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

Gerät zur Steuerung eines Ablaufventils eines Spülkastens

Dispositif pour réguler une soupape de vidange d'une chasse d'eau

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Description

[0001] The present invention relates to a device for controlling the discharge valve of a lavatory flush tank. In particular, the invention relates to a discharge valve control device enabling the tank to be emptied completely or partially, for the purpose of reducing water consumption.

[0002] Document EP-A-426 224 describes a control device of the above type, wherein the discharge valve shutter is connected to a float to delay closing of the valve and so empty the tank completely; a rocker arm is connected to the shutter, and carries the pivots of two elements connected by a slot and pin to an oscillating plate; the oscillating plate may be set by the two elements to either of two positions, each for predisposing a respective element for operation; and the two elements are activated alternatively by a single button, first to open and then to close the discharge valve at any time, regardless of the action of the float.

[0003] Though reliable, the above device has several drawbacks. In particular, the connection between the hinged elements and the oscillating plate is fairly complicated to produce and assemble; and the rigid connection of the device to the ceramic material of the tank makes it difficult to adjust and adapt the device to different tank sizes.

[0004] Document DE-U-9110092 discloses a devices according to the preamble of enclosed claim 1. This device presents the problem that the user has no clear indication, when pushing the single control button, if either the opening or the closure of the valve has been activated.

[0005] It is an object of the present invention to provide a highly straightforward, reliable tank control device of the above type, designed to eliminate the aforementioned drawbacks of the known device.

[0006] According to the present invention, there is provided a device for controlling the discharge valve of a lavatory flush tank as defined by the enclosed claim 1.

[0007] 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 partially sectioned side view of a device for controlling the discharge valve of a flush tank in accordance with the present invention;

Figure 2 shows an exploded, larger-scale partial section of Figure 1;

Figure 3 shows a partial section along line III-III in Figure 2;

Figure 4 shows a partially sectioned plan view of part of Figure 3;

Figure 5 shows a partially sectioned view of a variation of the control member of the device.

[0008] With reference to Figure 1, number 5 indicates as a whole a lavatory flush tank, which is preferably made of ceramic and, as usual, comprises a tap (not shown) for connection to the water supply pipe, and a float (not shown) for controlling the tap. Tank 5 comprises a bottom wall 6 having a hole 7 in which is fitted a device for controlling discharge of the water and indicated as a whole by 8. As the components of device 8 are generally made of rigid plastic material, in the following description, the material of the components is only specified when other than plastic.

[0009] Device 8 comprises a discharge fitting 9 having a bottom portion 11, which defines the discharge valve and is threaded externally. Fitting 9 also comprises a flat shoulder 12, and a top portion 13 having openings 14 for the passage of water to valve 11, which is inserted inside hole 7 in bottom wall 6 via the interposition of a seal 16, and is fixed to wall 6 by a threaded ring nut 17.

[0010] Device 8 also comprises an overflow pipe 18, which slides vertically inside a cylindrical casing 19; the bottom end of pipe 18 is provided with a shutter defined by an elastic ring 21, which cooperates with shoulder 12 to open and close discharge valve 11; and pipe 18 is fitted with a float 22 to delay closure of valve 11 and so fully discharge tank 5.

[0011] Casing 19 is fitted with an upside down U-shaped structure 23 (Figures 2-4) defined by two parallel arms 24 connected by a crosspiece 26. The two arms 24 are each provided with a vertical outer reinforcing rib 25, and may be so fitted to casing 19 (Figure 1) as to be axially adjustable in any known manner. Crosspiece 26 (Figures 2-4) is in the form of a bottomless paralleleiped box, and comprises two transverse walls 27, each having a horizontal slot 28 at the bottom. Walls 27 and two walls 29, perpendicular to walls 27, terminate at the top in shoulders 30.

[0012] The compartment defined by walls 27 and 29 houses assembly means comprising a sleeve 31, the inner surface of which has a helical rib 32. The outer surface of sleeve 31, on the other hand, comprises two shoes 33 sliding along walls 27 of crosspiece 26. Each shoe 33 is guided at the top by shoulder 30 of the corresponding wall 27, and comprises a bottom tongue 34, which, at assembly, is forced inside slot 28 of corresponding wall 27. Sleeve 31 is therefore permitted to slide along, but not to rotate inside, crosspiece 26.

[0013] Control device 8 also comprises a single control button 36 housed inside a cup-shaped support 37. A compression spring 39, for normally keeping button 36 in the top position, is fitted between button 36 and an annular wall 38 of support 37; wall 38 is fitted with a sleeve 41, the outer surface of which has a thread which screws onto helical rib 32 of sleeve 31; and support 37 has a shoulder 42 for housing a spacer ring 43 (Figure 1).

[0014] Cup-shaped support 37 is fitted to the usual cover 44, also made of ceramic, of tank 5; for which purpose, cover 44 comprises a hole 46 of a diameter corresponding to that of sleeve 41. Once spacer 43 is fitted against shoulder 42, sleeve 41 is inserted inside hole

46 and, by rotating support 37, is screwed to rib 32 (Figure 2) of sleeve 31, which slides along crosspiece 26 to adapt its position to that of hole 46, so that not a great deal of accuracy is required in the relative location of holes 7 and 46 (Figure 1) in bottom wall 6 and cover 44.

[0015] In the Figure 5 variation, the diameter of hole 46 is larger than in Figure 2; and the support is inserted inside the hole so as to rest on cover 44 with no spacer required.

