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(54) **FLUSHING DEVICE FOR FLUSH TANK**

SPÜLVENTIL FÜR SPÜLKASTEN

SOUPAPE DE VIDANGE POUR RESERVOIR DE CHASSE D'EAU

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Description

TECHNICAL FIELD

[0001] The present invention relates to a flushing device for a flush tank.

BACKGROUND ART

[0002] In general terms, a flushing device for a flush tank comprises a support structure, fixable to a bottom wall of the tank and provided with a flushing hole delimited by a seal seat, and a valve body, usually a tubular element which also performs the function of an overflow tube, slidably housed in the support structure and provided below with a shutter cooperating with the seal seat in order to close the flushing hole; the valve body is raised by means of suitable actuating members controlled by the user.

[0003] The closing speed of the shutter and the quantity of flushed water are normally adjusted using weights and/or floats which are connected, if necessary in a releasable manner, to the valve body; in particular, in the case of double flushing devices (i.e. which alternately enable the complete or only partial flushing of the water contained in the tank), in order to obtain the two flushing modes (complete or partial) it is known to vary the closing speed of the shutter by engaging the valve body with a single float (complete flush) or with two floats (partial flush). For example, FR2854180 and EP1199415 disclose flushing devices having floats laterally arranged with respect to a central valve body (also acting as overflow tube); however, the speed of the floats cannot be adjusted in order to adjust the closing speed of the valve body. Known flushing devices seem susceptible to improvements, especially in terms of operational reliability, simplicity and cost-effectiveness of production, bulk, efficiency, practicality of use and precision in the adjustment of the flow of flushed water in the various operating modes.

[0004] In particular, the operation of flushing devices is affected by the conditions in which they have to operate (dimensions of the tank, installation height, quantity of water contained in the tank, etcetera), whereby not only it is necessary to design and build a specific flushing device for each tank, in order to guarantee effective operation, but it may also occur, under conditions which differ from those originally envisaged, that the device no longer functions as it was designed to, for example flushing quantities of water which differ from those originally set.

[0005] Therefore, the need arises to rationalize the system for producing flushing devices, in particular in order to reduce the components necessary to provide devices for different flush tanks.

DISCLOSURE OF INVENTION

[0006] It is an object of the present invention to provide

a flushing device for a flush tank which is improved with respect to prior art solutions; in particular, it is an object of the invention to provide a flushing device which is particularly simple, fully effective and reliable and which enables simple and accurate adjustment of the quantity of flushed water, optionally also in different operating modes.

[0007] It is a further object of the invention to provide a flushing device which remains effective independently of the working conditions and therefore, in particular, independently of the principal characteristics of the tank in which it is mounted.

[0008] Therefore, the present invention relates to a flushing device for a flush tank as essentially defined in the appended claim 1, and for the preferred aspects thereof, in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention is described in detail in the following non-limiting exemplary embodiment, with reference to the accompanying figures in which:

- figure 1 is a diagrammatic side view of a flushing device in accordance with the invention;
- figure 2 is an exploded side view of the device in figure 1;
- figure 3 shows, in enlarged scale, some of the components illustrated in figure 2;
- figure 4 is a top plan view of a component of the device in figure 1;
- figures 5-8 are side views of the device in figure 1, shown in respective operating configurations.

BEST MODE FOR CARRYING OUT THE INVENTION

[0010] With reference to figures 1-2, a flushing device 1, in particular a double flushing device, for a flush tank 2 (known and only partially shown in figure 1) comprises: a support structure 3 which extends along an axis A (vertical in use); a valve body 4 which extends and is slidable along the axis A and is provided with a shutter 5 cooperating with a seal seat 6 of the structure 3; a float 7, used for the complete flush, which is fitted integral with the valve body 4 (and which is preferably realized as an integral piece thereof); a supplementary ballast tank 8 containing water, used for the partial flush, which is movable and selectively connectable to the valve body 4; an actuating system 9 acting on the valve body 4 and on the float 7 and on the ballast tank 8.

[0011] The structure 3 comprises a base body 10 and a connecting body 11, arranged beneath the base body 10 and connectable in a releasable manner to the base body 10 by means of fixing members 12, 13, for example constituted by a pair of flexible teeth 12 brought diametrically opposing the base body 10 and which may be inserted into respective coupling housings 13 formed in

the connecting body 11; the connecting body 11 is fixable to a bottom wall 14 of the tank 2 and is provided with a flushing hole 15 delimited by the seal seat 6; for example, the connecting body 11 comprises an end sleeve 16, which may be inserted into a hole of the bottom wall 14 and is provided with an annular gasket 17, preferably having a V-shaped cross-section.

[0012] With reference also to figures 3-4, the base body 10 comprises: a substantially tubular central portion 20 which extends along and about the axis A and is delimited by a lateral wall 21; a lateral tank 22, which projects radially from the central portion 20 and is arranged eccentric with respect to the axis A; and a guide 23, which projects from the lateral wall 21 and is opposed to the tank 22. More specifically, the tank 22 and the guide 23 project radially from the lateral wall 21 of the portion 20 and are diametrically opposed.

[0013] The tank 22 is open at the top, presenting a lower bottom wall 24, a ring-like closed lateral wall 25 and an upper opening 26, opposed to the bottom wall 24.

[0014] The tank 22 is provided with a valve 27 for adjusting the drop speed of the valve body 4. In particular, the valve 27 is a one-way valve and is arranged in a lower part of the tank 22; the valve 27 is configured in such a way to let water enter upwards into the tank 22, and to prevent the downward outflow of the water contained in the tank 22; preferably, the valve 27 is arranged on the bottom wall 24 of the tank 22; more precisely, the bottom wall 24 has a hole 28 defining a valve housing which houses a movable shutter element 29, which is movably pushed by the water in order to selectively open/close the hole 28, in such a way to let water enter upwards into the tank 22 through the hole 28, and to prevent the outflow of the water contained in the tank 22 through the hole 28. Advantageously, the tank 22 and/or the valve 27 can be provided with an auxiliary hole 28b, defining an opening for the outflow of water from the tank 22; the hole 28b is a by-pass hole with respect to the valve 27, having small diameter and passing through the valve 27 itself or through the bottom wall 24.

