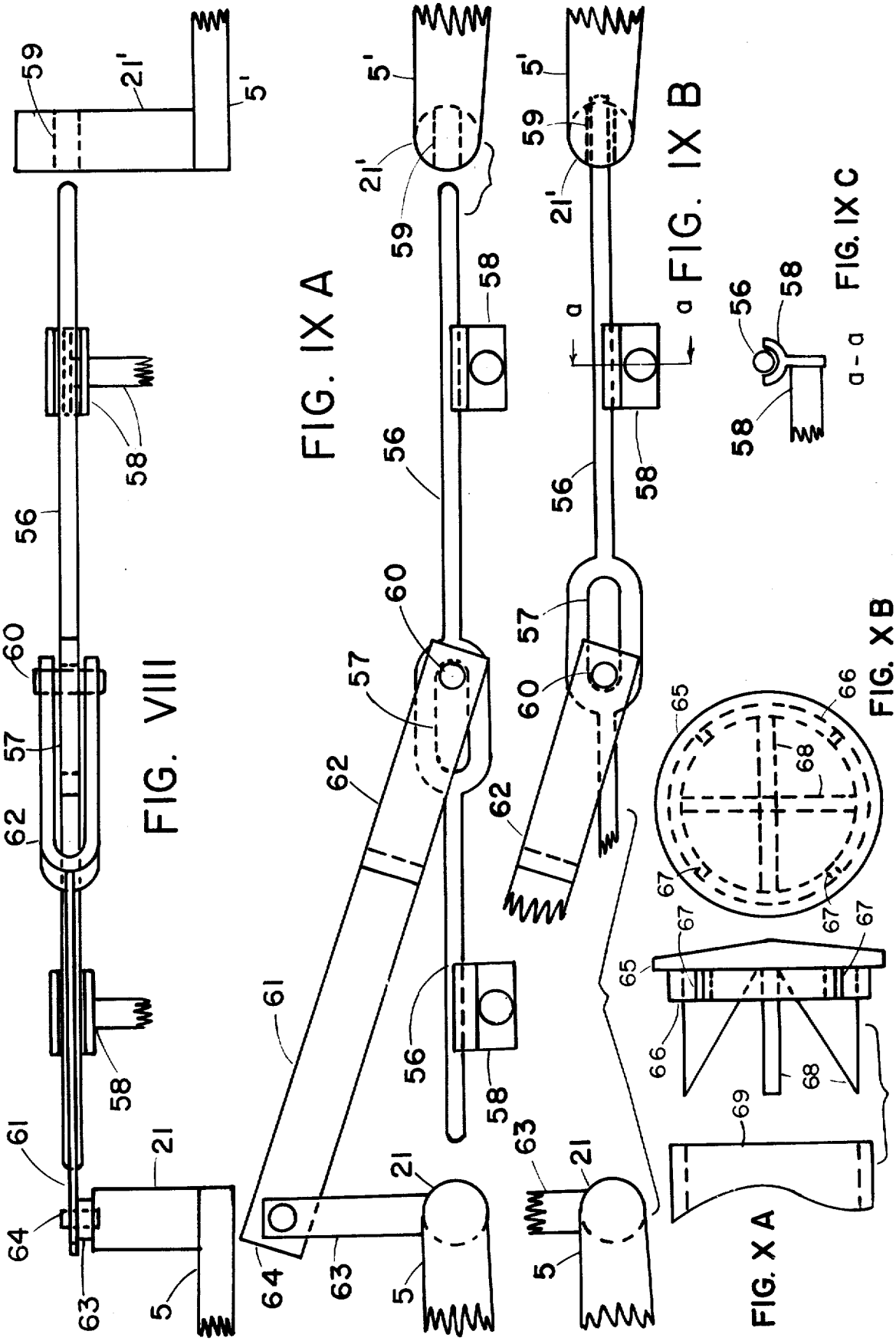


FIG. II B


FIG. VA
FIG. VIC
FIG. VIA
FIG. VIB
FIG. VB
FIG. IV A
FIG. VII
FIG. IV B
42
51
53
48
50
28'
29
26'
46
52
44
25
54
36
35
45
39
49
37
43
24
22
27
47
41
38
VII


