



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 191 158 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
27.03.2002 Bulletin 2002/13

(51) Int Cl.7: **E03D 5/092**

(21) Application number: **01122306.2**

(22) Date of filing: **18.09.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Moura De Oliveira, Antonio Manuel
3800 Aveiro (PT)**

(74) Representative: **Cerbaro, Elena, Dr. et al
STUDIO TORTA S.r.l.,
Via Viotti, 9
10121 Torino (IT)**

(30) Priority: **21.09.2000 IT MI002060**

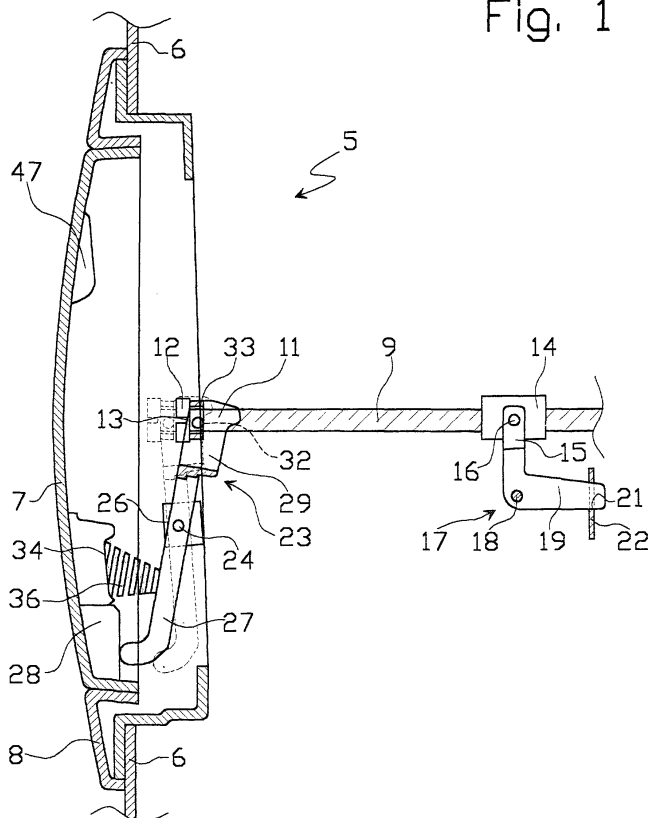
(71) Applicant: **Oliveira & Irmão S.A.
3800 Aveiro (PT)**

(54) Device for controlling the discharge valve of a lavatory flush tank

(57) The control device (5) has a manual-control button (7) which, by means of a lever (23), moves a tie (9) to open the discharge valve and return to the rest position following discharge. To alter the operating mode of the control device (5) to interrupt drainage of the tank in advance, the tie (9), even if already installed

on the tank, may be fitted selectively and removably with a member (37) having a semicylindrical wall (39) fittable to the tie (9) and connectable in articulated manner to the lever (23). When pressed with the tie (9) activated, the button (7) engages the member (37) to restore the tie (9) immediately to the rest position.

Fig. 1



EP 1 191 158 A2

Description

[0001] The present invention relates to a device for controlling the discharge valve of a lavatory flush tank.

[0002] Various types of flush tank discharge valve control devices are known for effecting either full drainage or selective full or partial drainage of the tank. Control devices are also known in which the same button is pressed once to open the discharge valve, and a second time to close the valve and so control discharge as required.

[0003] All these known devices are manufactured to operate in a specific way, which, once the device is installed, cannot be altered. That is, a control device designed to discharge a fixed quantity of water cannot be altered to discharge a variable quantity, and vice versa.

[0004] It is an object of the present invention to provide a discharge valve control device enabling alterations to the operating mode by means of straightforward operations and/or part replacements, even after the device is installed.

[0005] According to the present invention, there is provided a device for controlling the discharge valve of a lavatory flush tank, and which comprises a button for manually controlling the valve; and an actuating member normally maintained in a rest position and which is moved by said button into a work position to open said valve; said actuating member being restored to said rest position by said valve following discharge; and the device being characterized by a member activated by said button to interrupt drainage of said tank; said member being fittable selectively and removably to said actuating member already installed on the tank.