[0016] Control device 8 (Figures 1-3) also comprises a rocker arm defined by a substantially rectangular frame 47. Frame 47 comprises two opposite sides 48 having, at the respective mid points, two seats for two pins 49 integral with corresponding arms 24 of structure 23. Frame 47 also comprises a further two sides 51, one of which comprises an appendix 52 connected by a tie 53 (Figure 1) to a crosspiece 54 inserted inside two diametrically-opposite openings in overflow pipe 18. Tie 53 is such as to enable the connection to crosspiece 54 to be adjusted in any known manner, to adapt the device to various types of tank 5.

[0017] Two identical elements 56 and 57 are hinged to frame 47 and activated alternatively by a control member 55 fitted to button 36. Elements 56 and 57 are activated to respectively open and close discharge valve 11. In particular, each element 56, 57 is defined by a pair of arms 58 and 59 (Figure 3) connected by an L-section crospiece 61; and sides 48 (Figure 2) of frame 47 each have two pins 62 and 63 about which arms 58 and 59 of elements 56 and 57 pivot.

[0018] Arm 58 of each element 56, 57 has a cylindrical pin 64, which is arrested against a corresponding vertical inner rib 66 along the center line of the corresponding arm 24 of structure 23. Arm 59 of each element 56, 57, on the other hand, has an oblong appendix 67, which is also arrested against a corresponding rib 66, but extending in the opposite direction to rib 66. Pin 64 and appendix 67 therefore define a counterstop cooperating with ribs 66, which define a relative stop member.

[0019] Frame 47 also supports two leaf springs, each defined by a tongue 68, 69 of elastic plastic material. Each tongue 68, 69 has one end fixed to a respective pin of a respective pair 62, 63 on the same side 48 of frame 47. The other end of tongue 68 acts on pin 64 of element 56, while the other end of tongue 69 acts on appendix 67 of element 57.

[0020] The pair of pins 62 of element 56 is located further away than the pair of pins 63 from the pivot of frame 47 defined by the axes of respective pins 49, so that control member 55 must travel further to activate frame 47 by means of element 56 than by means of element 57, thus defining a tactile distinction between the two activations.

[0021] Tongues 68 and 69 push elements 56 and 57 towards ribs 66 so as to keep element 56 or 57 (element 56 in Figure 1) resting against ribs 66 by means of respective pin 64 and respective appendix 67. On account of the difference in the position of the rest points of tongues 68 and 69, tongue 68 is deformed to a lesser degree than tongue 69, thus defining a further tactile distinction between the two activations.

[0022] Member 55 controlling elements 56 and 57 is fittable adjustably to button 36, and comprises an upside down truncated-cone-shaped engaging portion having an ample surface by which to act on each crosspiece 61 and for preventing crosspiece 61 from impeding or interfering with the upward return movement of button 36.

[0023] In the Figure 1 and 2 variation, control member 55 is defined by a cylindrical bar 74, which is forced inside an axial hole of a sleeve 75 integral with button 36; bar 74 has a hollow cylindrical head 76 for engaging crosspieces 61; head 76 is connected to bar 74 by an upside down truncated-cone-shaped portion 77; and bar 74 may be cut to the required length at assembly.

[0024] In the Figure 5 variation, control member 55 is defined by a threaded bar 71, which is screwed inside a threaded sleeve 72 integral with button 36; bar 71 has an upside down truncated-cone-shaped head 73 for engaging crosspieces 61; and, at assembly, bar 71 is screwed into the best position to act on crosspieces 61.

[0025] Control device 8 operates as follows.

[0026] At rest (Figure 1), tank 5 is filled with water to the level defined by the float closing the supply tap; and frame 47 is positioned as shown in Figure 1, with element 56 in the top position and element 57 in the bottom position. More specifically, tongue 68 holds pin 64 and appendix 67 of element 56 against ribs 66, so that respective crosspiece 61 is engaged by control member 55; whereas tongue 69 is relaxed so that appendix 67 of element 57 is released and pin 64 and appendix 67 detached from ribs 66.

[0027] When button 36 is pressed, control member 55 acts on crosspiece 61 of element 56, which rotates frame 47 clockwise into the position shown by the dash line in Figure 2; frame 47, by means of tie 53 (Figure 1), raises pipe 18 together with ring 21 to open discharge valve 11; and frame 47 also raises element 57, which is now pushed by tongue 69 to rest on ribs 66, while tongue 68 allows element 56 to rotate clockwise.

[0028] Button 36 may now be released, and is restored to the top position by spring 39. By virtue of truncated-cone-shaped portion 73, 77 of control member 55, spring 39 overcomes the action of tongue 69, so that crosspiece 61 of element 57 allows button 36 to return to the top position together with portion 73, 77. Pipe 18, on the other hand, is kept in the raised position by the hydrostatic thrust acting on float 22 until tank 5 is emptied completely. As long as pipe 18 is raised, frame 47 is also kept in the rotated position, so that crosspiece 61 of element 57 is engaged by control member 55.

[0029] The outflow of water may be cut off before tank 5 is emptied completely by simply pressing button 36 once more. In which case, control member 55 acts on crosspiece 61 of element 57 to rotate frame 47 positively anticlockwise; frame 47, by means of tie 53, lowers pipe

18 to close discharge valve 11; and frame 47 raises element 56 and lowers element 57 to restore the control device to the Figure 1 position.

