(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 811 092 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.07.2007 Bulletin 2007/30

(51) Int Cl.:
E03D 1/14 *(2006.01)* ***E03D 5/092*** *(2006.01)*

(21) Application number: **06011883.3**

(22) Date of filing: **08.06.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **18.01.2006 IL 17321306**

(71) Applicant: **KETER PLASTIC LTD.**
Herzelyia 46852 (IL)

(72) Inventor: **Ogen, Itzhak**
Kiryat Tivon 36502 (IL)

(74) Representative: **Minoja, Fabrizio**
Bianchetti Bracco Minoja S.r.l.
Via Plinio, 63
20129 Milano (IT)

(54) **Flushing valve mechanism**

(57) A dual quantity flushing valve mechanism comprising a housing having a base fitting for attachment to a water outlet of a toilet cistern, an overflow tube axially displaceable within the housing and having a bottom portion extending substantially coaxial within the housing, a top portion parallel to the bottom portion and extending outside of the housing, and an intermediate, inclined portion extending between the top portion and the bottom and projecting through the housing, with a seal disc fitted at a bottom of the bottom portion for sealing engagement of the water outlet. The mechanism further comprising an internal float coaxial over the bottom portion of the overflow tube, has an axial displacement restrictor articulated thereto and an external float fixed to the overflow tube, an operating mechanism fitted within the housing, for axial displacement of the overflow tube, however with selective axial displacement of the internal float responsive to a operating a long flush actuator or a short flush actuator, articulated with said operating mechanism.

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to toilet cistern flushing valve mechanisms, and particularly to dual quantity flushing valve mechanisms.

BACKGROUND OF THE INVENTION

[0002] Due to increasing population and limited resources of fresh water supply, conservation of water is becoming important. A significant source of water consumption, in the domestic arena is the water used in flushing toilets. It is well appreciated that in some cases a full volume flush is not required to clean out a toilet bowl.

[0003] Thus, there has been an increase in recent years in demand and development of toilets fitted with a dual cistern flushing mechanism, such that the amount of water used for each flush is determined by the individual, allowing consumption of less water during certain flush cycles. In fact, some countries have regulated this matter and it is mandatory that each cistern be fitted with a dual flushing mechanism.

[0004] Various dual flush mechanisms have been developed over the years for the purpose of providing the option of a full or long flush cycle for solid waste, or a short or partial flush cycle for liquid waste.

[0005] One type of dual flush mechanisms comprises a single operating actuator, a first activation thereof opens the valve to flush the toilet bowl and a second activation is required to cease operation thereof, namely to shut water flow to the toilet bowl.

[0006] The more popular type of dual flushing mechanisms, typically comprises two different flush cycles achieved by the flush valve being adapted for two positions, whereby each cycle is activated by a separate knob or handle. The two positions may be at different heights with respect to the bottom of the closet's tank. The actuation of the knob linked to an upper valve position will produce a short or partial flush, while the actuation of a lower valve position will produce a long or full flush. The length of the flush cycle is a function of the height of the flush valve with respect to the closet's bottom wall. The higher the valve is from the closet's bottom wall, the smaller the volume of water that will be discharged. Accordingly, the flushing of liquid waste, for example, requires the pressing of the upper flush valve position operating knob since only a small amount of water is required for the flushing, while the flushing of solid waste requires the pressing of the knob linked to the lower flushing valve position whereby a longer flush or a larger volume of flush water is produced. In this way, water conservation is ensured.

[0007] It is an object of the present invention to provide a dual flush mechanism of simple construction, and which may be adjusted to adapt to different designs of toilet cisterns, i.e. the height of the mechanism is adjustable to accommodate the variation in tank size.

SUMMARY OF THE INVENTION

[0008] According to the present invention there is provided a toilet cistern flushing valve of compact size, rendering it suitable for installation in cisterns of different configurations, e.g. substantially large or small cisterns, with long/short flush actuators of different configurations (push buttons, levers, etc.)

[0009] The invention thus calls for a dual quantity flushing valve mechanism comprising:

a housing having a base fitting for attachment to a water outlet of a toilet cistern;
an overflow tube axially displaceable within the housing and having a bottom portion extending substantially coaxial within the housing, a top portion parallel to said bottom portion and extending outside of the housing, and an intermediate, inclined portion extending between the top portion and the bottom and projecting through the housing, there being a seal disc fitted at a bottom of the bottom portion for sealing engagement of the water outlet;
an internal float coaxial over the bottom portion of the overflow tube, having an axial displacement restrictor articulated thereto;
an external float fixed to the overflow tube; and
an operating mechanism fitted within the housing, for axial displacement of the overflow tube, however with selective axial displacement of the internal float responsive to a operating a long flush actuator or a short flush actuator, articulated with said operating mechanism.

[0010] According to some particular embodiments of the present invention, any of the following arrangements may be incorporated in the flushing mechanism:

- a top end of the top portion may be fitted with a telescopic extension piece, for calibrating overfill water level with the cistern.
- the external float may be axially displaceable so as to calibrate the amount of water discharged at a short flush.
- the external float is axially displaceable by a rack extending outside of said housing and fixedly attached to the overflow tube.
- the external float is articulated to the bottom portion of the overflow tube via a slot formed in the housing.
- the operating mechanism comprises a short flush rocker lever and a long flush rocker lever pivotally secured within the housing, said rocker levers being engageable at one end to the respective long flush actuator and the short flush actuator, and an opposite end to the overflow tube, for elevation thereof within the housing, and where said short flush rocker lever is articulated with a barrier member such that

pivotal displace of the short flush rocker lever entails pivotal displacement of the barrier into a position for encountering the axial displacement restrictor of the internal float.

- the long flush actuator and the short flush actuator are push buttons fitted in a top cover mounted on the housing.
- the push buttons are each fitted with a length-adjustable stem for engaging a corresponding rocker lever of the operating mechanism.
- the long flush actuator and the short flush actuator are pull levers articulated to lever arms.
- upwards axial displacement of the internal float is restricted by a lateral restriction element fitted on the bottom portion of the overflow tube and adapted for engaging a top face of the internal float.
- the housing is formed at its bottom with a compartment extending between a base portion and a coaxial sleeve portion, slidingly accommodating the internal float, said compartment fitted at its bottom with an outlet for slow release of water to thereby create a damping effect and impede descent of the internal float.
- the size of the outlet is controllable for calibrating the internal float descending rate.
- the base fitting is articulated to a base coupler attached in turn to a water outlet of a toilet cistern.