59
21'
5'
58
56
60
57
62
61
64
63
5
21
FIG. VIII
FIG. IX A
FIG. IX B
a
a
FIG. IX C
a - a
65
66
67
68
69
FIG. X B
FIG. X A

WATER CLOSETS

There is now registered in the U.S. Patent Office a water saving water closet that uses a valved bypass connection between the water trap and sewer line of an otherwise conventional water closet to permit a choice of two liquid levels in the water closet, the higher and conventional level to be used in the instances of defecation where odor control and bowl cleanliness dictate the need for the higher level. The lower level is intended to provide an amount of liquid just sufficient to assure proper trap functioning for use in urination-only occasions. This water closet is to be used in conjunction with a water tank which provides the capability of either a full or partial flush as described by Mr. Brown in U.S. Pat. No. **1,805,204** dated May 1931 and others. It is my contention that while a full tank flush is recognized by most as necessary to esthetically and sanitarily remove the solid wastes and clean the bowl of a water closet after a defecation, an identical amount is required to dispose of liquid only wastes. The need is dictated by the volume of solid water in the bowl and not just by its consistency. A tank with dual flush capability alone, therefore, is of no value. However, with the volume of liquid in the trap of the water closet to be disposed of greatly reduced and the point over which it must be raised to pass into the sewer volume at a minimum height, the fractional flushing tanks disclosed by Mr. Brown and others will then do an effective job and can accomplish a completely satisfactory disposal of urine with pints rather than gallons of liquid. It is the primary object of this invention to set forth a mechanical configuration to operate the positioning of the internal valve of the water closet set forth in my earlier patent application, and to add additional liquid as necessary, all in a manner which most nearly duplicates the customary techniques of operating a conventional toilet. It is a secondary object of this invention to provide a simple mechanical interlock between the flush handles to preclude the inadvertent flushing of the toilet with the partial quantity of liquid when a full flush is required. It is another object of this invention to render the lowered liquid level in the water closet bowl relatively insensitive to sudden wind gusts or pressure drops over the roof top vents.

A preferred embodiment of the apparatus of the present invention is shown in the accompanying drawings, in which:

FIG. I is a vertical section view of a dual-flush water closet tank and an elevation view of a valved bowl in accordance with the present invention, the bowl being shown rotated **90°** about a vertical axis from its normal orientation,

FIG. IIA is a horizontal section view of a detail of one of the flush handles of FIG. I,

FIG. IIB is an elevation view of the apparatus of FIG. IIA,

FIG. IIIA is a horizontal section view of a detail of the other of the flush handles of FIG. I,

FIG. IIIB is an elevation view of the apparatus of FIG. IIIA,

FIGS. IVA and IVB are detailed views of the valving mechanism in the water closet bowl of FIG. I, showing the valve in the open and closed positions, respectively,

FIG. VA and VB are detailed view of the piston of the spring retraction and retraction damping cylinder,

FIGS. VIA, VIB and VIC are detail views of the pliable check valve which is carried in the piston of the pneumatic damping cylinder,

FIG. VII is a detail view taken on line VII— VII in FIG. IVB,

FIG. VIII is a plan view of an interlock mechanism in the tank of FIG. I which can cause the urine-only flush handle on the right to be rendered inoperative by certain operations of the left-hand flush handle,

FIG. IXA is an elevation view of the apparatus of FIG. VIII, with the right hand flush handle operative,

FIG. IXB is the same elevation view as in FIG. IXA, but with the interlocking mechanism in use.

FIG. IXC is a sectional view taken on line a—a in FIG. IXB,

FIG. XA is an elevation view of a cap which is intended for use in the roof top vent pipe, and

FIG. XB is a plan view of the cap of FIG. XA.