[0006] A preferred, non-limiting embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic partial side view of a discharge valve control device in accordance with the present invention and set to a first operating mode;

Figure 2 shows a view in perspective of a detail of the Figure 1 device;

Figure 3 shows a partial view of the Figure 1 control device set to another operating mode;

Figure 4 shows a view in perspective of a detail in Figure 3.

[0007] Number 5 in Figure 1 indicates as a whole a device for controlling the discharge valve of a lavatory flush tank, of which Figure 1 shows a portion of a lateral wall 6, which may be positioned horizontally or vertically. More specifically, the tank may be recessed in a wall; and device 5 comprises a manual-control button 7, which is guided horizontally inside a ring nut 8 fixed in known manner to wall 6.

[0008] Device 5 comprises an actuating member defined by a tie 9, which is normally maintained in the rest

position shown in Figure 1, and which is movable towards button 7 into a work position, shown by the dash lines in Figure 1, to open the discharge valve. The discharge valve normally comprises a ring of elastic material fixed to an overflow pipe; is opened by raising the overflow pipe; and is closed by a float when the set quantity of water, e.g. for total or partial drainage of the tank, has been discharged.

[0009] More specifically, tie 9 is defined by a long screw comprising a nonthreaded portion 11, and a head 12 in the form of a flange and having a slot 13 for receiving an adjusting tool, e.g. a screwdriver. Screw 9 engages a nut screw 14 having two pins 16 engaging two tabs 15 of a transmission member defined by a lever 17. Lever 17 pivots on a fixed pin 18 and has an arm 19 engaging a slot 21 in an appendix 22 integral with the overflow pipe. By rotating screw 9, the distance between nut screw 14 and button 7 is adjustable to adapt the position of lever 17 to that of button 7.

[0010] Screw 9 is connected in articulated manner to a lever 23 activated by button 7. More specifically, lever 23 has two pins 24 (see also Figure 2) by which it pivots on two appendixes 26 of ring nut 8, and comprises a bottom arm 27, the rounded end of which is engaged by an inner appendix 28 of button 7. Lever 23 also comprises a top arm with a fork 29 having two recesses 31, which click onto respective pins 32 carried by a ring 33 on the nonthreaded portion 11 of screw 9.

[0011] A compression spring 36 is located between arm 27 of lever 23 and an appendix 34 on the inner surface of button 7, to keep button 7 normally in the rest position, and to keep ring 33 resting against head 12, which acts as a shoulder. Screw 9 is kept in the rest position by the weight of the overflow pipe via transmission lever 17.

[0012] In the Figure 1 condition, device 5 is set to discharge a fixed quantity of water from the tank: when button 7 is pressed, appendix 28 engages the end of arm 27 to rotate lever 23 anticlockwise; and, by means of fork 29 and ring 33, lever 23 moves screw 9 towards button 7, so that transmission lever 17, by means of appendix 22, opens the discharge valve. When the set amount of water has been discharged, transmission lever 17 is rotated clockwise by the weight of the overflow pipe and restores screw 9 and lever 23 to the rest position.

[0013] To alter control device 5 to cut off discharge at any time, button 7 need simply be removed in known manner and ring 33 simply replaced with a substitute member indicated as a whole by 37 (Figures 3 and 4). More specifically, member 37 comprises a semicylindrical wall 39, which extends in the form of two parallel portions 41 and supports two diametrically-opposite pins 42 similar to pins 32 of ring 33 and which also click inside recesses 31 (Figure 2) on fork 29 of lever 23.

[0014] Member 37 (Figures 3 and 4) also comprises a transverse wall 43 which, together with wall 39 and portions 41, forms a U-shaped seat 44 which fits onto

head 12 of screw 9. Wall 43 has a hole 45 for enabling engagement of slot 13 by a screwdriver, and extends in the form of a tab 46 which is engaged by a further inner appendix 47 of button 7 when button 7 is pressed and screw 9 is in the work position shown by the dash line in Figure 3. Tab 46 is connected to the two parallel portions 41 by two reinforcing brackets 48.

[0015] To alter the operating mode of the Figure 1 control device 5 already installed on the tank, button 7 is removed; fork 29 is released from the two pins 32 on ring 33, which is moved along screw 9 and left loose in the position shown in Figure 3; substitute member 37 is fitted onto screw 9 by fitting U-shaped seat 44 onto head 12; and recesses 31 (Figure 2) on fork 29 are clicked onto pins 42 of member 37 as shown in Figure 3.