[0011] According to another aspect of the invention there is a toilet flushing cistern fitted with a dual quantity flushing valve mechanism as described herein above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] In order to understand the invention and to see how it may be carried out in practice, some embodiments will now be described, by way of nonlimiting examples only, with reference to the accompanying drawings, in which:

Fig. 1 is a view of the inside of a toilet cistern (sectioned) comprising a flushing valve according to an embodiment of the present invention, the valve illustrated in a full-flush position;

Fig. 2 is a perspective view of a button-operated flushing valve, in full-flush position, with a portion of the housing and cap sectioned, according to an embodiment of the present invention;

Fig. 3 is a perspective, exploded view of the button-operated flushing valve;

Fig. 4 is a top perspective view illustrating the operating mechanism;

Fig. 5 is an isometric view illustrating a full-flush position of only the internal float and the operating mechanism;

Fig. 6 is an isometric view illustrating a half-flush position of only the internal float and the operating mechanism

Fig. 7 is a perspective view of a bottom portion of the housing of the valve according to the invention, formed with a controllable outlet lever; and

Fig. 8 is a perspective view of an operating mechanism articulated with a lever-operated flushing valve, in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0013] Attention is first directed to Fig. 1 of the drawings for understanding the construction and usage of the flushing valve in accordance with the present invention generally designated **10.**

[0014] The flushing valve **10** is disposed within a toilet cistern **12.** The cistern **12** comprises an inlet **14** for water flow entry into the cistern **12,** a float control mechanism **15** coupled to the inlet **14,** for regulating water flow into the cistern **12.** An outlet **16** is disposed at a bottom portion of the cistern **12** and is coupled to a toilet bowl (not shown). An operation mechanism **18** is fitted on the top of the cistern **12** and is articulated to the flushing valve **10** for operation thereof.

[0015] The flushing valve **10** is secured to the outlet **16** via a base coupler **20.** The base coupler **20** has slots **21** formed therein, through which the base coupler **20** is in fluid communication with the cistern **12.** As will be explained in greater detail hereinafter, the flushing valve **10** comprises an annular plug **22,** fitted with an annular seal **23,** extending within the base coupler **20,** adapted for sealing water passage into the outlet **16,** whenever the flushing valve is in its closed position.

[0016] As can further be seen in Figs. 2 and 3 there is illustrated a button operated flushing valve **10,** comprising a half-flush mode and a full-flush mode as will be explained hereinafter in detail. The valve **10** comprises a substantially cylindrical housing **32** (which in the drawings is partially concealed to facilitate viewing of the internal components therein). The housing **32** comprises an open top portion **34,** and is formed with a large slot **38,** a small slot **40** and several notches **42** disposed adjacent to the top portion **34,** adapted for fastening different covers thereto, as will be discussed hereinafter. The housing **32** further comprises a bottom portion **43,** formed with a downwardly extending rim **44** for detachably connecting to the base coupler **20,** and a propulsion inlet **48** formed therein (elaborated in connection with Fig. 7).

[0017] The large slot **38** extends from about slightly higher than the middle of the housing **32** to the top portion **34.** The small slot **40** is disposed diametrically opposite to the large slot **38,** extending upwardly from about the middle of the housing **32** a length, for example. However, position of the small slot **40** may differ with respect to the position of the large slot **38.**

[0018] The housing **32** is detachably secured to the base coupler **20** by snap coupling, however it may be secured in other ways, e.g., by threaded coupling, bay-

onet coupling, etc., and typically the arrangement is such that the housing **32** may be rotatably fixed with respect to the base coupler **20.** The base coupler **20** has an externally threaded tubular bottom portion **50** and is fitted for projecting through an opening formed at a bottom wall of the cistern **12** and is connectable by said threading to outlet pipe **16** which as discussed hereinabove in connection with in Fig. 1, is coupled in turn to a toilet bowl (typically via an intermediate pipe segment, not shown).

[0019] A non-linear overflow pipe and float guide **62,** disposed partially within the housing **32,** comprises a bottom portion of the pipe **64** being vertically oriented, disposed coaxially within the housing **32** and being in fluid communication with the tubular bottom portion **50,** an intermediate portion of the pipe **66,** disposed above the first portion **64,** being slanted and protruding upwardly from the housing **32** via the large slot **38** therein, and a top portion of the pipe **68,** disposed above the intermediate portion **66,** being substantially vertically oriented with an open upper end **69,** and accommodating a telescopic extension tube section **70** (Fig. 3) with an open top end **71,** axially displaceable with respect to the top portion of the pipe **68.** The height of the top end **71** determines an overflow level of the cistern **12,** namely the top end **71** determines the maximal water level within the cistern **12** so that in case of a system miscalibration or failure, in which the water level rises above the height of top end **71,** the water may drain through the pipe **62,** and hence the tubular bottom portion **50** into the outlet **16** (Fig. 1).

[0020] As can best be seen in Fig. 3, the bottom portion of the pipe **64** may be integrally formed with the annular plug **22** described in Fig. 1, supporting the rubber seal disc **23** so as to more effectively seal an axial aperture **52** of the base coupler **20** (Fig. 2). However, for practical manufacturing purposes, the plug 22 may be fitted on a lowermost end of the bottom portion of the pipe **64.**

[0021] The bottom portion **64** of the overflow pipe **62** is further formed with a plurality of laterally projecting wings **72,** and a lateral flange **75** formed integrally therewith, to be described hereinafter.

[0022] The intermediate portion **66** of the pipe **62** is formed with two laterally extending arms **74,** with their extreme edges **78** oriented away from each other (substantially radial), so that the extreme ends **78** are slidingly received within internal axial grooves **76** that extend along an internal wall portion of the housing **32,** whereby the overflow pipe **62** is adapted for axial displacement only within the housing **32.**

[0023] A support member **80,** vertically displaceable outside the housing **32,** is attached to the first flange 75. The support member **80** is in the form of a thin connecting bar, with one surface having a toothed-rack like appearance **84** and another surface further comprising a second flange **82** formed thereon. The second flange **82** is articulated to the first flange **75** and laterally projects through slot **40** formed in the housing **32.** The arrangement is such that vertical displacement of the overflow pipe **62** entails corresponding vertical displacement of the support member **80** and vice versa.

[0024] The support member **80** has mounted thereon an external float **88** (referred to as a *"half flush float",* as it is associated with flushing only a partial volume of the cistern **12** as will become apparent hereinafter). The external float **88** may have a buoyant material inserted therein, e.g. foamed material, a water tight space, etc. The external float **88** is slidingly displaceable over a portion of the toothed rack-like surface **84** of the support member **80** and is fitted with a clasp **90** formed in turn with a projection **91,** fitted for engaging with the teeth of the toothed surface **84** so as to calibrate the vertical level of the external float **88.** The arrangement is such that the external float **88** is stationary with respect to the support member **80,** i.e. with respect to the pipe **62,** and is articulated displaceable therewith.

[0025] In this embodiment the button operated flushing valve **10** comprises a top cover **92** articulated to the top portion of the housing **32,** e.g. by snap-type engagement with notches **42** of the housing **32.** The cover **92** comprises in turn a chamber **100** accommodating two push buttons, namely a full flush button **96** and a half-flush button **95,** each having an upper pressing surface **104** and an elongated vertical stem **97** and **98,** respectively, integrally formed therewith and extending downwards through respective openings formed in a bottom wall **102** of the top cover **92.** The full flush button **96** and the half-flush button **95** are each fitted with a coiled spring **99** (Fig.3) mounted on the respective stem, disposed between the upper surface **104** and the bottom wall **102** of the top cover **92,** for biasing the buttons into their non-depressed position (in Figs. **2** and **5** the full flush button **96** is shown in its depressed position and the half-flush button **95** in its elevated position, and in Fig. 6 vice versa).

