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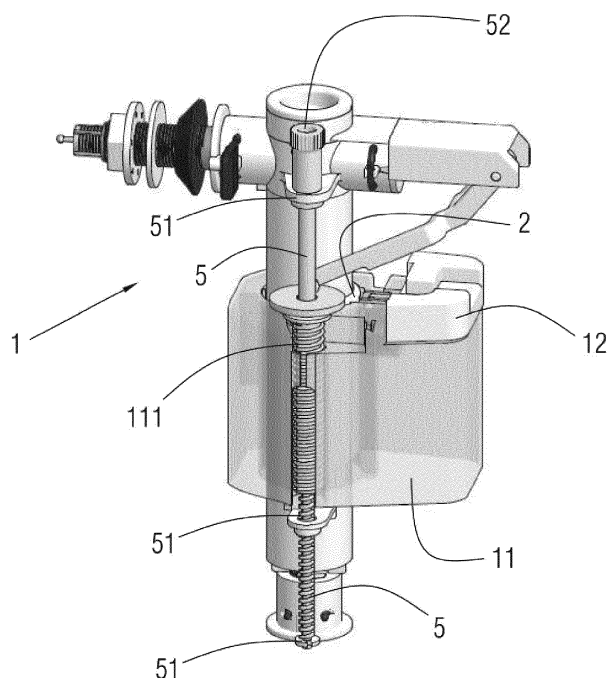
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(54) **WATER REFILLING DEVICE FOR TOILET CISTERNS**

(57) A water refilling device for toilet cisterns comprises a faucet body (1) for being arranged inside a toilet cistern, with a first float (11) connected to a sleeve (2) which, in turn, is integral with the faucet body (1), the device further comprising a second float (12) pivotably connected to the first float (11), and said second float (12) also being vertically movable in relation to a pivot point as a result of the buoyancy thereof according to the water level inside the cistern; the device comprises fur-

ther a retention mechanism simultaneously connected to the sleeve (2), to the first float (11) and to the second float (12), such that the retention mechanism maintains the first float (11) locked in the upward movement thereof, and releases the lock of said first float (11) when the second float (12) reaches a specific height during the vertical movement thereof due to the water level inside the cistern.

**FIG.1**



## Description

### OBJECT OF THE INVENTION

**[0001]** The object of the present patent application is to register an improved water refilling device for toilet cisterns which incorporates notable innovations and advantages over the techniques used hitherto.

**[0002]** More specifically, the invention proposes the development of an improved water refilling device for toilet cisterns which, due to the particular arrangement thereof, allows for the passage of water to the inside of the toilet cistern to be firmly, not gradually, closed, once the predetermined water level has been reached.

### BACKGROUND OF THE INVENTION

**[0003]** In the current state of the art, there are known problems in the sector of toilet cisterns specifically related to the progression of the closure of the passage of water filling the cistern, once the water level has exceeded the predetermined amount due to the positioning of the components of the device of the invention.

**[0004]** This causes added use of water in the cistern.

**[0005]** The present invention contributes to solving the present problem, since it allows the passage of water to the inside of the toilet cistern to be firmly, not gradually, closed once the predetermined water level has been reached.

### DESCRIPTION OF THE INVENTION

**[0006]** The present invention has been developed with the aim of providing an improved water refilling device for toilet cisterns comprising a faucet body arranged inside a toilet cistern, with a first toilet float connected to a sleeve which, in turn, is integral to the faucet body, and the first toilet float being vertically moveable in relation to said sleeve as a result of the buoyancy thereof according to the water level inside the cistern, said first actuating toilet float being in accordance with the upward vertical movement of the closure of the passage of water through the faucet body for filling the cistern; characterised by the fact that it further comprises a second toilet float that is also connected to the same sleeve, and said second toilet float also being vertically moveable in relation to said sleeve as a result of the buoyancy thereof according to the water level inside the cistern; which further comprises a retention mechanism simultaneously connected to the sleeve, to the first toilet float and to the second toilet float, such that the retention mechanism maintains the first toilet float locked in the upward movement thereof, and releases the lock of said first toilet float when the second toilet float reaches a specific height in the vertical movement thereof due to the water level inside the cistern.

**[0007]** Furthermore, in the improved water refilling device for toilet cisterns, the retention mechanism comprises

an anchoring latch joined to the second toilet float and a tooth arranged and protruding from the sleeve, both mutually arranged and enabled for releasing the anchoring latch on the tooth as a result of the rise of the second toilet float due to the buoyancy of the same on the water level.

**[0008]** In the improved water refilling device for toilet cisterns, the second toilet float is preferably incorporated in an upper section of the first toilet float.

**[0009]** In the improved water refilling device for toilet cisterns, the second toilet float is preferably smaller than the first toilet float.

**[0010]** Alternatively, the improved water refilling device for toilet cisterns incorporates a mechanism for adjusting the height thereof in relation to the water cistern itself, said height defining the volume of the water load in each filling/flushing cycle of the same cistern.

**[0011]** Additionally, in the improved water refilling device for toilet cisterns, the adjustment mechanism comprises a vertical rotating screw supported in the faucet body by through projections, and which passes through the first toilet float, screwed in a threaded section arranged in the first toilet float for said purpose, and said vertical screw further having a knob for adjusting the rotation thereof arranged on the upper end of the same and accessible by the user from the outside of the cistern.

**[0012]** Thanks to the present invention, the passage of water to the inside of the toilet cistern can be firmly, not gradually, closed once the predetermined water level has been reached.

**[0013]** Other characteristics and advantages of the improved water refilling device for toilet cisterns will become clear in light of the description of a preferred, though non-exclusive, embodiment, which, by way of a non-limiting example, is illustrated in the accompanying drawings, wherein:

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0014]**

Figures 1 and 2 are schematic views of a preferred embodiment of the improved water refilling device for toilet cisterns of the present invention.