Turning attention to FIG. I I show a water closet **1** attached plumbing-wise in a conventional manner to the tank **2** which employs the accepted methods of filling and overflow control not shown. It has a flush handle **5** with thru flush rod **6**, hook **8** and stem **7** operates ball cock **9** and drains the liquid contents of tank **2** into the manifold **10** thru opening **12** and thense to water closet **1**. Contained within tank **2** I show a standpipe **11** cast during manufacture having a separate flushing mechanism. It is filled thru small openings **13** cast into its sides below the normal water line of the main tank. Water is drained from this standpipe by depressing flush handle **5'** which, thru flush rod **6'**, hook **8'** and stem **7'** raises ball cock **9'** and allows the contained liquid to pass into the manifold **10** thru opening **12'** and thense to the commode **1**.

The lower portion of FIG. I identifies the bowl **16** of the water closet **1**. It also shows the trap volume **17** and the sewer access volume **19** as well as the trap opening **22** which joins them. A removable plate **40** is configured to give access to and support of the valve structure within the water closet which selectively opens and closes opening **22**. Plate **40** mounts the control levers externally which position the trap valve and is secured by bolts **30** over a specially configured opening in the side of the water closet structure. Valve shaft **25**, valve attachment lugs **27**, valve seat **24** and the replaceable pad **47** are shown to relate all of the elements. Identification of the remainder of the items and their interrelationship is better understood by reference to the remaining figures. FIGS. IIA and IIIA are sectional, plan views of the left hand and right hand mechanisms of the handles **5** and **5'** respectively while FIGS. IIB and IIIB are the corresponding elevation views. The wall of tank **2** has an opening in both upper corners to accommodate the two flusing mechanisms as well as indexing recesses under them into which indexing lugs **34** and **34'** fit. These align the support collars **18** and **18'** and prevent rotation. Into each of these openings is fitted, in order, the support collar **18** and **18'**, the actuation wheel **20** and **20'** and the flusher shaft **21** and **21'**. Each of these devices is restrained axially to a close tolerance position although the detail for accomplishing this is omitted as not germaine to full understanding. The attachment technique of the flush handles **5** and **5'** to flusher shafts **21** and **21'** is omitted also for the same reason. The flush handle **5** has formed to its inner side an actuating lug **31** which protrudes into actuator lug slot **32**. With a clockwise rotation of flush handle **5** ac-

tuating lug 31 engages the actuation wheel 20 at the top of actuating lug slot 32 causing it also to rotate about flusher shaft 21. With a counter clockwise rotation of flush handle 5, the actuating lug 31 moves unobstructed in actuating lug slot 32 and does not cause the actuation wheel to rotate. It should be noted here that on the inner side of the tank 2 actuation wheel 20 terminates in an actuation wheel radial lever arm 23 which rotates with it. On the right side of the tank flusher handle 5' has a comparable actuating lug 31' which engages actuation wheel 20' in an actuation lug circular hole 33 rather than a slot since the designed employment of this flush handle 5' is to be in one direction only, ie., clockwise. Each employment of flush handle 5' rotates the actuation wheel in the same direction and amount.

Loosely fitted over the inner end of flusher shafts 21 and 21' and axially restrained I show flush rods 6 and 6' which engage the remainder of the linkages to ball cocks 9 and 9'. Flush rods 6 and 6' are each also fitted with a lifting lug 15 and 15' which rests upon a lifting arm 14 and 14' which in turn are secured into their respective flusher shafts 21 and 21'. A counter clockwise rotation of flush handle 5 working thru flusher shaft 21, lifting arm 14, lifting lug 15 and flush rod 6 raises the associated ball cock 9. In a similar manner clockwise rotation of flush handle 5' raises ball cock 9'. I also provide a means for raising ball cock 9' by the clockwise rotation of flush handle 5. This is accomplished by the associated clockwise rotation of actuation wheel radial lever arm 23 pulling the flush crank 4 thru flushing linkage 3. Since the flush crank 4 is supported and pivoted on the structure of the standpipe 11 at the flush crank pivot 55, this action raises the other end of the flush crank 4 which, thru the interaction of the other engaging element of hook 8' and the stem 7', raises ball cock 9'. There is one further attachment to flusher shaft 21 and a modification to flusher shaft 21', neither of which are indicated on FIG. II. They are described fully in the text later and are diagramed in FIGS. VIII, IXA, an IXB. Each actuation wheel 20 and 20' controls a separate function for positioning the valve in the water closet trap. Both accomplish this by the use of a flexible pull cable 26 and 26'. These cables are contained in flexible sheaths 28 and 28', the ends of which are permanently but replaceably attached at the upper ends to the support collars 18 and 18' , and at the lower ends to the plate 40 on the side of the water closet. The plate 40 and the support collars 18 and 18' are appropriately configured with anchor points 29 for this purpose. On both actuation wheels 20 and 20' pull cable 26 and 26' are attached by the pull cable stops 35 and 35' in such a manner that clockwise rotation of the actuation wheels 20 and 20' engages and draws the pull cables 26 and 26' through the flexible sheaths 28 and 28'. Rotation of the actuation wheels in the opposite direction causes the pull cable stops 35 and 35' to slide freely along pull cables 26 and 26' without moving them.