[0015] Optionally, but not necessarily, the lateral wall 25 has a window 30 defining a further outflow opening, formed at a level above the valve 27. The window 30 is closed by an adjustable gate 31, which is movable in order to vary the flow section of the window 30 and therefore the outflow speed of the water through the window 30.

[0016] The valve body 4 also functions as an overflow tube and comprises a principal tube 32, which is housed to slide along the axis A within the base body 10 (in particular, in a guide housing 33 formed in the central portion 20) and is provided below with the shutter 5 cooperating with the seal seat 6 in order to close the flushing hole 15; and a supplementary tube 34, aligned with the tube 32 along the axis A and joined, for example by means of a bayonet coupling, to an upper end of the tube 32.

[0017] The float 7 projects laterally from the valve body 4 and is eccentric and radially external with respect to

the tube 32; in more detail, the float 7 comprises a floating case 36, substantially parallel to the tube 32, and a connection bracket 37 which connects the floating case 36 to the tube 32. The bracket 37 is fitted integral with the tube 32 and projects radially from the tube 32 and supports an upper end of the floating case 36; the floating case 36 projects downwards from a free end of the bracket 37 and is laterally spaced from the tube 32 (that is to say a port separates the floating case 36 from the tube 32).

[0018] The floating case 36 is housed at least partially inside the tank 22 and is slidable parallel to the axis A in the tank 22 like a piston. Preferably, the floating case 36 has a lower end, opposed to the upper end fixed to the bracket 37, provided with a surface 38 facing (and substantially parallel to) the bottom wall 24 of the tank 22. For example, the floating case 36 is inferiorly closed by a closing disc 38b provided by the surface 38.

[0019] The supplementary ballast tank 8 comprises a tank-shaped casing 39, open at the top in order to be filled with water, and a rod 40 which projects downwards from the casing 39 and is slidable inserted, parallel to the axis A, into the guide 23; the ballast tank 8 is arranged laterally with respect to the valve body 4 and diametrically opposed to the float 7. The ballast tank 8 is, as a whole, slidable with respect to the tube 32 parallel to the axis A and is guided along the tube 32 by means, for example, of a pair of arms 57.

[0020] The ballast tank 8 is equipped with a window 58, formed, for example, in a lateral wall 59 of the casing 39; the window 58 is provided with an adjustable gate 60, which is movable in order to vary the opening of the window 58 and the content of water within the casing 39 and hence adjust the overall weight of the ballast tank 8. The gate 60 is, for example, slidable parallel to the axis A in lateral guides formed on the wall 59.

[0021] The actuating system 9 comprises a pair of tie rods 41, 42 coupled to the valve body 4 by means of respective connecting members 43, 44 and connected, for example, by means of upper eyelets, to respective command members (known and not illustrated), which can be operated by the user in order to operate the device and more precisely to perform the complete flush and the partial flush of the water contained in the tank 2.

[0022] The connecting members 43 of the tie rod 41, used for the complete flush, comprise at least one vertically elongated slot 45 and a peg 46 which projects laterally from the tube 34 and engages the slot 45. The peg 46 is slidable within the slot 45, parallel to the axis A, for a predetermined stroke between a lower limit position and an upper limit position.

[0023] A lever 48 is rotatably hinged to the tie rod 41, in particular to a free end of an appendix 49 which projects from the tie rod 41, and is configured in such a way to be activated (i.e. rotated) when the tie rod 41 moves vertically upwards and in such a way to mechanically connect the ballast tank 8 to the valve body 4 in a releasable manner. In more detail, the lever 48 is hinged to the tie

rod 41 by means of a rotating joint 50 and comprises a first lever arm 51, cooperating with the tie rod 41 in order to rotate the lever 48, and a second lever arm 52, having a tooth 53 which couples a corresponding coupling member 54 fixed to the ballast tank 8.

[0024] The connecting members 44 which couple the tie rod 42, used for the partial flush, to the tube 34 comprise, for example, two elastic arms 55, which are clamped about the tube 34 and cooperate axially with at least one upper collar 56 formed on the tube 34; the tie rod 42 moves integrally with the tube 34 parallel to the axis A.

[0025] With reference also to figures 5-8, the operation of the device is as follows:

When the tank 2 is full of water (figure 1), the valve body 4 is in a lower position in which the shutter 5 closes the flushing hole 15. The float 7 is in a rest position in which the floating case 36 is housed in the tank 22, and in particular the surface 38 rests on the bottom wall 24 and/or on the shutter element 29 of the valve 27, which is closed. The tank 22 practically does not contain water (or it contains very little), the volume thereof being almost entirely occupied by the floating case 36. The ballast tank 8 is also in a rest position, pushed downwards by its own weight, with the rod 40 housed in the guide 23. The ballast tank 8 is coupled by the lever 48 (by means of the tooth 53 which engages the coupling member 54) and the peg 46 is in the upper limit position, i.e. abutting against an upper end of the slot 45.

[0026] When the user raises the tie rod 41 in order to activate the complete flush (figure 5), the tie rod 41 at first moves without raising the valve body 4 (because the peg 46 slides in the slot 45) and unblocks, by means of the appendix 49, which rotates the lever 48, the ballast tank 8, which therefore remains in a rest position; then, when the slot 45 comes to cooperate with the peg 46 in the lower limit position, the tie rod 41 couples the valve body 4 and therefore raises the valve body 4 and the float 7 integral thereto; upon the raising of the float 7, the valve 27 opens and the water enters the tank 22 through the hole 28.

[0027] The flushing hole 15 opens and the water flows out of the tank 2. The flushing hole 15 remains open as long as the valve body 4 is raised, supported by the buoyancy of the float 7 in the tank 22; the valve body 4 goes back to closing the flushing hole 15 (figure 6) when the float 7 returns to the rest position; the drop speed of the float 7 in the tank 22 is adjusted by the speed at which the water flows out of the tank 22 through the window 30 (the extent of opening of which is adjusted by the gate 31 and can be set during installation, in order to adjust the quantity of flushed water), and/or through the auxiliary hole 28b (only through the latter in the event of the tank 22 not being provided with the window 30 and the relative gate 31).