[0026] An annular rim **108** of the top cover **92** further comprises a guide member **112,** adapted to slidingly receive and support the support member **80.**

[0027] Referring to Figs. 4 to 6, the elongated vertical stems **97** and **98** are each in contact with a lever system **114,** completely disposed within the housing **32,** at a top portion thereof, above the intermediate portion **66** of the pipe **62** (Fig. 2). The lever system **114** comprises a shaft **116,** oriented horizontally, inserted in two notches **47** (one of which is seen in Fig. 3) in the housing **32** (Figs. 1 to 3) such that translational movement is prevented but not rotational movement.

[0028] Mounted on the shaft **116** in a freely rotatable manner there is a first rocker lever **118,** a second rocker lever **120** and a barrier **121.** The center of gravity of the first rocker lever **118** and second rocker lever **120** is such that they normally retain a ready state, namely extend at a substantially horizontal position.

[0029] Both the first rocker lever **118** and the second rocker lever **120** are physically similar though oriented in opposite directions, and each comprises a first end **122A, 122B** respectively, adapted for contact with the vertical stem **97** and **98,** respectively. The first ends **122A** and

122B are arced so as to enable continuous and smooth contact with a bottom end of the respective vertical stem **97** and **98.** A second end **123A** and **123B** of each rocker is fitted with a first lateral projection **124A** and **124B,** respectively, and a second lateral protrusion **126A** and **126B,** to be further elaborated on hereinafter.

[0030] In the disclosed embodiment the first rocker lever **118** and the barrier **121** are articulated to one another by a lateral projection **125,** so that rotational movement of the first lever **118** entails the barrier **121** to rotationally displace in the same sense. It is noted however that the barrier **121** is formed with an arresting arm portion **127,** extending shorter than the second end **123A** of the first rocker lever **118,** the reason for which will become apparent hereinafter.

[0031] The arrangement is such that at the assembled position, each second lateral protrusion **126A** and **126B** is positioned under an extending arm **74** of the overflow pipe **62.**

[0032] The button valve **10** further comprises a substantially cylindrical internal float **128** concentrically mounted inside the housing **32,** normally disposed at the bottom portion **43** thereof and further being slidingly disposed over the bottom portion **64** of the overflow pipe **62.** However, axial displacement of the internal float **128** in an upwards direction is restricted by the wings **72** of the overflow pipe **62** adapted for engaging a top surface **129** of the internal float **128.** The float **128** may accommodate buoyant material (e.g. foamed material). Furthermore, there is fitted on a top portion of the float a rod **132,** to be discussed hereinafter.

[0033] The internal float **128** is free to move in the axial direction when not restrained by the wings **72.** The wings **72,** biased downwards by the weight of the pipe **62,** serve to ensure the internal float **128** normally remains in the lowest possible position within the housing **32,** sealing the outlet **16** (Fig. 1) from the cistern **12** (Fig. 1).

[0034] The rod **132** is disposed under the barrier **121** such that when the barrier **121** is rotated to a substantially horizontal orientation (Figs. 4 and 6), the arresting arm portion **127** of the barrier **121** is positioned directly above the rod **132,** preventing further upwards displacement of the rod **132** and the articulated internal float **128.** Additionally, if the barrier **121** is rotated to a substantially vertical orientation, as seen in Figs. 1, 2 and 5, then there is no portion of the barrier **121** above the rod **132,** thus the of the rod **132** and the articulated internal float **128** are free to axially displace upwardly until abutment of the internal float **128** with wings **72.** It is also noteworthy to mention in the normal position the barrier **121** is designed to be in its substantially vertical orientation.

[0035] Before activation of the operation mechanism **18** the normal state of the cistern **12** being at least partially filled with water (not shown), which enters the cistern **12** via the inlet **14.** The water level in the cistern **12** is calibrated to a chosen height by means of the control mechanism **15** which is adapted to detect when the water in the cistern **12** reaches at least a specified level and regulate the flow through the inlet **14** accordingly. The flushing valve **10** being at least partially submerged in the water, having lateral slots allowing water to access the base coupler **20.** The plug **22,** forced downwards by gravity, normally seals the axial aperture **52** thus obstructing the water from entering the outlet **16.**

[0036] During activation of the operation mechanism **18,** the flushing valve **10** may raise the plug **22** allowing the water in the cistern **12** to drain into the outlet **16.** The water in the outlet **16** may be directed into a toilet bowl (not shown) forcing waste (not shown) into a sewer (not shown).

[0037] After the activation of the operation mechanism **18** the plug **22** descends, for reasons that will be explained hereinafter, once again sealing the outlet **16** and restoring the cistern **12** to the "before activation" state described above.

[0038] In a first mode of operation, when a full flush is desired (i.e. substantially the entire amount of water within the cistern), the full flush button **96** is depressed (Figs. 1, 2 and 5). The coiled spring **99** is thereby compressed and the relevant stem **98** descends into the housing **32** applying a downwards force on the first end **122B** of the second rocker lever **120,** causing it to pivot about shaft **116.** The recoil of the spring **99** causes the button **96** to immediately revert to it's elevated position (Fig. 6) upon stopping a force applied thereto. However, the rotation of the second lever **120** causes the second lateral protrusion **126B** thereof to elevate the corresponding extending arm **74** of the overflow pipe **62.** The elevation of the pipe **62** entails raising the external float **88** (owing to buoyancy forces), and lifting the annular plug **22,** facilitating full drainage of the cistern **12.** The drainage causes the water level in the cistern **12** to drop below the calibrated water level.

[0039] Additionally, the upwards motion of the plug **22** forces water into the propulsion inlet **48,** thereby applying additional force propelling the internal float **128** in an upwards direction. The upwards motion of the internal float **128** is halted when the its top surface engages the wings **72,** of the already elevated pipe **62,** the upwards motion of which is halted when the annular plug **22** encounters the bottom base of the housing **32.**

[0040] After the described upward motion has been halted, the pipe **62** and connected components begin to descend, due to gravitational forces, to their original, downward positions. The downwards motion of the pipe **62** is retarded by the external float **88** and the internal float **128** thereby increasing drainage time. The rate of descent is decreased when the buoyant external float **88** contacts the reducing water level, the force of the water on the external float **88** being in the upward direction. Additionally, the descent of the pipe **62** is further retarded by the slow descent of the internal float **128.** The internal float **128** is forced downwards by the wings 72 of the pipe **62,** which are propelled by the weight of the pipe **62,** however, as the water beneath the internal float **128** must exit compartment **45** of the housing **32** via the small pro-

pulsion outlet **48** creating a damping effect and thereby impeding the descent of the internal float **128.**

[0041] According to a variation of the invention, disclosed in Fig. 7, propulsion outlet **48** may be of controllable section area, e.g. by a manual lever **135** pivotally secured at **131** to the bottom wall of the compartment **125,** governing the section are of the outlet, to thereby govern the descending speed of the overflow pipe **62.**

[0042] Eventually, the pipe **62** resumes the position taken before activation of the flushing valve **10.** The plug **22** thereby seals the outlet **16** allowing the water entering from the inlet **14** to refill the cistern **12** to the calibrated water level.