FIGS. IVA and IVB both show the mechanisms which are mounted on the outside of plate 40 to position replaceable pad 47 in or out of the trap opening 22 within the water closet. The significant elements of the device on the inside of the water closet are shown in dotted lines as a reference. FIG. IVA has the trap by pass valve in the full open position while FIG. IVB shows the mechanism just after the opening of the by-pass valve has been initiated. This was accomplished by rotating flush handle 5' clockwise. Besides initiating the emptying of standpipe 11, it raised the spring-actuated detent 46 out of the notch 52 in the circular cam surface 45 by the upward action of pull cable 26' against the force of the detent spring 44. Having thus been freed to rotate, the valve shaft 25 does so under the combined action of the cam surface crank 36, the piston rod 50, the piston 42, the retraction spring 41, the cylinder cap 39, the cylinder 37, and the cylinder eye 38, all working against the anchor point 29 affixed to plate 40. Closing the by-pass valve by replacing pad 47 in opening 22 re-compresses the retraction spring acting thru the same devices. This is accomplished by the clockwise rotation of flush handle 5 withdrawing pull cable 26 from the flexible sheath 28. As seen in FIG. IVA the circular cam surface 45 is caused to rotate counter clockwise by this action of the pull cable 26 being pulled up into the flexible sheath 28. The flexible pull cable 26 is also restrained onto the circular cam surface 45 by the pull cable stop 35 such that it turns the circular cam surface 45 when it is moving in a counter clockwise motion but slides freely when caused to move in the clockwise direction. When the replaceable pad 45 engages the lips of the opening 22 the spring actuated detent 46 is forced into the notch 52 in the circular cam surface 45 under the action of detent spring 44 working against another anchor point 29 mounted on plate 40. The circular cam surface 45 and the cam surface crank 36 are attached to the valve shaft 25 by recessed bolts 54. This relationship is understood best by reference to FIG. VII.

Because the rapid opening of the by-pass valve 22 might cause a surge of liquid out of the water closet trap and momentarily break the sealing action of the trap, a pneumatic cylinder is employed to modulate the speed of retraction. When detent 46 is extracted from the notch 52, it releases the energy of the retraction spring 41, thereby withdrawing pad 47 from opening 22. The air in cylinder 37 forces the check valve 48 to close into the piston valve seat 53. This forces the air to vent thru the orifices 51, retarding the free movement of piston 42. During the subsequent retraction process, the air forces check valve 48 open, reducing the pneumatically caused resistance in this direction to a negligible amount. The cylinder cap 39 is threaded internally to match the threads on the open end of cylinder 37. This permits the amount of compression of the retraction spring 41 to be varied. The rectangular slot 43 in the cylinder cap 39 allows the cap 39 to be placed over the piston rod eye 49 during assembly. In the event that testing shows the pneumatic feature of this cylinder to be un-necessary, the piston can be done away with allowing the characteristics of the spring to determine the retraction rate.