[0030] As compared with known devices, the advantages of the control device according to the invention will be clear from the foregoing description. In particular, frame 47 and the two hinged elements 56 and 57 are easy to produce and assemble, and provide for a high degree of reliability; the adjustable connection of various components of the device provides for adapting the device to different tanks; and the truncated-cone-shaped portion 73, 77 of control member 55 prevents any interference between the return travel of the control member to the rest position and positioning of hinged element 56, 57 for subsequent operation.

[0031] Clearly, changes may be made to the device as described and illustrated herein without, however, departing from the scope of the accompanying Claims. For example, as opposed to being fixed to crosspiece 54 of pipe 18, tie 53 connecting frame 47 to pipe 18 may be hinged to an appendix integral with pipe 18; ribs 66 may be replaced by appropriate cam profiles; and tongues 68 and 69 may be replaced by one spring stretched between the two elements 56 and 57.

Claims

1. A device for controlling the discharge valve (11) of a lavatory flush tank (5), the device comprising a shutter (21) for opening and closing said valve (11); a manual control member (55) for activating said shutter (21); a float (22) connected to said shutter (21) and for delaying closure of said valve (11) to fully discharge the tank (5); a rocker arm (47) connected to said shutter (21); and a pair of hinged elements (56, 57) hinged to said rocker arm (47) and activated alternatively by said control member (55) to so control said shutter (21) as to open said valve (11) and close the valve following partial discharge of the tank (5); said hinged elements (56, 57) being pushed elastically into a position of engagement by said control member (55); **characterized in that** said two hinged elements (56, 57) are designed to produce a different tactile sensation on said control member (55).

2. A device as claimed in Claim 1, **characterized in that**, to achieve said different tactile sensation, respective pairs of pins (62, 63) of said hinged elements (56, 57) hinged to said rocker arm (47) are located at different distances from the pivot (49) of said rocker arm (47).

3. A device as claimed in Claim 2, **characterized in that** said hinged elements (56, 57) are hinged to the rocker arm (47) by said respective pairs of pins (62, 63) and are each pushed by a corresponding leaf spring carried by said rocker arm (47).

4. A device as claimed in Claim 3, **characterized in that** each of said leaf springs is defined by a tongue (68, 69) having one end fixed to one of said pairs of pins (62, 63) and the other end acting on an appendix (64, 67) integral with the respective hinged element (56, 57).

5. A device as claimed in Claim 4, **characterized in that** a first (56) of said hinged elements (56, 57) is activated to open said valve (11), and is hinged to the pair of pins (62) further away from the pivot (49) of said rocker arm (47) than the pair of pins (63) of the other hinged element (57), which is activated to close said valve (11) .

6. A device as claimed in Claim 4 or 5, **characterized in that** the two appendixes (64, 67) on which said tongues (68, 69) act are formed differently; the appendix (64) of said first hinged element (56) elastically deforming the corresponding tongue (68) to a lesser degree than the appendix (67) of said other hinged element (57).

7. A device as claimed in one of the foregoing Claims from 3 to 6, **characterized in that** said rocker arm (47) and said hinged elements (56, 57) are made of rigid plastic material; said leaf springs being made of elastic plastic material.

8. A device as claimed in one of the foregoing Claims, **characterized in that** said position of engagement is defined by a stop (66) for a counterstop (64, 67) provided on each of said hinged elements (56, 57).

9. A device as claimed in Claim 8, **characterized in that** said rocker arm (47) is hinged to a structure (23); said stop (66) being defined by a rib of said structure (23), against which said counterstop (64, 67) may slide.

10. A device as claimed in Claim 9, **characterized in that** said rocker arm (47) is a substantially rectangular frame having two opposite sides (48), the mid points of which are hinged to said structure (23); said rib being located in a vertical plane through said mid points.

11. A device as claimed in Claim 10, **characterized in that** each of said hinged elements (56, 57) is defined by a pair of arms (58, 59) connected by a crosspiece (61); said arms (58, 59) being hinged to said frame by said two pairs of pins (62, 63) carried by said two opposite sides (48).

12. A device as claimed in Claim 11, wherein said control member (55) is carried by a button (36) housed

in a cup-shaped support (37); said button (36) being pressed in opposition to a spring (39); **characterized in that** said structure (23) has a further crosspiece (26) supporting assembly means (31) for assembling said cup-shaped support (37); said control member (55) acting on the crosspiece (61) of each of said hinged elements (56, 57).

13. A device as claimed in Claim 12, **characterized in that** said assembly means comprise a sleeve (31) having guide elements (33, 34) on said further crosspiece (26) so as to slide along, but not rotate inside, the further crosspiece; said sleeve (31) receiving a fastening member (41) for fastening said cup-shaped support (37).

14. A device as claimed in Claim 13, **characterized in that** said sleeve (31) comprises a helical rib (32) engaged by a thread of said fastening member (41).

15. A device as claimed in one of the foregoing Claims from 12 to 14, **characterized in that** said control member (55) comprises a head (73, 76) for engaging the crosspieces (61) of said hinged elements (56, 57) and having an upside down truncated-cone-shaped portion (73, 77).

16. A device as claimed in Claim 15, **characterized in that** said control member (55) also comprises a cylindrical bar portion (74) adaptable in length at assembly and which is forced inside a sleeve (75) carried by said button (36).

17. A device as claimed in Claim 15, **characterized in that** said control member (55) also comprises a threaded portion (71) which is fitted adjustably to a thread (72) of said button (36).