[0028] When, on the other hand, the user raises the tie rod 42 in order to activate the partial flush (figure 7), the peg 46 being in the upper limit position and therefore in contact with the upper end of the slot 45, the tie rod 42 also integrally raises the tie rod 41; the lever 48 does not rotate and continues to engage the ballast tank 8, whereby the valve body 4, the float 7 and also the ballast tank 8 are ultimately raised. Also in this case, upon the raising of the float 7, the valve 27 opens and the water enters the tank 22 through the hole 28.

[0029] In this case, the closing of the flushing hole 15 takes place more quickly than before, because the ballast tank 8 acts upon the valve body 4, and therefore a lesser quantity of water is flushed. The quantity of water contained in the casing 39 of the ballast tank 8 (i.e. the weight of the ballast tank 8) is adjusted, in the installation stage of the device 1, adjusting the position of the gate 60 in the window 58.

[0030] The advantages of the present invention are clear from what is described.

[0031] In general, the flushing device 1 in accordance with the invention is particularly simple and cost-effective to produce and functions in a simple, safe and reliable manner; furthermore, the device of the invention enables simple, quick and accurate adjustment of the quantity of flushed water and lends itself to providing both a complete flush and a partial flush.

[0032] The valve 27 adjusts the drop speed of the valve body 4, performing the functions of:

- guaranteeing the correct drop speed of the valve body 4;
- lightening the raising of the valve body 4, as the valve 27 opens a wide passage for the water entering the tank 22;
- lowering the valve body 4 slowly, even when the partial flush is performed (unlike various known systems, in which the partial flush is activated by a supplementary weight which causes the valve body to drop violently).

[0033] The operation of the device 1 is always the same, in particular with regard to the quantity of water flushed, independently of the working conditions and of the specific type of flush tank in which it is installed.

[0034] In particular, the principal float 7 is arranged laterally with respect to the valve body 4, which also functions as an overflow tube: with respect to known solutions with a float arranged around the overflow tube, this solution enables a better use of the space and to have a greater effective volume available for the operation of the float, with smaller overall dimensions.

[0035] The float 7 moves in the tank 22 like a piston, enabling it to function effectively, reliably and practically, independently of the conditions under which the device 1 must operate.

[0036] Even in partial flush mode, operation is simple, effective and reliable; furthermore, it is not necessary to

adjust the height of the supplementary ballast tank 8 (used, precisely, in order to obtain the partial flush) in accordance with the flush tank in which the device 1 is installed.

[0037] The device 1 further lends itself to being installed in flush tanks of any dimension (height), by simply replacing few components (in particular the valve body 4, for example, only the supplementary tube 34) and instead using mostly components of a single dimension; it is therefore not necessary to use a large number of components specifically designed for each flush tank.

[0038] Finally, it is evident that further modifications and variations may be made to the flushing device described and illustrated herein, without departing from the scope of the appended claims.

Claims

1. A flushing device (1) for a flush tank, comprising a support structure (3) that extends along an axis (A); a valve body (4) that extends and is slidable along the axis (A) and is provided with a shutter (5) cooperating with a seal seat (6) of the support structure (3); a float (7), fitted integral with the valve body (4) and being movable together with the valve body (4) with respect to the support structure (3); an actuating system (9) connected to the valve body (4) for raising the valve body (4) and opening the seal seat (6); the float (7) projecting laterally from the valve body (4) and being eccentric and radially external with respect to the valve body (4), the device being **characterized in that** the float (7) is housed to slide in a tank (22) of the support structure (3) that is set eccentrically with respect to the axis (A); and **in that** the tank (22) regulates the drop speed of the valve body (4) and has a valve (27) for the supply of water into the tank (22) and at least one outlet opening (30; 28b) for the outflow of water from the tank (22).
2. A device according to claim 1, wherein the valve (27) is a one-way valve set in a lower part of the tank (22), in particular on a lower bottom wall (24) of the tank (22), and is configured in such a way to let water enter upwards into the tank (22), and to prevent the downward outflow of the water contained in the tank (22).
3. A device according to claim 1 or 2, wherein the tank (22) is provided with an auxiliary hole (28b) that bypasses the valve (27).
4. A device according to one of the preceding claims, wherein the tank (22) is provided with a first window (30) defining a first outlet opening for the outflow of water from the tank (22), the first window (30) being formed in a lateral wall (25) of the tank (22) and at a higher level than the valve (27).

5. A device according to claim 4, wherein the first window (30) is provided with a first adjustable gate (31), movable for adjusting the flow section of the first window (30) and hence adjusting the outflow rate of the water from the tank (22).
6. A device according to one of the preceding claims, comprising a supplementary ballast tank (8) containing water and selectively connectable to the valve body (4) for performing a partial flush, the ballast tank (8) being arranged laterally with respect to the valve body (4) and diametrically opposed to the float (7).
7. A device according to claim 6, wherein the ballast tank (8) has a second window (58) provided with a second adjustable gate (60), movable for changing the opening of the second window (58) and the amount of water inside the ballast tank (8) and hence the weight of the ballast tank (8).
8. A device according to one of the preceding claims, wherein the float (7) comprises a floating case (36) substantially parallel to the valve body (4) and spaced radially apart from the valve body (4), and a connection bracket (37) that projects laterally from the valve body (4) and supports the floating case (36) in the tank (22).
9. A device according to one of the claims 1-7, wherein the float (7) comprises a floating case (36) housed at least partially inside the tank (22) and slidable parallel to the axis (A) in the tank (22) like a piston; the floating case (36) being inferiorly closed and having a lower end provided with a surface (38) facing a bottom wall (24) of the tank (22).
10. A device according to claim 8, wherein the floating case (36) is housed at least partially inside the tank (22) and slidable parallel to the axis (A) in the tank (22) like a piston; the floating case (36) being inferiorly closed and having a lower end provided with a surface (38) facing a bottom wall (24) of the tank (22).