When the water closet has been prepared for a defecation by an upward or clockwise rotation of flush handle 5, ie., raising the water level in the water closet bowl to the conventional level, it must be subsequently flushed by the same flush handle 5 with a counter clockwise rotation. The valve in the water closet then remains closed, the larger and necessary volume of water is supplied, the desired siphoning action takes place and the solid waste material is disposed of in a conventional manner. If the user inadvertently, flushed with the urine only flush handle 5', it would release the valve control mechanism allowing the by-pass valve 22

to open and allow the solid material and tissue to attempt to pass directly to the sewer. It would also provide an insufficient quantity of liquid for this function and negate the siphoning action. To preclude this I provide a simple sliding interlock between the two handles such that when the flushing handle **5** is rotated clockwise to prepare the bowl for a defecation, it actuates a mechanical locking mechanism on flush handle **5'** preventing its rotation. It is released only with the counter clockwise flushing action of flush handle **5.**

The interlocking action is described with reference to FIGS. VIII, IXA, and IXB. A sliding lock shaft **56** is mounted horizontally within the tank **2** such that it is axially aligned with the horizontal hole **59** in flusher shaft **21'**. It is supported on left end and right end supports **58** which are appropriately supported in turn on extensions of support collars **18** and **18'** (not shown for clarity). Sliding lock shaft **56** has at its midpoint a slotted opening **57** thru which lock shaft actuating pin **60** is placed with its axis horizontal and perpendicular to the plane of the slot. Placed over the slot **57** I show the yoke **62** of connecting link **61** which also snugly restrains pin **60** in both ends of its yoke. The other end of connecting link **61** is joined to flusher shaft **21** thru vertical link pin **64** and the vertical link **63.** Rotation of flusher shaft **21,** then, results in movement on the horizontal plane of pin **60** back and forth in the sliding lock shaft slot **57.** Connecting link **61** and slot **57** are to be of such lengths that clockwise rotation of flusher shaft **21** pushes the sliding lock shaft **56** into the horizontal hole **59** in flusher shaft **21'**. Return of flusher shaft **21** to its neutral position of rotation returns pin **60** to the left hand extremity of slot **57** (FIG. IXB). Counterclockwise rotation of flusher shaft **21** extracts the sliding lock shaft **56** from the horizontal hole **59.** The return of flusher shaft **21** to its neutral position of rotation in this case places pin **60** at the right hand extremity of slot **57** (FIG. IXA).

Because this concept of toilet design features a greatly reduced depth of liquid in the trap of the water closet as a vapor and odor barrier (about ½ inch as opposed to the more traditional **3–3½** inches liquid depth) there is the concern that high and sudden wind velocities over the top of the trap vent protruding thru the roof can cause momentary pressure drops or overpressures in the soil stack and momentarily break the liquid seal of this concept permitting sewer gases to reach the bath room area. To preclude this I provide a cap for the rooftop vent which has protected small openings which easily accommodate gradual atmospheric pressure changes but render the water closet relatively insensitive to the effects of sudden wind velocities. In FIGS. XA and XB I show side and top views of this cap which has a top **65,** a collar **66,** collar slots **67** and retaining extensions **68.** It should be noticed that collar **66** has a cross section identical to the vent **69** to which it is to be attached and the outer dimension of the retaining extensions **68** match the inner diameter of the vent pipe **69.** The slots **67** are spaced at **90°** apart and are rotated **45°** from the positions of the retaining extensions **68.** Top **65** is slightly larger in diameter than the collar to afford protection to the slots from becoming clogged with bird droppings, etc. The cap is forced down into the vent pipe **69** until the collar **66** touches the top surface of it where it is held by the retaining extensions **68.** The coordination of all of these elements is best understood by reviewing an operational cycle.

The water closet is normally to be kept with opening **22** in the trap area open which holds the trap liquid level at its lower position. After a urination-only occasion the water closet is flushed by depressing the right side flush handle **5'** which, thru a conventional type linkage, empties the liquid in the standpipe **11** only and also thru pull cable **26'** raises the spring actuated detent **46** off of the circular cam surface **25.** Since the pad **47** is already in the fully retracted condition this has no effect and the urine contaminated trap liquid is replaced by a minimum of clean liquid. The standpipe **11** is replenished thru the openings **13** from the main tank which in turn is refilled by conventional techniques. If the user had inadvertently flushed with the left flusher handle, it would have had no adverse effect except to use the traditional several gallons of liquid, considerably in excess of that which is now required.