Patentansprüche

1. Vorrichtung zum Steuern bzw. Regeln des Auslassventils (11) eines Toilettenspülbehälters (5), wobei die Vorrichtung aufweist: einen Verschluss (21) zum Öffnen und Schließen des Ventils (11); ein handbetätigbares Steuer- bzw. Regelglied (55) zum Aktivieren des Verschlusses (21); einen Schwimmer bzw. Schwimmkörper (22), der mit dem Verschluss (21) verbunden ist, und zum Verzögern des Schließens des Ventils (11) dient, um den Behälter (5) vollständig zu entleeren; einen Kipp- bzw. Schwinghebel (47), der mit dem Verschluss (21) verbunden ist; und ein Paar von schwenkbaren bzw. angelenkten Elementen (56, 57), welche an dem Kipphebel (47) angelenkt sind und durch das Steuer- bzw. Regelglied (55) alternativ bzw. abwechselnd aktiviert werden, um den Verschluss (21) so zu steuern bzw. regeln, dass das Ventil (11) geöffnet und auf eine teilweise Entleerung des Behälters (5) folgend geschlossen wird; wobei die schwenkbaren Elemente (56, 57) in eine Position des Eingriffs bzw. in Eingriffkommens mit dem Steuer- bzw. Regelglied (55) elastisch gedrückt werden; **dadurch gekennzeichnet, dass** die zwei schwenkbaren Elemente (56, 57) so ausgestaltet sind, um eine unterschiedliche Berührungsempfindung bzw. -wahrnehmung an dem Steuer- bzw. Regelglied (55) zu erzeugen.

2. Vorrichtung, wie in Anspruch 1 beansprucht, **dadurch gekennzeichnet, dass**, um die unterschiedliche Berührungsempfindung bzw, -wahrnehmung zu erhalten, jeweilige Paare von Stiften bzw. Bolzen (62, 63) der an dem Kipphebel (47) angelenkten, schwenkbaren Elemente (56, 57) an unterschiedlichen Distanzen bzw. Abständen von dem Drehpunkt bzw. Drehgelenk (49) des Kipphebels (47) angeordnet sind.

3. Vorrichtung, wie in Anspruch 2 beansprucht, **dadurch gekennzeichnet, dass** die schwenkbaren Elemente (56, 57) an dem Kipphebel (47) durch die jeweiligen Paare von Stiften (62, 63) angelenkt sind und jeweils durch eine entsprechende Blatt- bzw, Flachfeder gedrückt werden, die durch den Kipphebel (47) getragen ist.

4. Vorrichtung, wie in Anspruch 3 beansprucht, **dadurch gekennzeichnet, dass** jede der Blattfedern durch eine Zunge (68, 69) definiert ist, deren eines Ende an einem der Paare von Stiften (62, 63) befestigt ist und deren anderes Ende auf einen Ansatz bzw. Venängerungsstück (64, 67) einwirkt, das mit dem jeweiligen schwenkbaren Element (56, 57) integral ist.

5. Vorrichtung, wie in Anspruch 4 beansprucht, **dadurch gekennzeichnet, dass** ein erstes (56) der schwenkbaren Elemente (56, 57) aktiviert wird, um das Ventil (11) zu öffnen, und an dem Paar von Stiften (62) weiter weg von dem Drehpunkt (49) des Kipphebels (47) als das Paar von Stiften (63) des anderen schwenkbaren Elements (57) angelenkt ist, welches aktiviert wird, um das Ventil (11) zu schließen.

6. Vorrichtung, wie in Anspruch 4 oder 5 beansprucht, **dadurch gekennzeichnet, dass** die zwei Ansätze (64, 67), an bzw. auf welche die Zungen (68, 69) wirken, unterschiedlich geformt sind; wobei der Ansatz (64) des ersten schwenkbaren Elements (56) die entsprechende Zunge (68) zu einem geringeren Grade als der Ansatz (67) des anderen schwenkbaren Elements (57) elastisch verformt.

7. Vorrichtung, wie in einem der vorhergehenden An-

sprüche 3 bis 6 beansprucht, **dadurch gekennzeichnet, dass** der Kipphebel (47) und die schwenkbaren Elemente (56, 57) aus hartem bzw. starrem Kunststoffmaterial hergestellt sind; wobei die Blattfedern aus elastischem Kunststoffmaterial hergestellt sind.

8. Vorrichtung, wie in einem der vorhergehenden Ansprüche definiert, **dadurch gekennzeichnet, dass** die Position des Eingriffs bzw. in Eingrittkommens durch elnen Stopp bzw. Anschlag (66) für einen Gegenstopp bzw. -anschlag (64, 67) definiert ist, der an jedem der schwenkbaren Elemente (56, 57) vorgesehen ist.

9. Vorrichtung, wie in Anspruch 8 beansprucht, **dadurch gekennzeichnet, dass** der Kipphebel (47) an einer Struktur (23) angelenkt ist; wobei der Anschlag (66) durch eine Rippe der Struktur (23) definiert ist, gegen welche der Gegenanschlag (64, 67) gleiten bzw. sich verschieben kann.

10. Vorrichtung, wie in Anspruch 9 beansprucht, **dadurch gekennzeichnet, dass** der Kipphebel (47) ein im Wesentlichen rechteckförmiger Rahmen mit zwei entgegengesetzten bzw. gegenüberliegenden Seiten (48) ist, deren Mittelpunkte an der Struktur (23) angelenkt sind; wobei die Rippe in einer vertikalen Ebene durch die Mittelpunkte angeordnet ist.