[0016] Control device 5 in Figure 3 operates as follows.

[0017] When button 7 is pressed, appendix 28 rotates lever 23 anticlockwise as in Figure 1; lever 23 moves member 37, which in turn moves tab 46 towards appendix 47 of button 7. In other words, member 37 moves screw 9 leftwards to open the discharge valve and, at the same time, is set in a position for enabling the button 7 to cut off the discharge.

[0018] To cut off discharge before the overflow pipe closes the discharge valve, button 7 is simply pressed again, so that appendix 47 engages tab 46 of member 37, which moves screw 9 rightwards in Figure 3, so that transmission lever 17 lowers the overflow pipe positively to close the discharge valve.

[0019] By performing the above operations in reverse order, member 37 fitted to control device 5 as shown in Figure 3 may obviously be removed from screw 9, and fork 29 reconnected to pins 32 of ring 33 left loose on screw 9, so as to return at any time to the full-discharge condition in Figure 1. Member 37 may obviously be connected selectively and removably to head 12 of screw 9 and to lever 23.

[0020] The advantages, with respect to known devices, of the control device according to the invention will be clear from the foregoing description. In particular, the operating mode of the flush tank can be determined easily on the basis of one component, and can be altered at any time, even once the device is installed, by simply changing one component part.

[0021] Clearly, changes may be made to the device as described herein without, however, departing from the scope of the accompanying Claims. For example, button 7 may be fitted to the top wall of the tank; member 37 may be formed otherwise than as described; and screw 9 may be replaced with a tie having a straightforward flange.

Claims

1. A device for controlling the discharge valve of a lavatory flush tank, and which comprises a button (7)

for manually controlling the valve; and an actuating member (9) normally maintained in a rest position and which is moved by said button (7) into a work position to open said valve; said actuating member (9) being restored to said rest position by said valve following discharge; and the device being **characterized by** a member (37) activated by said button (7) to interrupt drainage of said tank; said member (37) being fittable selectively and removably to said actuating member (9) already installed on the tank.

2. A device as claimed in Claim 1, **characterized in that** said actuating member is defined by a tie (9) connected to a lever (23) activated by said button (7); said member (37) comprising a semicylindrical wall (39) fittable to said tie (9) and connectable in articulated manner to said lever (23).
3. A device as claimed in Claim 2, **characterized in that** said member (37) also comprises a tab (46) activated by said button (7) when said tie (9) is in said work position; a compression spring (36) being provided between said lever (23) and said button (7).
4. A device as claimed in Claim 3, **characterized in that** said tie (9) comprises a shoulder (12) engaged by a ring (33) having two diametrically-opposite pins (32); said lever (23) having a fork (29) in turn having two recesses (31) which click onto said pins (32).
5. A device as claimed in Claim 4, **characterized in that** said semicylindrical wall (39) has two corresponding diametrically-opposite pins (42) enabling assembly of said member (37) in lieu of said ring (33).
6. A device as claimed in Claim 5, **characterized in that** said shoulder is defined by a flange (12) of said tie (9); said semicylindrical wall (39) being associated with two parallel portions (41), and having a U-shaped seat (44) which fits onto said flange (12).
7. A device as claimed in Claim 6, **characterized in that** said tie is defined by a screw (9), and said flange is defined by the head (12) of said screw (9); said screw (9) engaging a nut screw (14) connected to a transmission member (17) for activating the discharge valve, so as to adapt the position of said transmission member (17) with respect to said button (7).
8. A device as claimed in Claim 7, **characterized in that** said button (7) is fitted to a lateral wall (6) of said tank; the head (12) of said screw (9) being engageable by an adjusting tool; and said member (37) comprising a transverse wall (43) engaging said head (12) and having an opening (45) for the passage of said tool.