[0043] Turning now to Fig. 6, there is illustrated the lever system **114** with the half-flush button **95** depressed. The operation of the button valve **10** is substantially similar to that described in the previous example, however with the following differences.

[0044] The depression of the half-flush button **95** causes rotation of the second rocker lever **120** and therefore a corresponding pivotal displacement of the articulated barrier **121.** The arresting arm portion **127** of the barrier **121** is thereby rotated to a substantially horizontal orientation. Pivotal displacement of barrier **121** is restricted by a projection **133** extending from the shaft **118.** In the present example the upward motion of the internal float **128** is halted when the rod **132** impacts the arresting arm portion **127** of the barrier **121.** It should be noted that the distance traveled by the internal float **128** is significantly less than in the previous example, associated with a full flush mode, and hence the retardation effect caused thereby will be significantly shorter. Thus there is a shorter drainage period causing the desired half-flush effect. It is noticed that the elevation of the external float **88,** in fact governs the amount of water to be flushed in a 'half flush' procedure.

[0045] It is to be appreciated that the design of the system according to the present invention is such that depressing the full flush button **96** and the half-flush button **95** simultaneously, results in activating a half flush mode, as discussed hereinabove.

[0046] Fig. 8 is directed to a modification of the invention, illustrating the activating mechanism generally referred to at **140,** wherein rather than a press button valve there is provided a pull-lever valve. The pull-lever valve **140** differs from the button valve **10** by the replacement of the cover **92** with an alternate cover **142** adapted for pull-levers **144A** and **144B,** associated with the half-flush and full-flush rocker levers **118** and **120,** respectively.

[0047] Each pull-lever **144A** and **144B** is mounted on the relevant lateral protrusions **124A** and **124B,** respectively, and protrudes from the housing **32** upwardly through the alternate cover **142.** In this example each pull-lever **144** has a handle **146** at the upper end thereof. These handles are articulated to lever operators typically fitted on a front wall of a cistern (not shown).

[0048] The operation of the button valve **10** is identical to that of the pull-lever valve **140** except that the respective second end **123A** and **123B** of either the first lever **118** or second lever **120** is pulled in order to create a desired rotational motion and the following chain of effects that are caused.

Claims

1. A dual quantity flushing valve mechanism comprising:

a housing having a base fitting for attachment to a water outlet of a toilet cistern;
an overflow tube axially displaceable within the housing and having a bottom portion extending substantially coaxial within the housing, a top portion parallel to said bottom portion and extending outside of the housing, and an intermediate, inclined portion extending between the top portion and the bottom and projecting through the housing, there being a seal disc fitted at a bottom of the bottom portion for sealing engagement of the water outlet;
an internal float coaxial over the bottom portion of the overflow tube, having an axial displacement restrictor articulated thereto;
an external float fixed to the overflow tube; and
an operating mechanism fitted within the housing, for axial displacement of the overflow tube, however with selective axial displacement of the internal float responsive to a operating a long flush actuator or a short flush actuator, articulated with said operating mechanism.

2. A flushing valve according to claim 1, wherein a top end of the top portion is fitted with a telescopic extension piece, for calibrating overfill water level with the cistern.

3. A flushing valve according to claim 1, wherein the external float is axially displaceable so as to calibrate the amount of water discharged at a short flush.

4. A flushing valve according to claim 3, wherein the external float is axially displaceable by a rack extending outside of said housing and fixedly attached to the overflow tube.

5. A flushing valve according to claim 3, wherein the external float is articulated to the bottom portion of the overflow tube via a slot formed in the housing.

6. A flushing valve according to claim 1, wherein the operating mechanism comprises a short flush rocker lever and a long flush rocker lever pivotally secured within the housing, said rocker levers being engageable at one end to the respective long flush actuator and the short flush actuator, and an opposite end to

the overflow tube, for elevation thereof within the housing, and where said short flush rocker lever is articulated with a barrier member such that pivotal displace of the short flush rocker lever entails pivotal displacement of the barrier into a position for encountering the axial displacement restrictor of the internal float.

7. A flushing valve according to claim 1, wherein the long flush actuator and the short flush actuator are push buttons fitted in a top cover mounted on the housing.

8. A flushing valve according to claim 7, wherein the push buttons are each fitted with a length-adjustable stem for engaging a corresponding rocker lever of the operating mechanism.

9. A flushing valve according to claim 1, wherein the long flush actuator and the short flush actuator are pull levers articulated to lever arms.

10. A flushing valve according to claim 1, wherein upwards axial displacement of the internal float is restricted by a lateral restriction element fitted on the bottom portion of the overflow tube and adapted for engaging a top face of the internal float.

11. A flushing valve according to claim 1, wherein the housing is formed at its bottom with a compartment extending between a base portion and a coaxial sleeve portion, slidingly accommodating the internal float, said compartment fitted at its bottom with an outlet for slow release of water to thereby create a damping effect and impede descent of the internal float.

12. A flushing valve according to claim 11, wherein the size of the outlet is controllable for calibrating the internal float descending rate.

13. A flushing valve according to claim 1, wherein the base fitting is articulated to a base coupler attached in turn to a water outlet of a toilet cistern.

14. A toilet flushing cistern fitted with a dual quantity flushing valve mechanism according to any one of the preceding claims.