11. Vorrichtung, wie in Anspruch 10 beansprucht, **dadurch gekennzeichnet, dass** jedes der schwenkbaren Elemente (56, 57) durch ein Paar von Armen (58, 59) definiert ist, welche durch ein Querstück (61) verbunden sind; wobei die Arme (58, 59) an dem Rahmen durch die zwei Paare von Stiften (62, 63) angelenkt sind, die durch die zwei entgegengesetzten bzw. gegenüberliegenden Seiten (48) getragen sind.

12. Vorrichtung, wie in Anspruch 11 beansprucht, bei der das Steuer- bzw. Regelglied (55) durch einen Knopf (36) getragen ist, der in einem becherförmigen Halter bzw. Träger bzw. Stützelement (37) untergebracht ist; wobei der Knopf (36) in Opposition bzw. Gegenstetiung zu einer Feder (39) gedruckt bzw. gepresst ist; **dadurch gekennzeichnet, dass** die Struktur (23) ein weiteres Querstück (26) aufweist, weiches Zusammenbau- bzw. Zusammenfügmittel (31) zum Zusammenbauen bzw. -fügen des becherförmigen Stützelements (37) trägt bzw. abstützt; wobei das Steuer- bzw. Regelglied (55) auf das Querstück (61) jedes der schwenkbaren Elemente (56, 57) einwirkt.

13. Vorrichtung, wie in Anspruch 12 beansprucht, **dadurch gekennzeichnet, dass** das Zusammenbaumittel eine Hülse (31) mit Führungselementen (33, 34) an dem weiteren Querstück (26) aufweist, um entlang des weiteren Querstücks zu gleiten bzw. sich zu verschieben, jedoch nicht innerhalb dieses weiteren Querstücks zu rotieren bzw. sich zu drehen: wobei die Hülse (31) ein Befestigungsglied (41) zum Befestigen des becherförmigen Stützelements (37) aufnimmt.

14. Vorrichtung, wie in Anspruch 13 beansprucht, **dadurch gekennzeichnet, dass** die Hülse (31) eine schraubenförmige bzw. spiralförmige Rippe (32) aufweist, mit welcher ein Gewinde des Befestigungsglieds (41) in Eingriff kommt bzw. ist.

15. Vorrichtung, wie in einem der vorhergehenden Ansprüche 12 bis 14 beansprucht, **dadurch gekennzeichnet, dass** das Steuer- bzw. Regelglied (55) einen Kopf bzw. Kopfende (73, 76) zum Ineingriffkommen mit dem Querstück (61) der schwenkbaren Elemente (56, 57) aufweist und einen auf dem Kopf stehenden, kegelstumpfförmigen Bereich (73, 77) aufweist.

16. Vorrichtung, wie in Anspruch 15 beansprucht, **dadurch gekennzeichnet, dass** das Steuer- bzw. Regelglied (55) ferner einen zylindrischen Stangen- bzw. Stabbereich (74) aufweist, welcher bei Zusammenbau in der Länge anpassbar ist und innerhalb eine Hülse (75) gedrückt bzw. getrieben wird, welche durch den Knopf (36) getragen ist.

17. Vorrichtung, wie in Anspruch 15 beansprucht, **dadurch gekennzeichnet, dass** das Steuer- bzw. Regelglied (55) ferner einen mit Gewinde versehenen Bereich (71) aufweist, welcher an einem Gewinde (72) des Knopfes (36) einstellbar angebracht bzw. eingepasst ist.

Revendications

1. Dispositif pour réguler la soupape de vidange (11) d'une chasse d'eau (5), le dispositif comprenant une vanne (21) pour ouvrir et fermer de ladite soupape (11); un élément de régulation manuelle (55) pour actionner ladite vanne (21); un flotteur (22) raccordé à ladite vanne (21) et pour retarder la fermeture de ladite soupape (11) pour vidanger totalement la chasse d'eau (5); un bras oscillant (47) raccordé à ladite vanne (21); et une paire d'éléments articulés (56, 57) articulés sur ledit bras oscillant (47) et actionnés alternativement par ledit élément de régulation (55) pour réguler ainsi ladite vanne (21) afin d'ouvrir ladite soupape (11) et de fermer la soupape à la suite d'une vidange partielle de la chasse d'eau (5); lesdits éléments articulés (56, 57) étant poussés élastiquement dans une position d'engagement par ledit élément de régulation

(55); **caractérisé en ce que** lesdits deux éléments articulés (56, 57) sont conçus pour produire une sensation tactile différente sur ledit élément de régulation (55).

2. Dispositif selon la revendication 1, **caractérisé en ce que**, pour obtenir ladite sensation tactile différente, des paires de goupilles respectives (62, 63) desdits éléments articulés (56, 57) articulés sur ledit bras oscillant (47) sont placées à des distances variables du pivot (49) dudit bras oscillant (47).

3. Dispositif selon la revendication 2, **caractérisé en ce que** lesdits éléments articulés (56, 57) sont articulés sur le bras oscillant (47) par lesdites paires de goupilles respectives (62, 63) et sont poussés chacun par un ressort à lames correspondant porté par ledit bras oscillant (47).

4. Dispositif selon la revendication 3, **caractérisé en ce que** chacun desdits ressorts à lames est défini par une languette (68, 69) ayant une extrémité fixée à l'une desdites paires de goupilles (62, 63) et l'autre extrémité agissant sur un appendice (64, 67) d'un seul tenant avec l'élément articulé respectif (56, 57).