Fig. 1

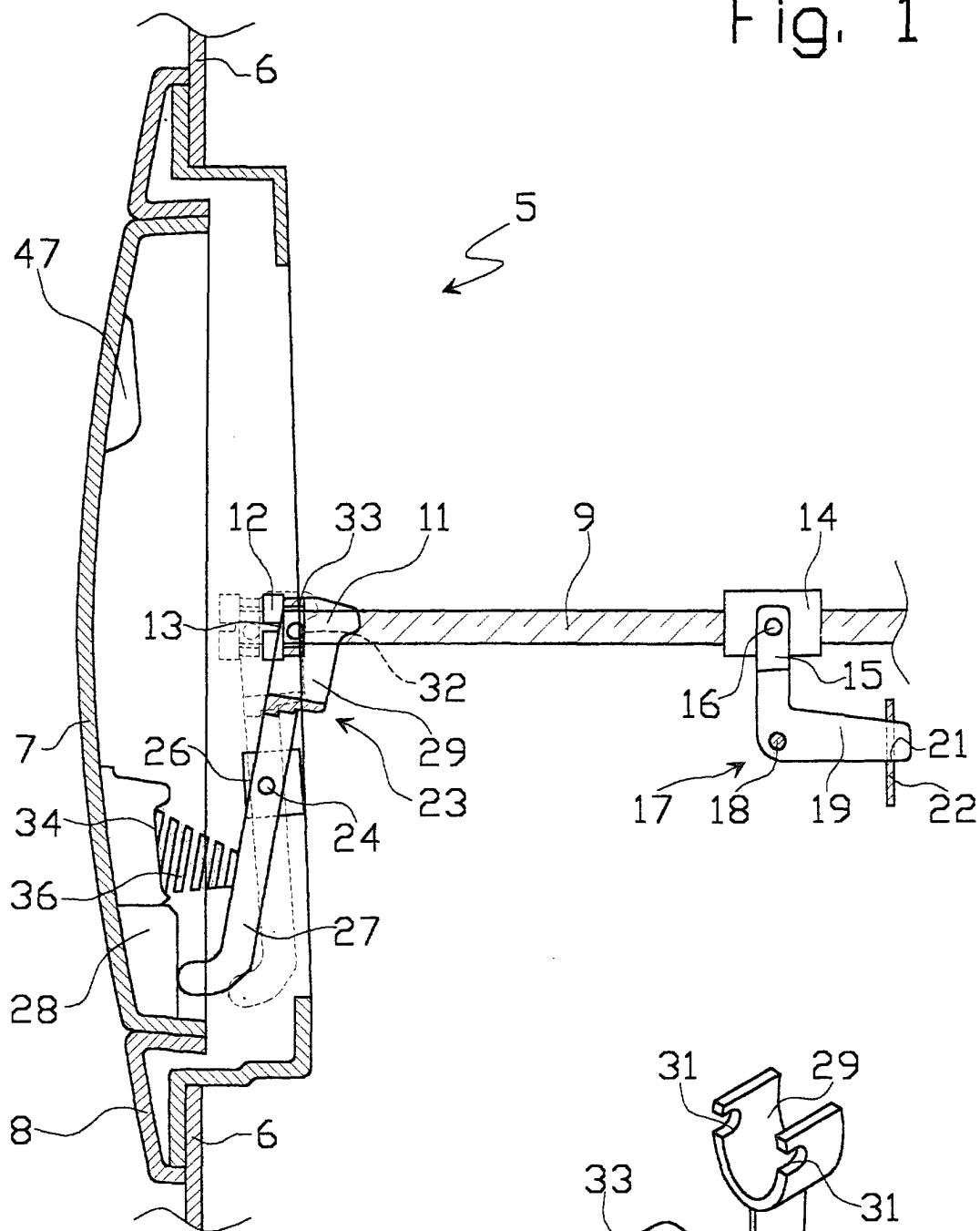


Fig. 2

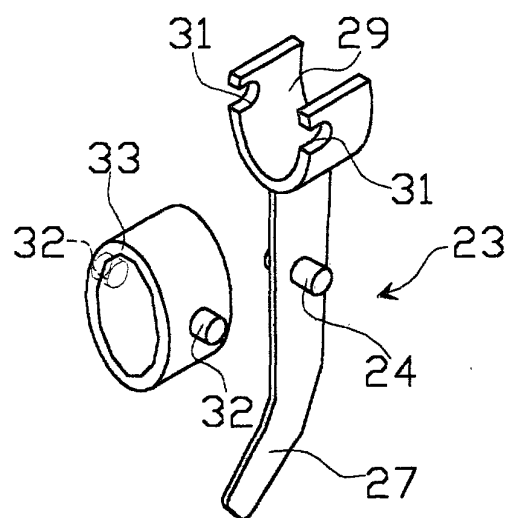