Patentansprüche

1. Spülvorrichtung (1) für einen Spülkasten, umfassend eine Haltestruktur (3), welche entlang einer Achse (A) verläuft, einen Ventilkörper (4), welcher entlang der Achse (A) verläuft und verschiebbar ist und mit einem Verschluss (5) ausgestattet ist, welcher mit einem Dichtungssitz (6) der Haltestruktur (3) zusammenwirkt, einen Schwimmer (7), welcher fest mit dem Ventilkörper (4) installiert ist und zusammen mit dem Ventilkörper (4) gegenüber der Haltestruktur (3) bewegbar ist; ein mit dem Ventilkörper (4) verbundenes Betätigungssystem (9) zum

- Anheben des Ventilkörpers (4) und Öffnen des Dichtungssitzes (6), wobei der Schwimmer (7) seitlich von dem Ventilkörper (4) vorsteht und bezüglich dem Ventilkörper (4) exzentrisch und radial außerhalb ist, wobei die Vorrichtung **dadurch gekennzeichnet ist, dass** der Schwimmer (7) so aufgenommen ist, dass er in einem Behälter (22) der Haltestruktur (3) gleitet, welcher in Bezug auf die Achse (A) exzentrisch angeordnet ist, und dadurch, dass der Behälter (22) die Fallgeschwindigkeit des Ventilkörpers (4) reguliert und ein Ventil (27) für die Zufuhr von Wasser in den Behälter (22) und mindestens eine Auslassöffnung (30; 28b) für das Ausfließen von Wasser aus dem Behälter (22) hat.
2. Vorrichtung nach Anspruch 1, wobei das Ventil (27) ein Einwegeventil ist, welches in einem unteren Teil des Behälters (22), insbesondere an einer unteren Bodenwand (24) des Behälters (22) angeordnet ist und derart konfiguriert ist, dass es Wasser nach oben in den Behälter (22) eintreten lässt und das Ausfließen des in dem Behälter (22) enthaltenen Wassers nach unten verhindert.
 3. Vorrichtung nach Anspruch 1 oder 2, wobei der Behälter (22) mit einer Hilfsöffnung (28b) ausgebildet ist, welche das Ventil (27) umgeht.
 4. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Behälter (22) mit einem ersten Fenster (30) ausgebildet ist, welches eine erste Auslassöffnung für das Ausfließen von Wasser aus dem Behälter (22) bildet, wobei das erste Fenster (30) in einer Seitenwand (25) des Behälters (22) und auf einem höheren Niveau als das Ventil (27) ausgebildet ist.
 5. Vorrichtung nach Anspruch 4, wobei das erste Fenster (30) mit einer ersten verstellbaren Sperre (31) ausgestattet ist, welche zum Verstellen des Durchflussquerschnitts des ersten Fensters (30) und damit zum Verstellen der Ausflussrate des Wassers aus dem Behälter (22) bewegbar ist.
 6. Vorrichtung nach einem der vorhergehenden Ansprüche, einen zusätzlichen Ballastbehälter (8) umfassend, welcher Wasser enthält und zum Ausführen einer Teilspülung mit dem Ventilkörper (4) wahlweise verbindbar ist, wobei der Ballastbehälter (8) in Bezug auf den Ventilkörper (4) seitlich und dem Schwimmer (7) diametral gegenüberliegend angeordnet ist.
 7. Vorrichtung nach Anspruch 6, wobei der Ballastbehälter (8) ein zweites Fenster (58) hat, welches mit einer zweiten verstellbaren Sperre (60) ausgestattet ist, welche zum Ändern der Öffnung des zweiten Fensters (58) und der Menge an Wasser in dem Bal-

lastbehälter (8) und damit des Gewichts des Ballastbehälters (8) bewegbar ist.

8. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Schwimmer (7) ein schwimmendes Gehäuse (36), welches im Wesentlichen parallel zu dem Ventilkörper (4) und von dem Ventilkörper (4) radial beabstandet ist, und einen Verbindungsbügel (37) umfasst, welcher seitlich von dem Ventilkörper (4) absteht und das schwimmende Gehäuse (36) in dem Behälter (22) hält.
9. Vorrichtung nach einem der Ansprüche 1 bis 7, wobei der Schwimmer (7) ein schwimmendes Gehäuse (36) umfasst, welches zumindest teilweise in dem Behälter (22) aufgenommen und parallel zu der Achse (A) in dem Behälter (22) wie ein Kolben verschiebbar ist, wobei das schwimmende Gehäuse (36) unten geschlossen ist und ein unteres Ende hat, welches mit einer einer Bodenwand (24) des Behälters (22) zugewandten Fläche (38) ausgebildet ist.
10. Vorrichtung nach Anspruch 8, wobei das schwimmende Gehäuse (36) zumindest teilweise in dem Behälter (22) aufgenommen und parallel zu der Achse (A) in dem Behälter (22) wie ein Kolben verschiebbar ist, wobei das schwimmende Gehäuse (36) unten geschlossen ist und ein unteres Ende hat, welches mit einer einer Bodenwand (24) des Behälters (22) zugewandten Fläche (38) ausgebildet ist.

Revendications

1. Soupape de vidange (1) pour un réservoir de chasse d'eau, comprenant une structure de support (3) qui s'étend le long d'un axe (A) ; un corps de vanne (4) qui s'étend et est coulissant le long de l'axe (A) et est doté d'un clapet (5) coopérant avec un siège de joint d'étanchéité (6) de la structure de support (3) ; un flotteur (7), faisant partie intégrante du corps de vanne (4) et étant mobile avec le corps de vanne (4) par rapport à la structure de support (3) ; un système d'actionnement (9) raccordé au corps de vanne (4) pour relever le corps de vanne (4) et ouvrir le siège de joint d'étanchéité (6) ; le flotteur (7) faisant saillie latéralement depuis le corps de vanne (4) et étant excentrique et radialement externe par rapport au corps de vanne (4), le dispositif étant **caractérisé en ce que** le flotteur (7) est logé pour coulisser dans un réservoir (22) de la structure de support (3) qui est disposé de manière excentrique par rapport à l'axe (A) ; et **en ce que** le réservoir (22) régule la vitesse de descente du corps de vanne (4) et possède une vanne (27) pour l'alimentation en eau du réservoir (22) et au moins un orifice de sortie (30 ; 28b) pour l'écoulement de l'eau depuis le réservoir (22).