5. Dispositif selon la revendication 4, **caractérisé en ce qu'**un premier (56) desdits éléments articulés (56, 57) est actionné pour ouvrir ladite soupape (11) et est articulé sur la paire de goupilles (62) plus éloignée du pivot (49) dudit bras oscillant (47) que la paire de goupilles (63) de l'autre élément articulé (57) qui est actionné pour fermer ladite soupape (11).

6. Dispositif selon la revendication 4 ou 5, **caractérisé en ce que** les deux appendices (64, 67), sur lesquels lesdites languettes (68, 69) agissent, sont formés différemment; l'appendice (64) dudit premier élément articulé (56) déformant élastiquement la languette correspondante (68) dans une moindre mesure que l'appendice (67) dudit autre élément articulé (57).

7. Dispositif selon l'une quelconque des revendications précédentes 3 à 6, **caractérisé en ce que** ledit bras oscillant (47) et lesdits éléments articulés (56, 57) sont faits d'une matière plastique rigide; lesdits ressorts à lames étant faits d'une matière plastique élastique.

8. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite position d'engagement est définie par une butée (66) pour une contre-butée (64, 67) prévue sur chacun desdits éléments articulés (56, 57).

9. Dispositif selon la revendication 8, **caractérisé en ce que** ledit bras oscillant (47) est articulé sur une structure (23); ladite butée (66) étant définie par une nervure de ladite structure (23) contre laquelle ladite contre-butée (64, 67) peut coulisser.

10. Dispositif selon la revendication 9, **caractérisé en ce que** ledit bras oscillant (47) est un cadre sensiblement rectangulaire ayant deux côtés opposés (48) dont les points médians sont articulés sur ladite structure (23); ladite nervure étant placée dans un plan vertical à travers lesdits points médians.

11. Dispositif selon la revendication 10, **caractérisé en ce que** chacun desdits éléments articulés (56, 57) est défini par une paire de bras (58, 59) raccordés par une traverse (61); lesdits bras (58, 59) étant articulés sur ledit cadre par lesdites deux paires de goupilles (62, 63) portées par lesdits deux côtés opposés (48).

12. Dispositif selon la revendication 11, **caractérisé en ce que** ledit élément de régulation (55) est porté par un bouton (36) logé dans un support en forme de coupelle (37); ledit bouton (36) étant comprimé en sens inverse d'un ressort (39); **caractérisé en ce que** ladite structure (23) comprend une autre traverse (26) soutenant des moyens de montage (31) pour monter ledit support en forme de coupelle (37); ledit élément de régulation (55) agissant sur la traverse (61) de chacun desdits éléments articulés (56, 57).

13. Dispositif selon la revendication 12, **caractérisé en ce que** lesdits moyens de montage comprennent un manchon (31) comportant des éléments de guidage (33, 34) sur ladite autre traverse (26) afin de coulisser le long, mais pas de tourner à l'intérieur de l'autre traverse; ledit manchon (31) recevant un élément de fixation (41) pour fixer ledit support en forme de coupelle (37).

14. Dispositif selon la revendication 13, **caractérisé en ce que** ledit manchon (31) comprend une nervure hélicoïdale (32) s'engrenant dans un filet dudit élément de fixation (41).

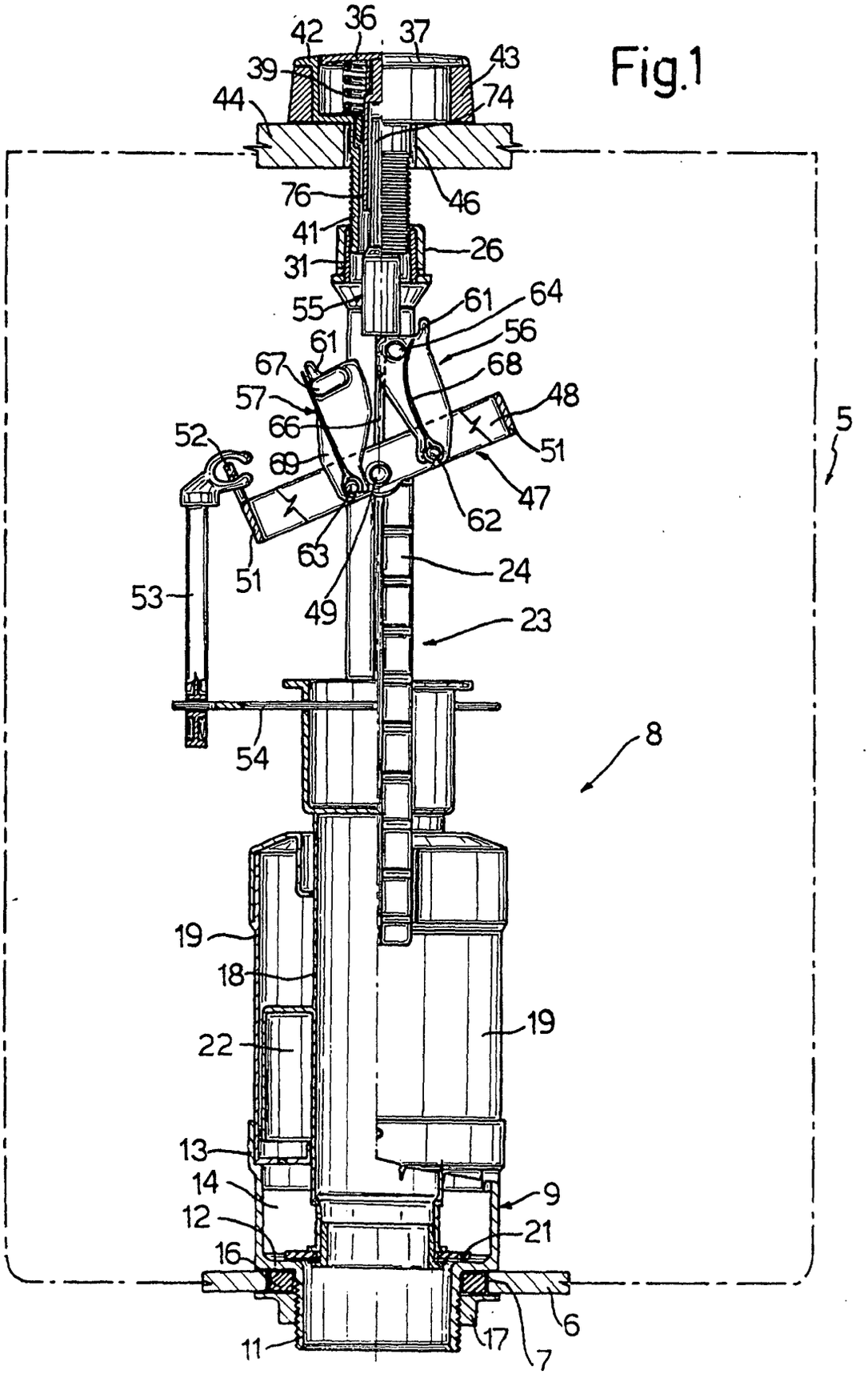
15. Dispositif selon l'une quelconque des revendications précédentes 12 à 14, **caractérisé en ce que** ledit élément de régulation (55) comprend une tête (73, 76) pour l'engrènement desdites traverses (61) desdits éléments articulés (56, 57) et comportant une partie tronconique masquée renversée de haut en bas (73, 77).