Fig. 3

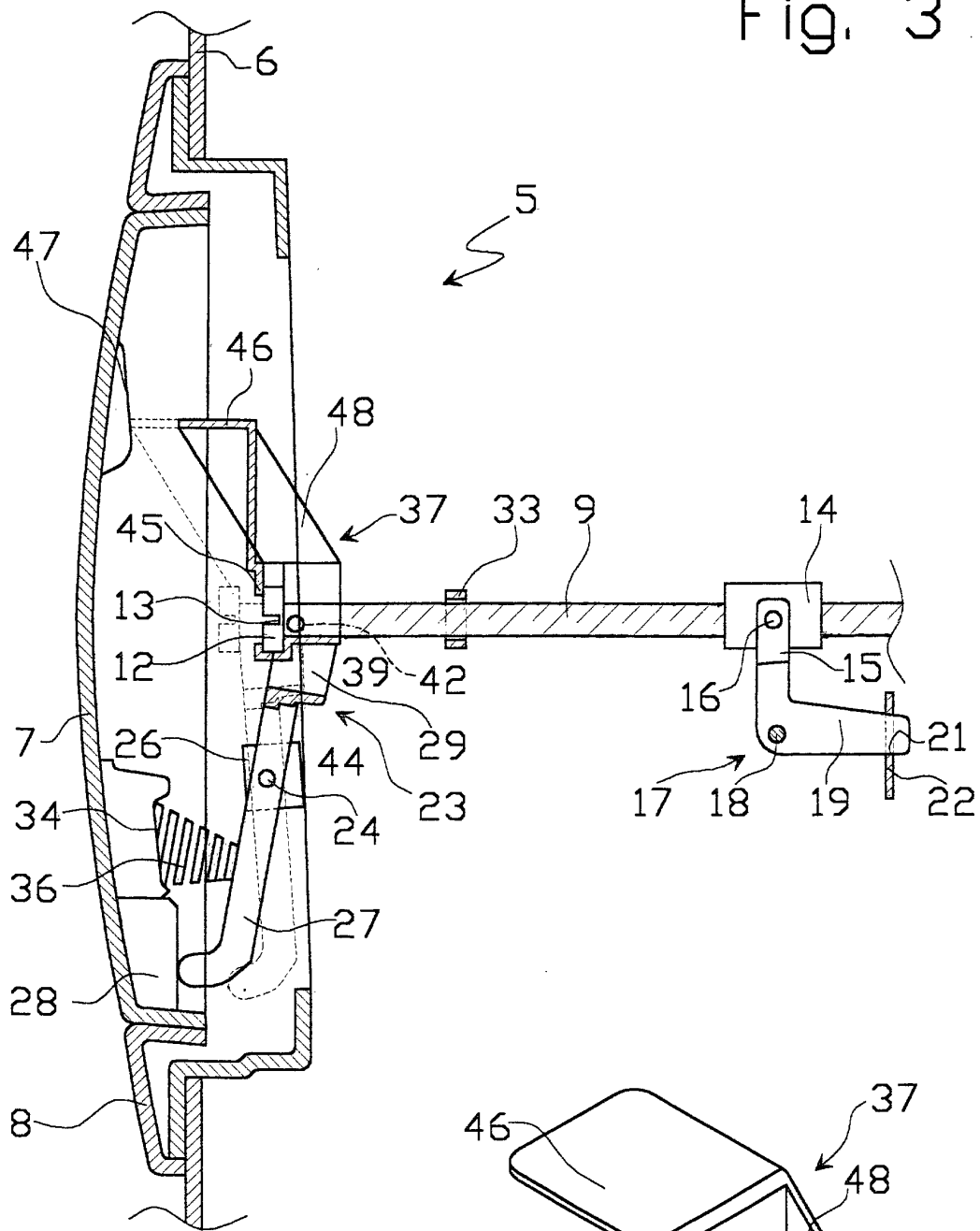


Fig. 4