2. Dispositif selon la revendication 1, dans lequel la vanne (27) est un ensemble de vanne anti-retour dans une partie inférieure du réservoir (22), en particulier sur une paroi de fond inférieure (24) du réservoir (22), et est configurée de manière à laisser de l'eau pénétrer vers le haut dans le réservoir (22), et à empêcher l'écoulement vers le bas de l'eau contenue dans le réservoir (22). 5
3. Dispositif selon la revendication 1 ou 2, dans lequel le réservoir (22) est doté d'un orifice auxiliaire (28b) qui contourne la vanne (27). 10
4. Dispositif selon l'une des revendications précédentes, dans lequel le réservoir (22) est doté d'une première fenêtre (30) définissant un premier orifice de sortie pour l'écoulement d'eau depuis le réservoir (22), la première fenêtre (30) étant formée dans une paroi latérale (25) du réservoir (22) et à un niveau supérieur à la vanne (27). 15
20
5. Dispositif selon la revendication 4, dans lequel la première fenêtre (30) est dotée d'une première porte réglable (31), mobile pour régler la section d'écoulement de la première fenêtre (30) et donc régler le débit d'écoulement de l'eau depuis le réservoir (22). 25
6. Dispositif selon l'une des revendications précédentes, comprenant un réservoir de ballast supplémentaire (8) contenant de l'eau et raccordable sélectivement au corps de vanne (4) pour réaliser une chasse partielle, le réservoir de ballast (8) étant agencé latéralement par rapport au corps de vanne (4) et diamétralement opposé au flotteur (7). 30
35
7. Dispositif selon la revendication 6, dans lequel le réservoir de ballast (8) possède une seconde fenêtre (58) dotée d'une seconde porte réglable (60), mobile pour changer l'ouverture de la seconde fenêtre (58) et la quantité d'eau à l'intérieur du réservoir de ballast (8) et donc le poids du réservoir de ballast (8). 40
8. Dispositif selon l'une des revendications précédentes, dans lequel le flotteur (7) comprend un boîtier flottant (36) sensiblement parallèle au corps de vanne (4) et espacé radialement du corps de vanne (4), et un support de connexion (37) qui fait saillie latéralement depuis le corps de vanne (4) et supporte le boîtier flottant (36) dans le réservoir (22). 45
50
9. Dispositif selon l'une des revendications 1 à 7, dans lequel le flotteur (7) comprend un boîtier flottant (36) logé au moins partiellement à l'intérieur du réservoir (22) et coulissant de façon parallèle à l'axe (A) dans le réservoir (22) comme un piston ; le boîtier flottant (36) étant fermé inférieurement et ayant une extrémité inférieure dotée d'une surface (38) faisant face à une paroi de fond (24) du réservoir (22). 55
10. Dispositif selon la revendication 8, dans lequel le boîtier flottant (36) est logé au moins partiellement à l'intérieur du réservoir (22) et coulissant de façon parallèle à l'axe (A) dans le réservoir (22) comme un piston ; le boîtier flottant (36) étant fermé inférieurement et ayant une extrémité inférieure dotée d'une surface (38) faisant face à une paroi de fond (24) du réservoir (22).