16. Dispositif selon la revendication 15, **caractérisé en ce que** ledit élément de régulation (55) comprend également une partie de barre cylindrique (74)

adaptable en longueur au moment du montage et qui est forcée à l'intérieur d'un manchon (75) porté par ledit bouton (36).

17. Dispositif selon la revendication 15, **caractérisé en ce que** ledit élément de régulation (55) comprend également une partie filetée (71) qui est fixée de manière réglable à un filet (72) dudit bouton (36).

Fig.1


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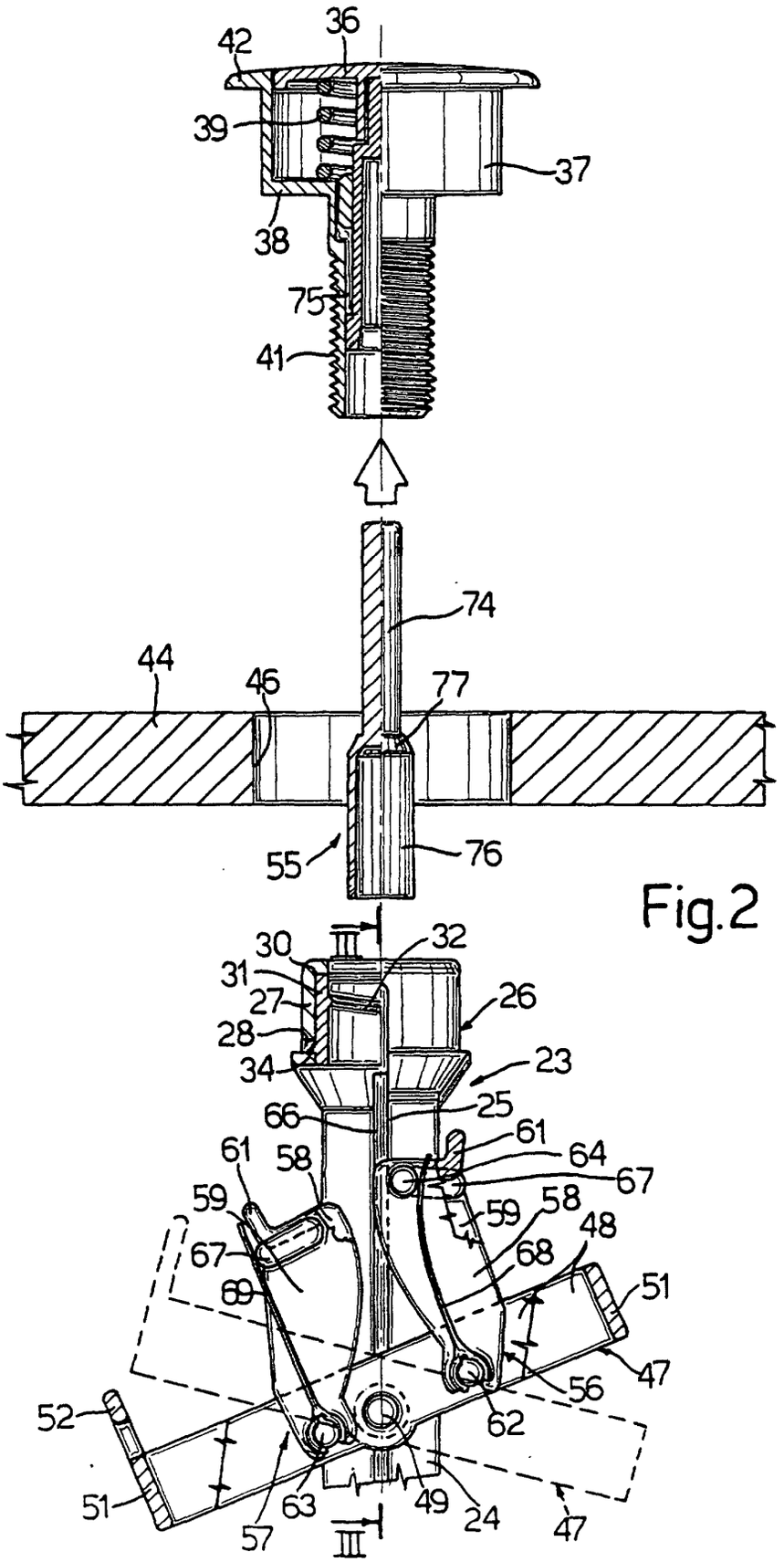