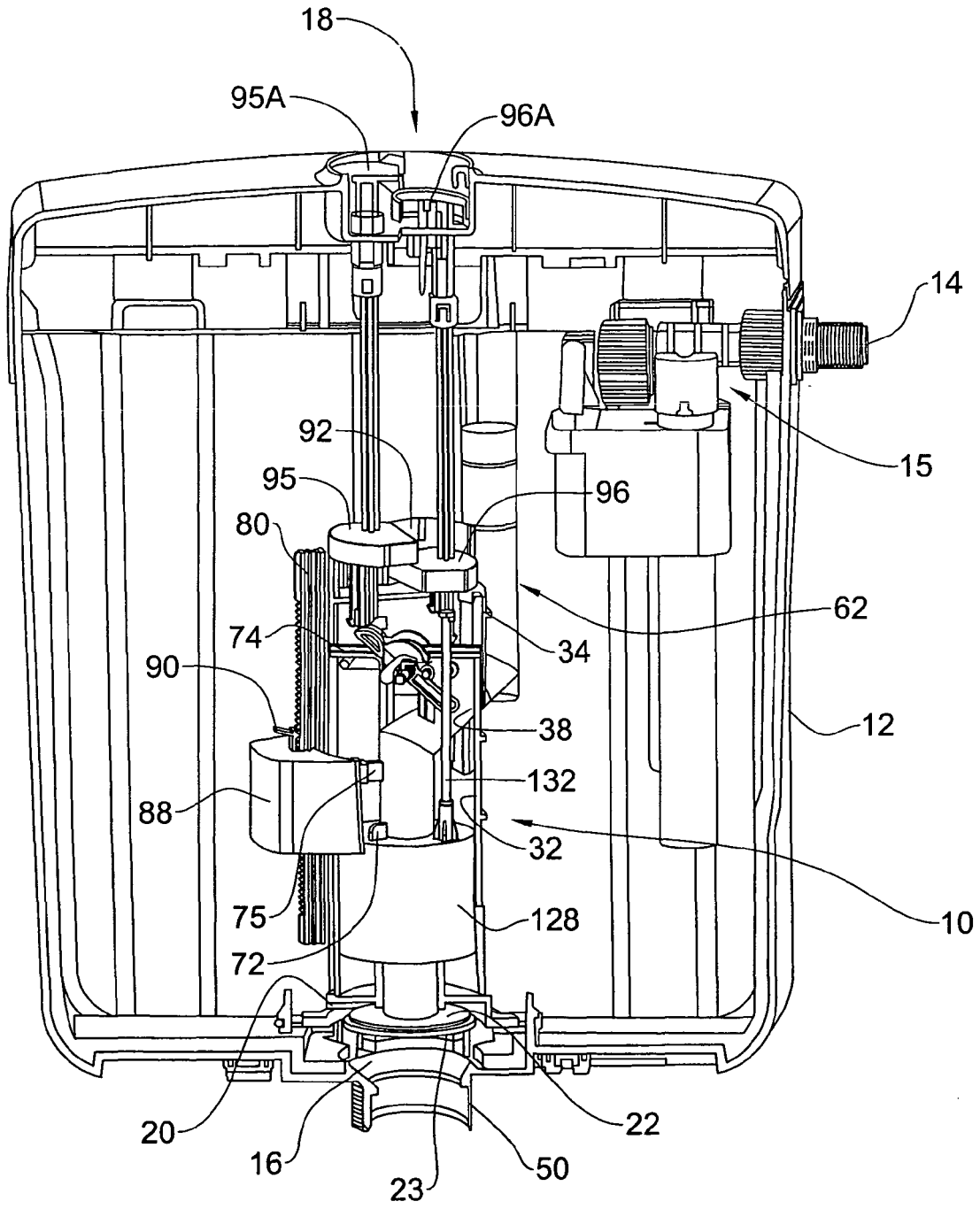
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FIG. 1

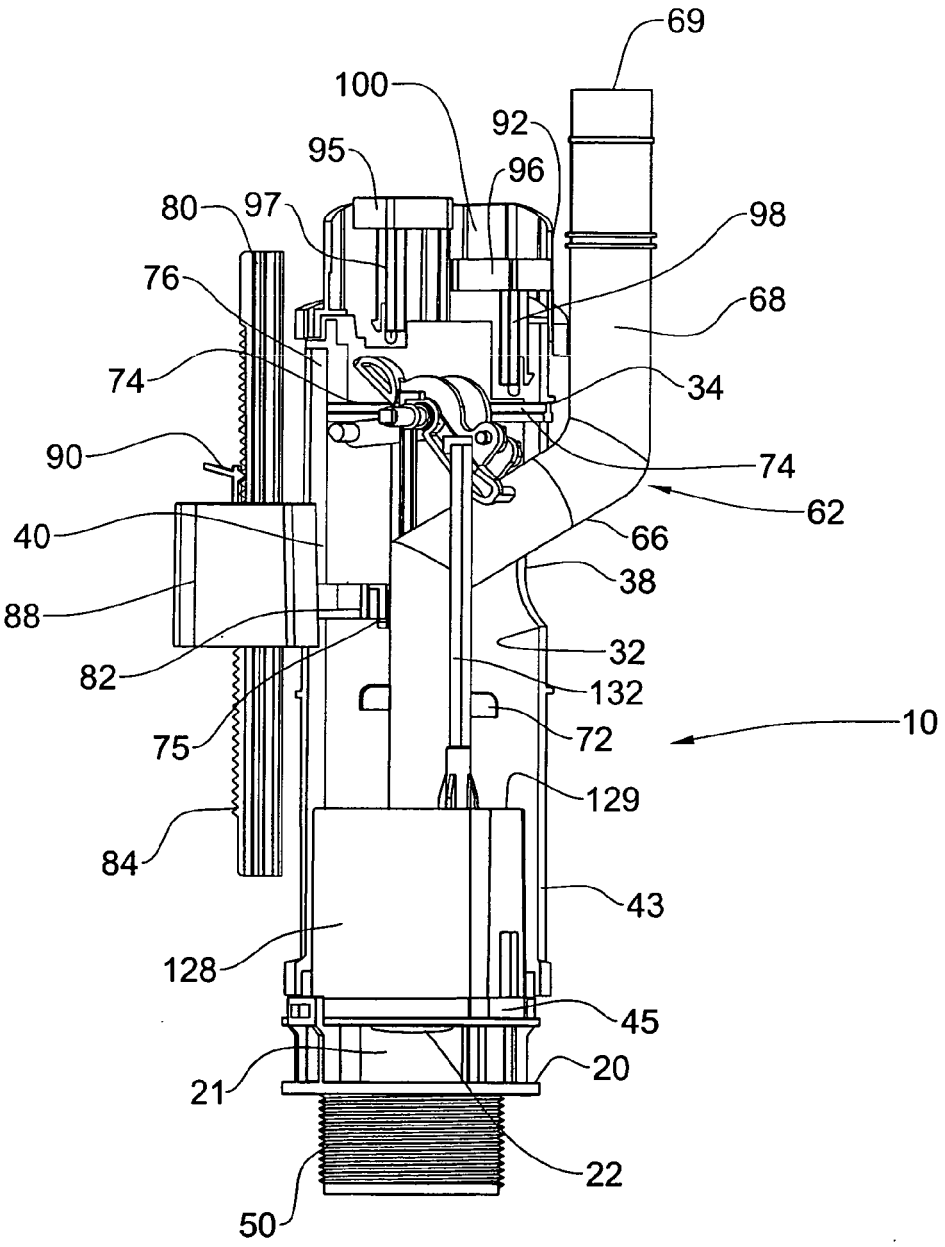
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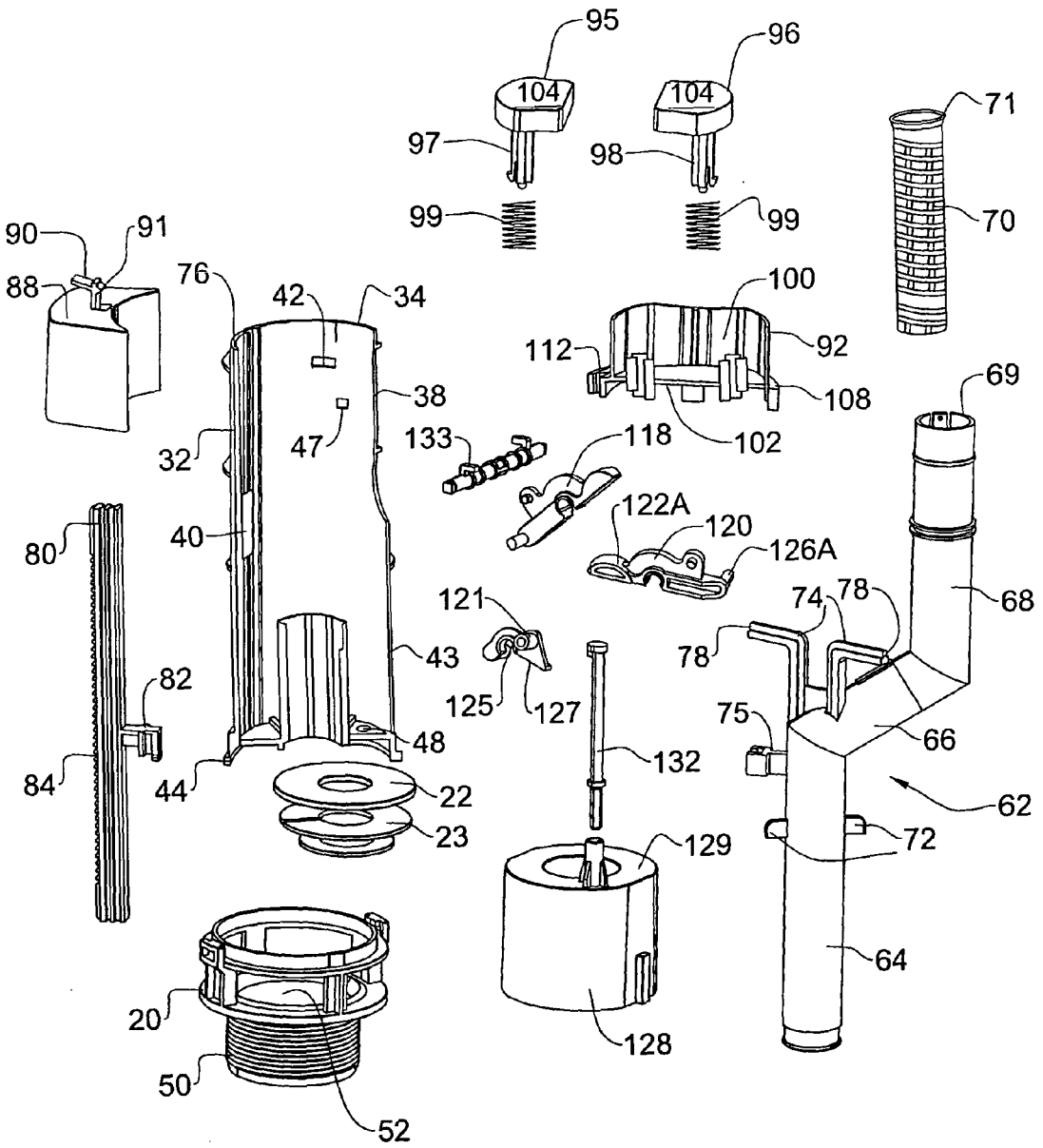
FIG. 2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118
102
69
122A
120
126A
80
40
121
74
78
68
78
43
125
127
75
66
82
132
48
84
44
22
62
23
72
129
64
20
50
52
128