FIG. 1

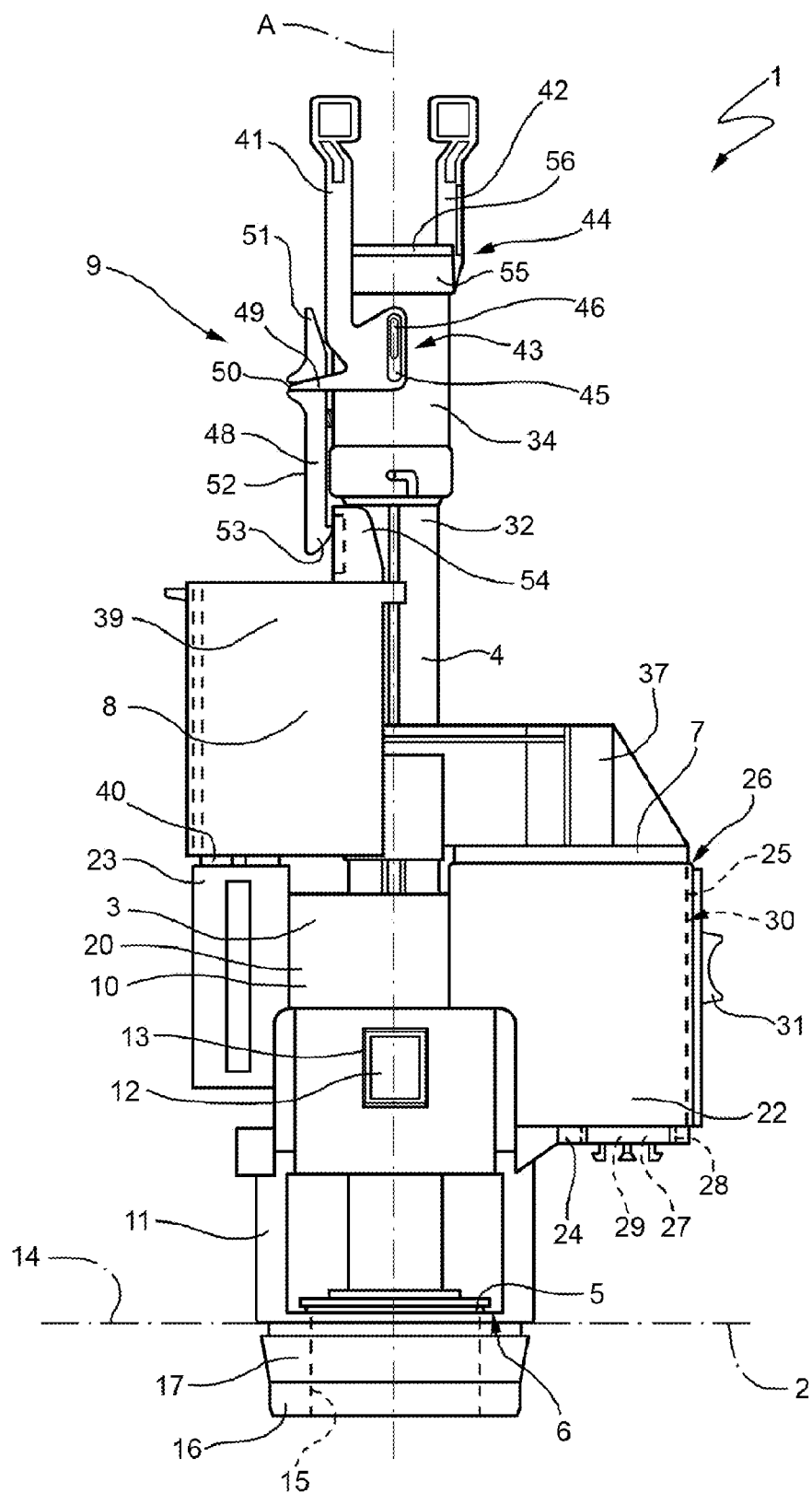


FIG. 2

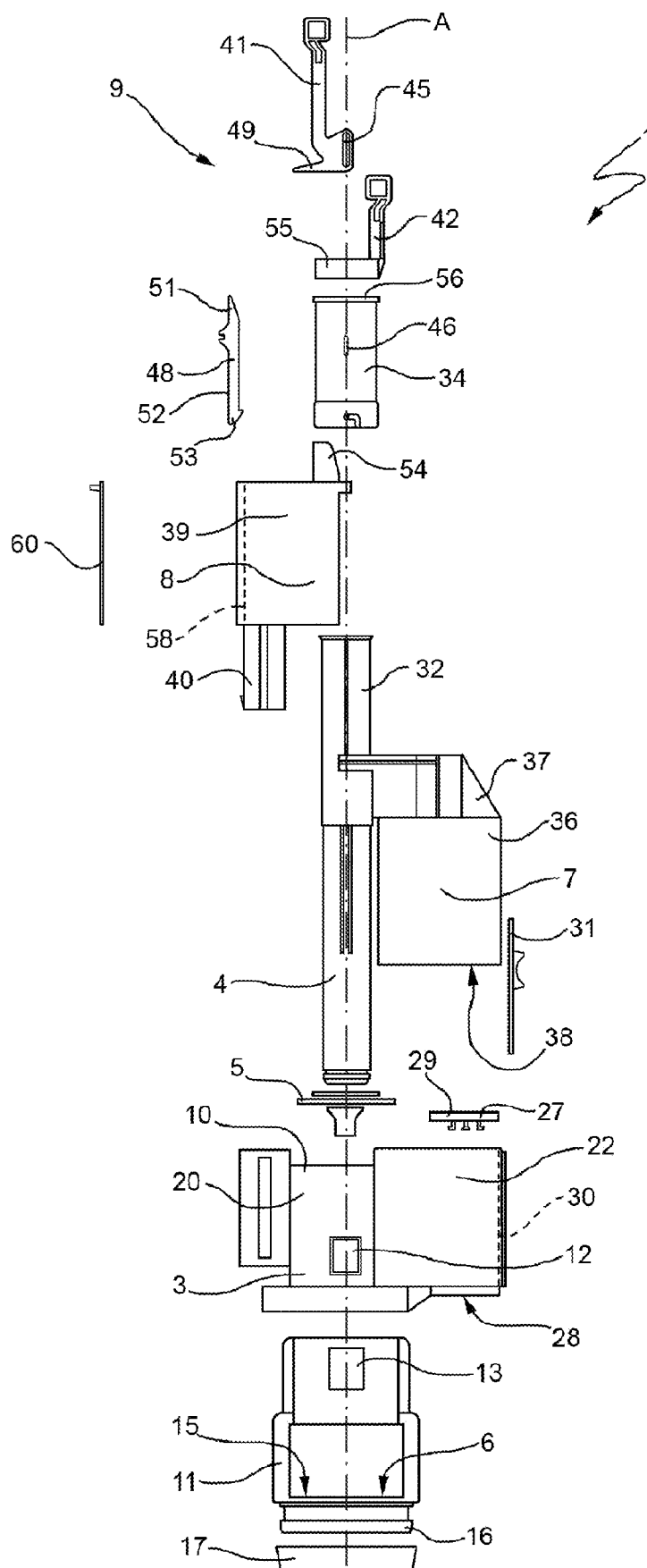


FIG. 4

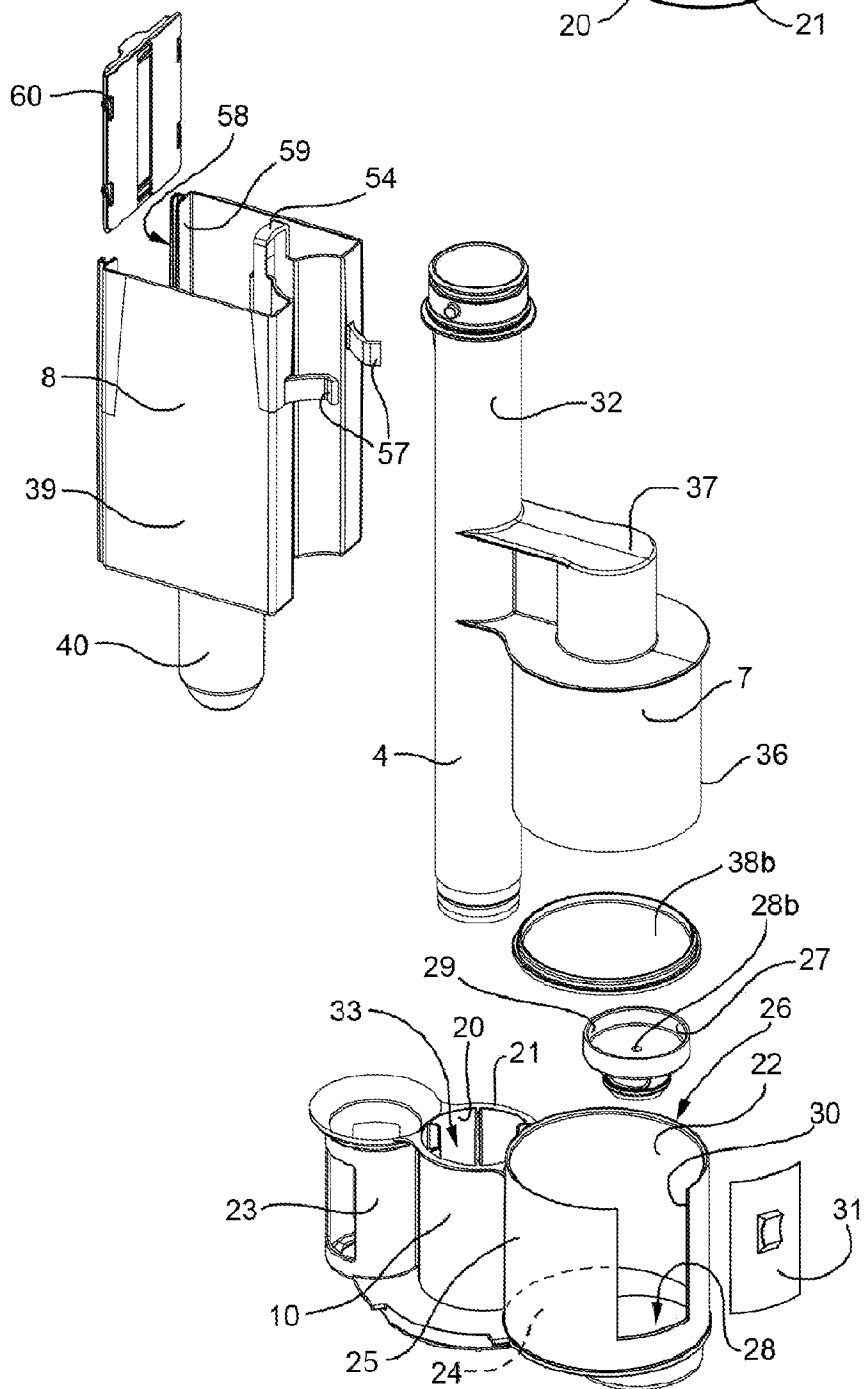
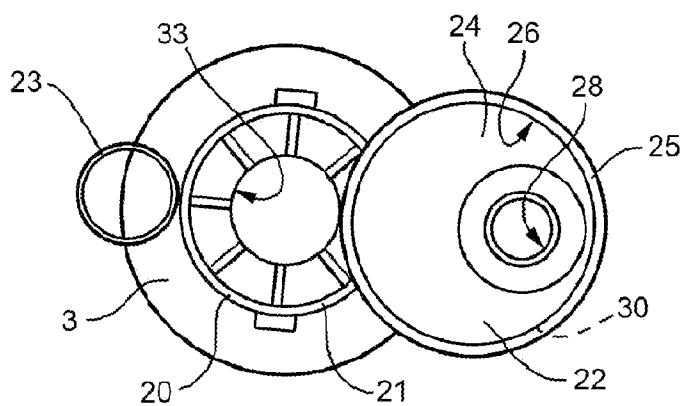