The water closet is prepared for a defecation, ie., the liquid level is raised to the conventional level, by simply rotating the left hand flush handle **5** in the up or clockwise direction. This single action, (a) closes opening **22** (where it is held by detent **46** being forced into notch **52**) allowing the bowl **16** to be temporarily capable of holding the conventional level of liquid, (b) actuates the interlock to preclude the rotation of flusher handle **5'**, and (c) initiates the flush of the standpipe **11** to provide the required additional liquid. Flushing in this instance is accomplished by depressing, ie., rotating counter clockwise, flush handle **5** which empties the main tank, the amount required to adequately dispose of the solid waste when the liquid in the bowl is at its traditional level, and dis-engages the interlock from the flusher handle **5'**. The next urination-only instance is flused as usual by flush handle **5'**. However, in this instance the valve is still closed over opening **22** and the level of liquid in the bowl is still at the higher point. Actuation of flush handle **5'** initiates the release of the water in standpipe **11** while simultaneously raising detent **46** out of the notch **52** thru the action of pull cable **26'** which permits the retraction of the trap valve. The energy for the retraction of the valve in the water closet trap is provided by action of the pneumatically damped spring **41.** The flushing action completes, and the level of trap liquid is once again established at its customary level.

While I have described my invention in certain of its preferred embodiments, I realize that modifications may be made and I desire that it be understood that no limitations upon my invention are intended other than may be imposed by the scope of the appended claims.

I claim:

1. A means to control the position of a valve which opens or closes a waterway through the weir of the trap of a specially configured water closet and to supply separate water quantity requirements to said water closet using the rotational motions of two flushing mechanisms on the face of the associated tank, said means comprising:

a. a flat support structure comprising a removable access plate member forming a part of the water closet bowl wall and constituting a mounting means for such trap valve shaft and the operating means therefor, said access plate also serving as a liquid and vapor sealing means for a corresponding access aperture in such bowl wall,

b. two sheath-enclosed flexible pull cables, each connected to and adapted to be actuated by a respec-

tive one of two tank-mounted flushing mechanisms for imparting appropriate motion to respective control devices of the water closet trap valve connected thereto,

c. two tank-mounted flushing mechanisms connected to respective ones of said pull cables to operate the same in conjunction with respective flush cycles initiated thereby,

d. a linkage within the water closet tank and interconnecting the two flushing mechanisms whereby one of the flush handles by a reverse rotation can initiate the operation of the other flush cycle, and

e. an interlocking linkage within the water closet tank and interconnecting the two said flushing mechanisms whereby a reverse rotation of one flush handle can temporarily preclude the subsequent functioning of the other handle.

2. A control apparatus in accordance with claim **1** wherein the mechanism which rotates the water closet valve shaft to open and close the internal valve comprises a circular cam surface attached to the external end of said valve shaft with the plane of said cam perpendicular thereto, said cam surface having attached to it on its circumference one end of a pull cable by means of a loose restraint whereby a pulling motion of said cable rotates the cam with it against the force of a spring working between a crank attached to said cam and an anchor point on the supporting plate, said cam surface having in addition a notch to interact with a support-structure mounted, spring-actuated detent, said detent being held against the cam surface by said spring in order to maintain the internal valve in the closed position when the detent and notch are aligned and engaged.

3. A mechanism in accordance with claim **2** wherein the valve-actuating spring is employed within a cylinder to assist in the valve retraction, said cylinder being closed at the one end where it is pivotally anchored to the support structure, said cylinder damping the release of the energy of the spring by employment of a check valve in an associated piston against which the spring is working such that during the energy release said check valve closes causing the trapped air to vent thru small orifices in the piston and during the energy storage cycle, said check valve when opened allowing free return of the air to the enclosed side of the piston, the cylinder cap against which the other end of the retraction spring reacts allowing free passage of the piston shaft and being internally threaded to match the external threads of the open end of said cylinder to facilitate varying the compressive load on the retraction spring.

4. A device in accordance with claim **2** wherein a spring-actuated detent, mounted on the support structure, is positioned and tensioned to cause engagement with a notch in said cam surface when the rotation of the cam permits, said tensioning force being opposed when appropriate by a permanently attached pull cable actuated by the rotation of a flushing handle on the front of the flush tank.