FIG. 3

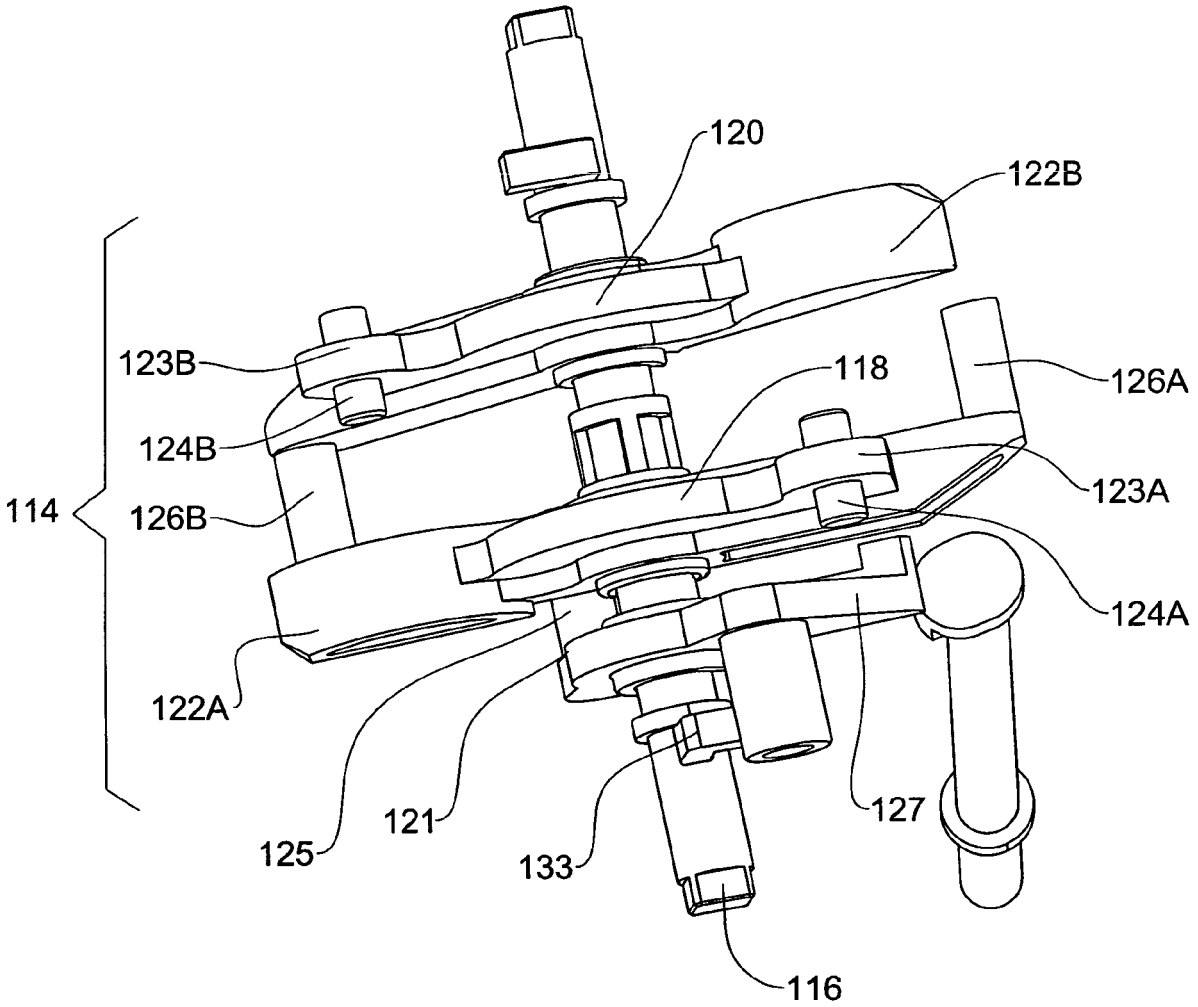
120
122B
123B
118
126A
124B
123A
114
126B
124A
122A
127
121
125
133
116