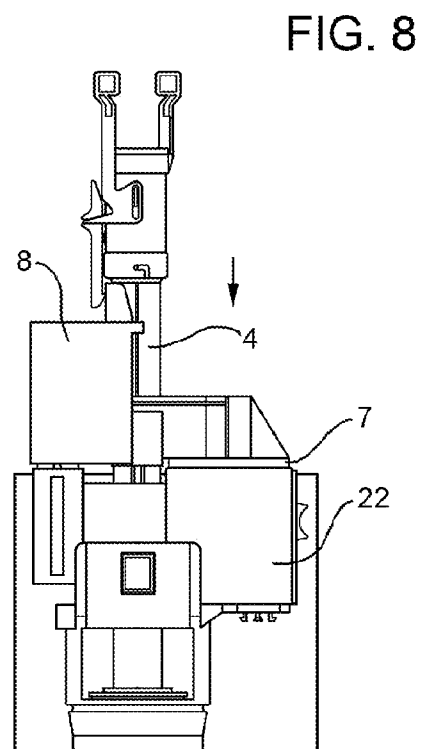
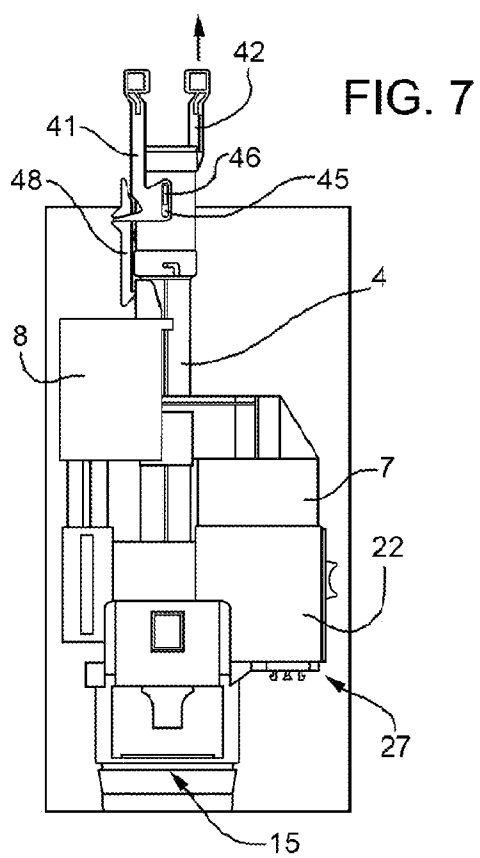
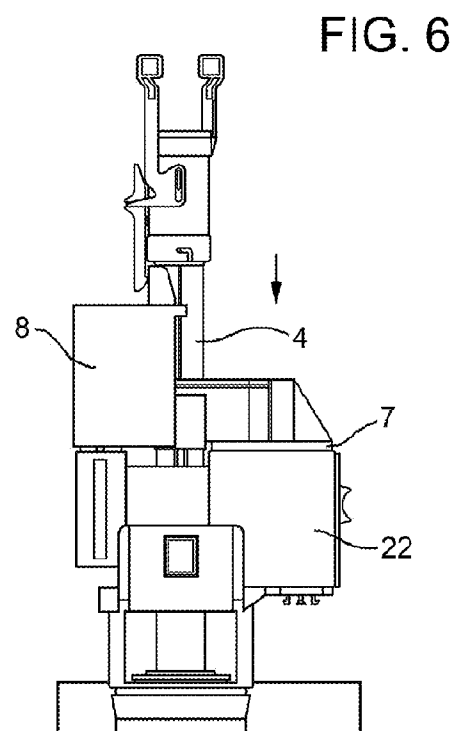
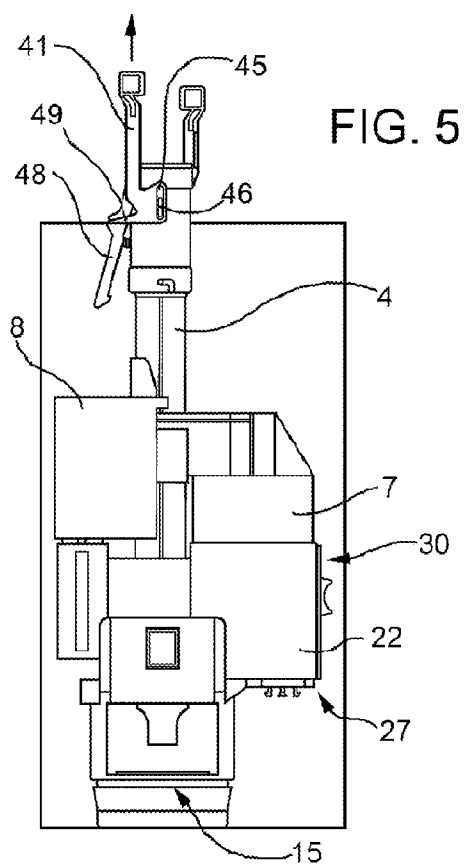