5. A device in accordance with claim **1** wherein a flush handle located at the top left front of the toilet tank wall, besides being attached to a shaft which enters the tank and which thru a specific internal linkage when rotated counterclockwise initiates a full flush cycle, has in addition a protrusion on its back surface which interacts with a concentric slot segment in a wheel which is supported in the toilet tank wall above the full liquid level coaxially with, and rotatably about the aforementioned shaft, said wheel having attached to its circumference by a loose restraint the upper end of the pull cable related to rotationally closing the valve of the water closet trap such that clockwise rotation of the wheel by the flush handle acting thru the protrusion thereon engages the end of the pull cable and causes it to move with it, while said wheel and cable combination remain immune from motion caused by any counterclockwise rotation of the flush handle due to the pattern and position of the slot segment in said wheel, said wheel having in addition within the tank wall as an integral part of it a radial link parallel to the inner surface of the tank front wall, such wheel and link combination always rotating about the flushing shaft during clockwise rotation only of the flush handle thru the same interaction of said protrusion on its back surface and the concentric slot segment in the wheel.

6. A device in accordance with claim **1** wherein a flush handle mounted at the top right front of the toilet tank wall, besides being attached to a shaft which enters the tank and which thru a specific linkage when rotated clockwise initiates a separate and reduced quantity flush cycle, has in addition a protrusion on its back surface which interacts with a circular hole in a wheel which is supported in the toilet tank wall above the full liquid level co-axially with, and rotatably about, the aforementioned shaft, said wheel having attached to its circumference by a loose restraint the upper end of the pull cable related to raising the spring-positioned detent from the notch in the surface of the cam which positions the water closet valve, such that clockwise rotation of the wheel by the flush handle acting thru the protrusion thereon engages the end of the pull cable and causes it to move with it and raise the detent.

7. An extension of the device of claim **5** wherein a clockwise rotation of the wheel-associated radial link within the tank by the left hand flush handle causes the initiation of the alternate flushing system by the upward rotational motion of one arm of a crank suitably pivoted on structure within the tank acting on the flushing devices, said rotational motion being caused by a connecting link between the other leg of the crank and the wheel-associated radial link, said linkage combination comprising the second of two separate ways that the flushing of the alternate and reduced quantity flush system can be accomplished.

8. A device in accordance with claim **1** wherein the initiation of either flushing capability is carried out by an associated flush handle which acts thru its own shaft, said shaft penetrating the tank wall and having a rod loosely fitted over its inner end by means of a hole in one end of the rod, said rod being axially restrained to the shaft, pointing horizontally toward the middle of the tank where its other extremity is mechanically linked to its associated ball cock and having a protrusion on its side positioned to interact with a parallel extension of its associated flushing shaft such that a downward motion of the associated flush handle imparts, thru the interaction of the protrusion, an upward rotation to said horizontal rod initiating the flush but configured in such a manner that opposite rotation of the flush handles will have no rotational effect on the aforementioned flushing linkages.

9. A device in accordance with claim **1** wherein means are provided to give mechanical support for all of the flushing elements on the front wall of the tank in

their proper relationships comprising: a flat supporting collar which has a circular projection which extends into the tank where it is to be mechanically restrained, said projection having an outer diameter which matches the opening in the tank wall and whose inner opening diameter is sufficient to provide rotational support to penetrating elements, the outward facing surface of said supporting collar having provisions for anchoring the sheath of a flexible pull cable and the tank side face having formed upon it a protrusion which matches an indentation in the tank face for the purpose of preventing rotation of said support collar.

10. A device in accordance with claim 1 wherein an interlock is employed between the two flushing elements mounted on the tank face such that clockwise rotation of the left flush handle, which prepares the water closet for a defecation and thereby subsequently requires a full tank flush, mechanically precludes any rotation of the right hand flush handle, such an interlocking action being releasible only by subsequent counterclockwise or flushing rotation of the left hand flush handle comprising: a horizontally supported slotted rod being aligned to be inserted into a corresponding hole in the right hand flush shaft and a linkage connecting a constrained pin which moves right and left in the aforementioned slot an amount to insert and withdraw said slotted rod with a pivot on an associated vertical linkage secured to the end of the left hand flusher shaft.

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