FIG. 4

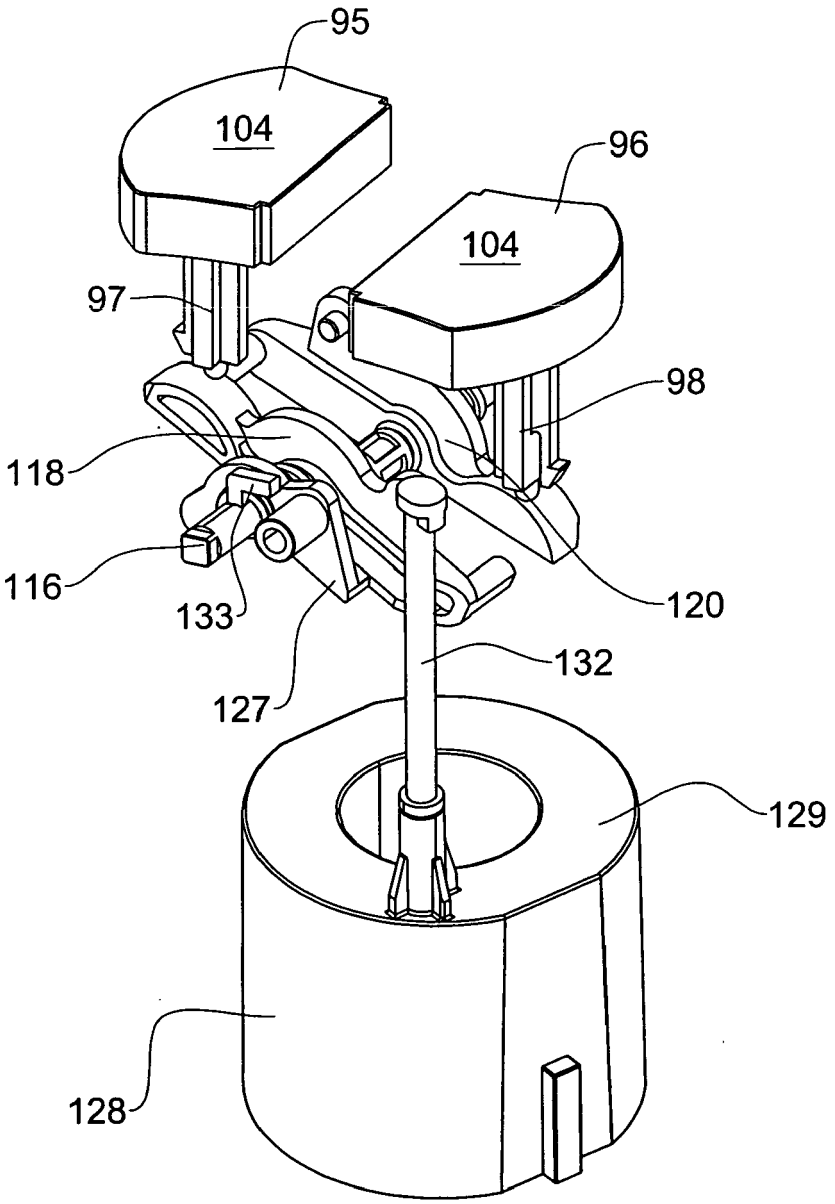

FIG. 5

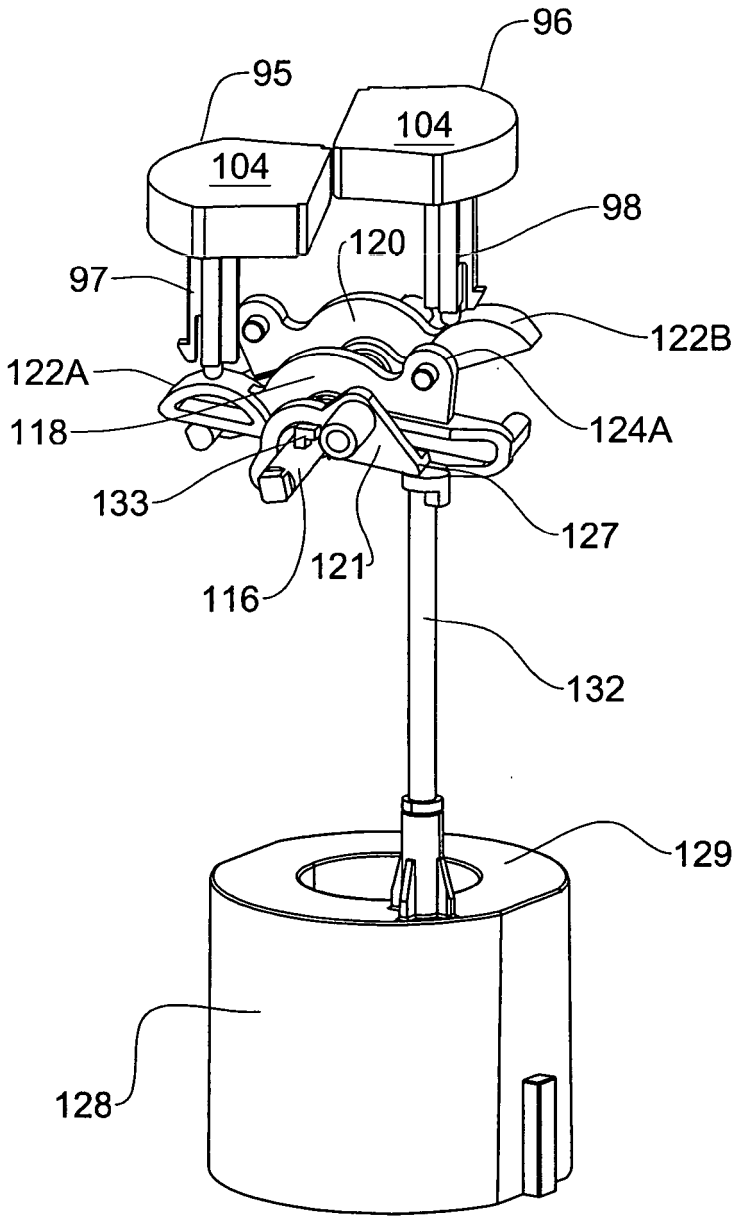
96
95
104
104
98
120
97
122B
122A
124A
118
133
127
121
116
132
129
128