FIG. 3



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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ÖBLÍTŐKÉSZÜLÉK ÖBLÍTŐTARTÁLYHOZ

Szabadalmi igénypontok

1. Öblítőkészülék (1) öblítőtartályhoz, amely a következő részekből áll: egy tartószerkezetből (3), amely egy (A) tengely mentén terjed ki; egy szeleptestből (4), amely az (A) tengellyel párhuzamos és a tengely mentén elcsúsztható, rendelkezik egy zárral (5), mely együttműködik a tartószerkezet (3) üléktömítésével (6); egy úszóból (7), amely a szeleptesttel (4) van egybeépítve és együtt mozgatható a szeleptesttel (4) a tartószerkezethez (3) képest; egy működtető rendszer (9), mely a szeleptesthez (4) kapcsolódik, hogy megemelje a szeleptestet (4) és kinyissa az üléktömítést (6); az úszó (7) oldalirányban excentrikusan helyezkedik el a szeleptesthez (4) képest, sugárirányban külsőlegesen a szeleptesthez (4) képest, a készüléket az jellemzi, hogy az úszó (7) a tartószerkezet (3) tartályában (22) képes mozogni, amely excentrikus az (A) tengelyhez képest; továbbá a tartály (22) szabályozza a szeleptest (4) esésének sebességét és rendelkezik egy szeleppel (27), amely a tartályba (22) vizet enged, illetve legalább egy kimeneti nyílás (30; 28b), amely biztosítja a víz kifolyását a tartályból (22).
2. Az 1. szabadalmi igénypontnak megfelelő készülék, melyben a szelep (27) egyirányú szelep, amely a tartály (22) alsó részében helyezkedik el, különösen a tartály (22) alsó falán (24), és úgy van konfigurálva, hogy a víz alulról felfelé befolyhasson a tartályba (22), és egyben megakadályozza, hogy a víz lefelé kifolyjon a tartályból (22).
3. Az 1. és 2. szabadalmi igénypontnak megfelelő készülék, melyben a tartálynak (22) egy kiegészítő nyílása (28b) is van, amely megkerüli a szelepet (27).
4. Az egyik fent említett szabadalmi igénypontnak megfelelő készülék, amelyben a tartály (22) rendelkezik egy első ablakkal (30), amely meghatározza az első kifolyási pontot a víznek a tartályból (22); az első ablak (30) a tartály (22) egyik oldalfalán (25) helyezkedik el, magasabban, mint a szelep (27).
5. A 4. szabadalmi igénypontnak megfelelő készülékben az első ablak (30) egy első állítható ajtóval (31) van ellátva, amely mozgatható, így szabályozza az első ablak (30) áramlási keresztmetszetét, így szabályozva a tartályból (22) történő vízkirárlás sebességét.
6. Az egyik fent említett szabadalmi igénypontnak megfelelő készülék rendelkezik egy kiegészítő, vizet tartalmazó ballaszttartállyal (8), amely választhatóan csatlakoztatható a szeleptesthez (4), hogy részleges öblítést végezzen, a ballaszttartály (8) a szeleptesthez (4) képest oldalirányban helyezkedik el, diametrikusan az úszóval szemben (7).
7. A 6. szabadalmi igénypontnak megfelelő készülékben a ballaszttartály (8) egy második ablakkal (58) rendelkezik, amely egy második állítható ajtóval (60) van ellátva, így szabályozza a második ablak (58) nyílását és a vízmennyiséget a ballaszttartályon (8) belül, vagyis a ballaszttartály (8) súlyát.
8. Az egyik fent említett szabadalmi igénypontnak megfelelő készülékben az úszó (7) egy úszó tokból (36) áll, amely nagyrészt párhuzamos a szeleptesttel (4) és sugárirányban fix távolságra van a szeleptesttől (4), illetve egy összekötő karból (37), amely oldalirányban kinyúlik a szeleptestből (4) és tartja az úszó tokot (36) a tartályban (22).
9. Az 1-7. szabadalmi igénypont valamelyikének megfelelő készülékben az úszó (7) egy úszó tokból (36) áll, amely legalább részben a tartály (22) belsejében van és dugattyúhoz hasonlóan elcsúszhat az (A) tengellyel párhuzamosan; az úszó tok (36) alul zárt és az alján egy olyan felület (38) található, amely szemben van a tartály (22) alsó falával (24).
10. A 8. szabadalmi igénypontnak megfelelő készülékben az úszó tok (36) legalább részben a tartály (22) belsejében van és dugattyúhoz hasonlóan elcsúszhat az (A) tengellyel párhuzamosan a tartályban (22); az úszó tok (36) alul zárt és az alján egy olyan felület (38) található, amely szemben van a tartály (22) alsó falával (24).



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