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Fig.2

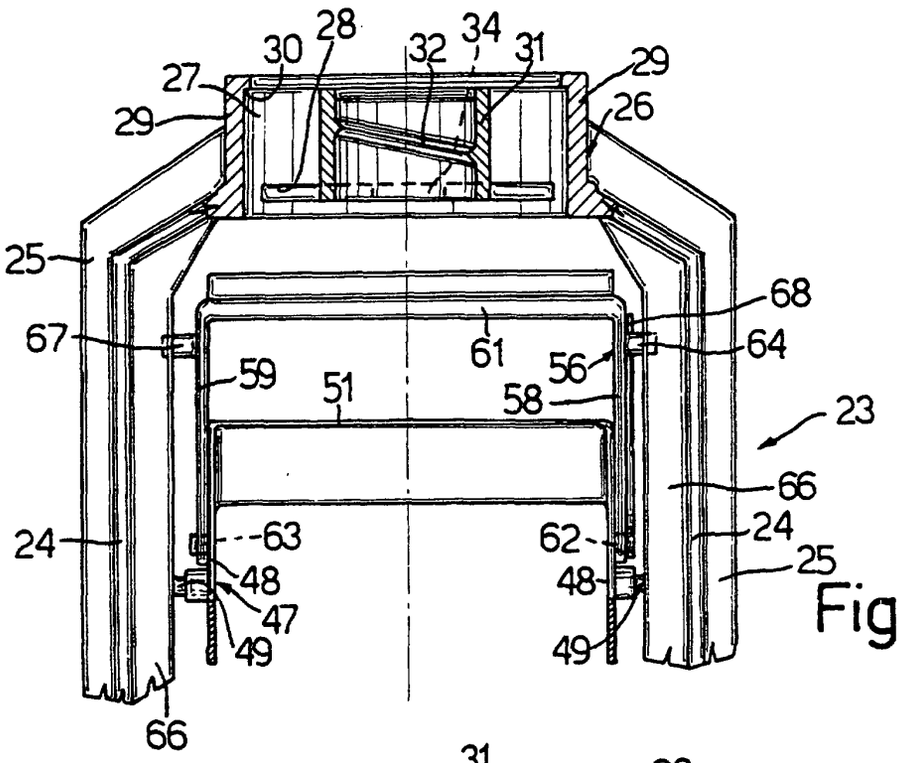


Fig.3

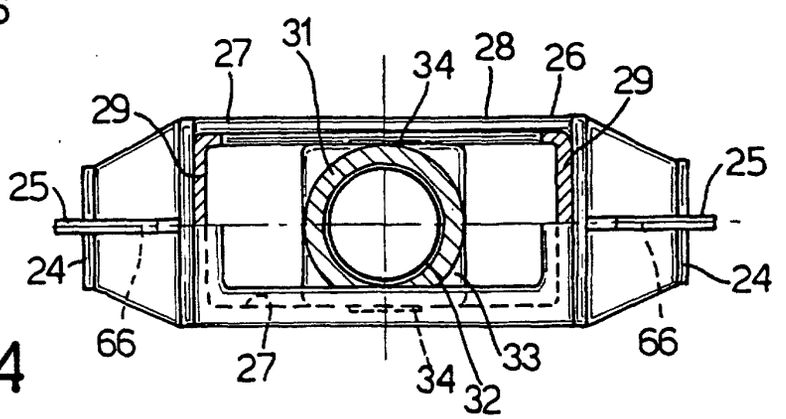


Fig.4

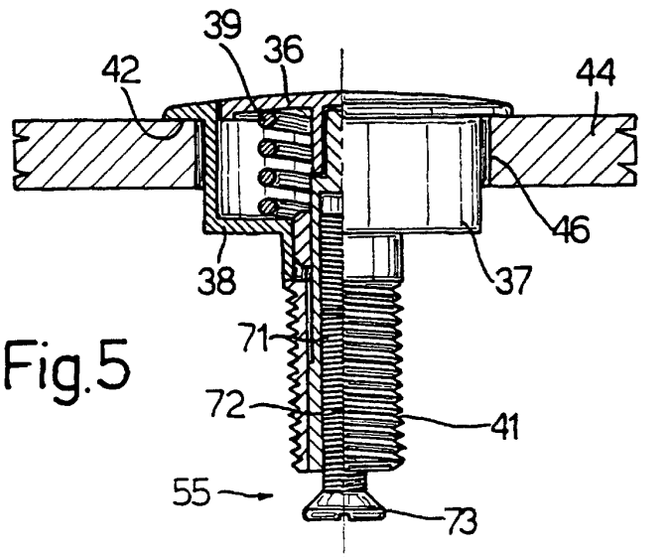


Fig.5