FIG. 6

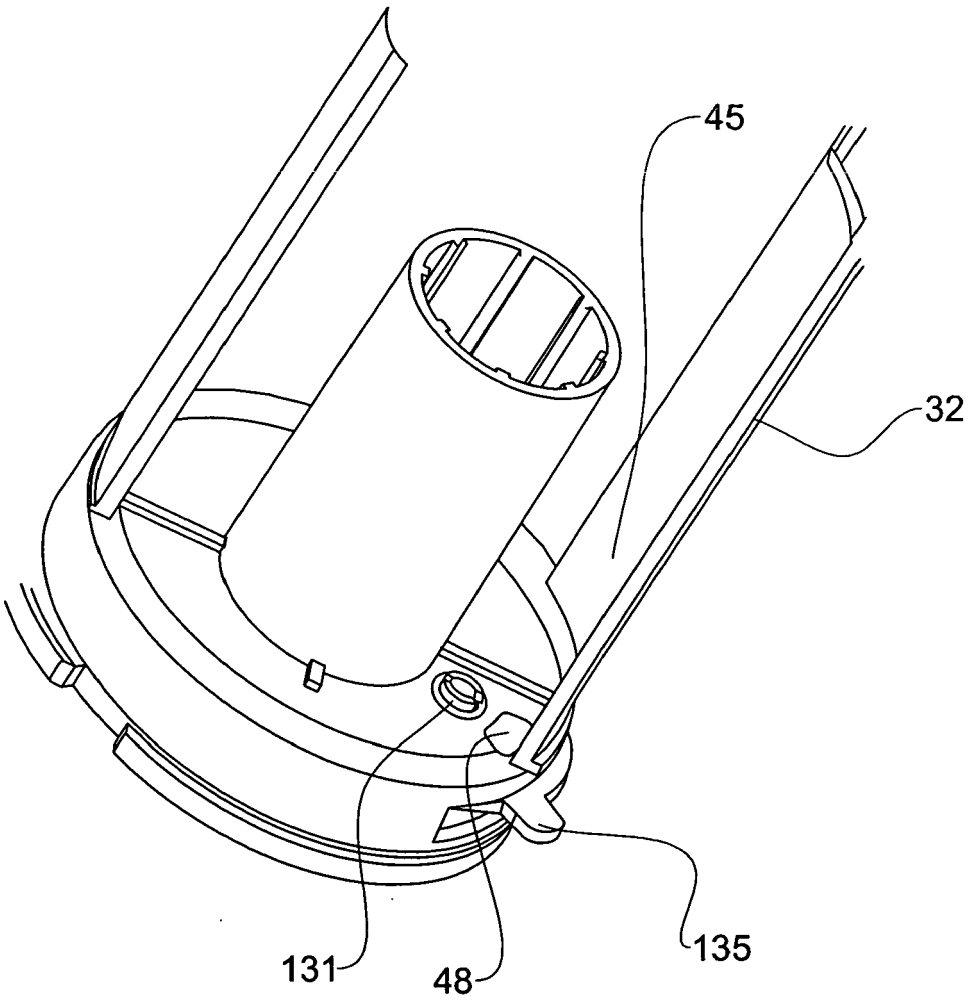

FIG. 7

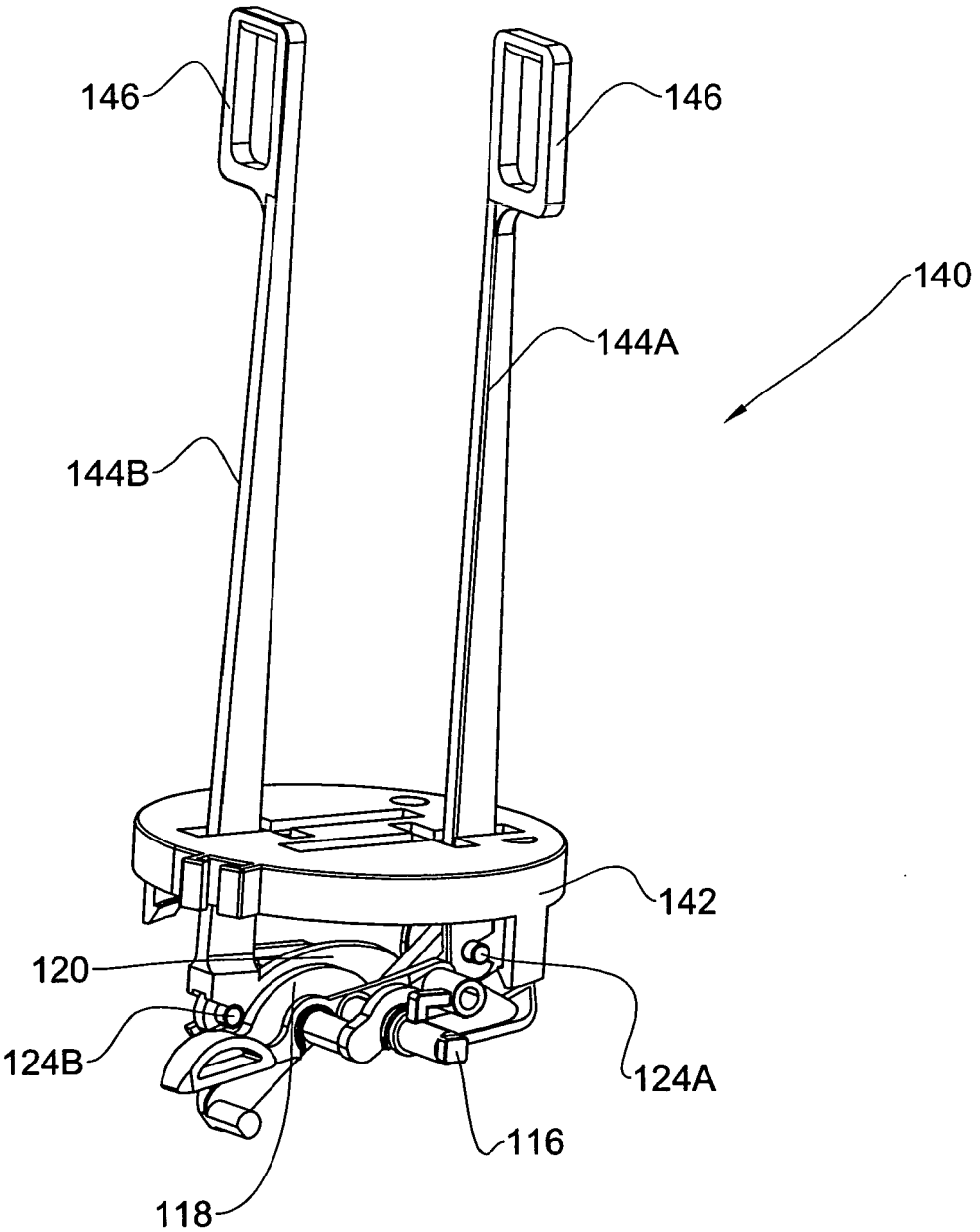

FIG. 8