Figure 3 is a schematic view of the retention mechanism of a preferred embodiment of the improved water refilling device for toilet cisterns of the present invention.

Figure 4 is a schematic and comparative view indicating the functioning of a preferred embodiment of the improved water refilling device for toilet cisterns of the present invention.

### DESCRIPTION OF A PREFERRED EMBODIMENT

**[0015]** As schematically shown in Figures 1 and 2, the improved water refilling device for toilet cisterns of the invention has an arrangement that is, in part, similar to

that which is already known in the state of the art.

**[0016]** In this sense, the improved water refilling device for toilet cisterns of the invention comprises a faucet body 1 arranged inside a toilet cistern and with a first buoyant toilet float 11 connected to a sleeve 2 which, in turn, is integral to the faucet body 1. In Figure 2, the first toilet float 11 is not shown so as to allow the sleeve 2 to be more clearly seen.

**[0017]** Said toilet float 11 is vertically moveable in relation to said sleeve 2 as a result of the buoyancy thereof according to the water level inside the cistern during the filling of the water in the same cistern.

**[0018]** Furthermore, the first toilet float 11 actuates, according to the upward vertical movement thereof, the closure of the passage of water through the faucet body 1 for filling the same cistern.

**[0019]** According to the invention itself, the improved water refilling device for toilet cisterns of the invention further comprises a second toilet float 12 that is also connected to the same sleeve 2.

**[0020]** In this preferred embodiment, the second toilet float 12 is smaller than the first toilet float 11 and is furthermore incorporated in an upper section of the first toilet float 11.

**[0021]** Said second toilet float 12 is also vertically moveable in relation to the previous sleeve 2, also as a result of the buoyancy thereof according to the water level inside the cistern.

**[0022]** The improved water refilling device for toilet cisterns of the invention further comprises a retention mechanism.

**[0023]** Said retention mechanism is simultaneously connected to the first toilet float 11, to the second toilet float 12 and to the sleeve 2.

**[0024]** The retention mechanism is arranged such that it maintains the first toilet float 11 locked in the upward movement thereof, even though the water level of the cistern rises.

**[0025]** Said retention mechanism unlocks and allows the upward movement of the first toilet float 11 only when the second toilet float 12 has reached a specific height level during the vertical movement thereof due to the buoyancy of the same following the same water level inside the cistern.

**[0026]** With the explained arrangement of the improved water refilling device for toilet cisterns of the invention, the first toilet float 11 remains retained and locked in the vertical movement thereof by the action of the second toilet float 12 by means of the retention mechanism until the water level in the cistern rises enough to reach a specific height of said second toilet float 12 as a result of the buoyancy thereof.

**[0027]** It is at that precise moment when the buoyancy of the second toilet float 12 on the water level makes said second toilet float 12 act on the retention mechanism, the same unlocking and releasing the first toilet float 11 for the rise thereof and which, given that it was previously entirely submerged in the water as a result of prior locking

by the retention mechanism, it rapidly rises and actuates the closure of the passage of water through the faucet body 1, causing the instantaneous closure thereof.

**[0028]** In this preferred embodiment, the retention mechanism comprises an anchoring latch 3 joined to the second toilet float 12 and a tooth 4 arranged and projecting from the sleeve 2, as shown in Figure 2 and in an enlarged schematic detailed view in Figure 3.

**[0029]** As can be comparatively seen in the same Figure 4, when the second toilet float 12 rises due to the buoyancy thereof on the water level, the anchoring latch 3 releases the tooth 4, which unlocks the first toilet float 11, thereby allowing for the rapid rise thereof due to the buoyancy of the same.

**[0030]** In the improved water refilling device for toilet cisterns of the invention, the rise of the first toilet float 11 by the buoyancy thereof is retained by means of the second toilet float 12 by the retention mechanism, and thus, once the water level of the cistern exceeds said second toilet float 12, an instantaneous vertical rise of the first toilet float 11 is produced, which also causes the desired instantaneous closure of the passage of water through the faucet body 1, as can be seen in Figure 4.

**[0031]** Furthermore, this preferred embodiment of the improved water refilling device for toilet cisterns incorporates a regulation mechanism for adjusting the height in relation to the water cistern itself of the different previously described elements, with the aim of being able to vary the volume of water of the cistern in each filling/flushing cycle according to the user's preference.

**[0032]** In this preferred embodiment, said adjustment mechanism comprises a vertical rotating screw 5 supported in the faucet body 1 by through projections 51, and which pass through the first toilet float 11, screwed in a threaded section 111 arranged in the first toilet float 11 for said purpose.

**[0033]** Said vertical screw 5 further has a knob 52 for adjusting the rotation thereof arranged on the upper end of the same and accessible by the user from the outside of the cistern.

**[0034]** By rotating the vertical screw 5 by means of the adjusting knob 52, and since furthermore it is screwed into the threaded section 111 arranged on the same first toilet float 11, the different previously described elements of the improved water refilling device for toilet cisterns of the invention are raised or lowered in relation to the cistern itself, according to the volume of water the user desires to use in the cistern in each filling/flushing cycle.

**[0035]** This instantaneous way of closing the passage of water to the inside of the cistern of the improved water refilling device for toilet cisterns of the invention proposed substantially improves the state of the art and, additionally, saves water, given that the entry of said fluid is completely closed in a firm, not gradual, way, once the water level predetermined by the user is reached.

**[0036]** The details, shapes, dimensions and other accessory elements, as well as the materials used to manufacture the improved water refilling device for toilet cisterns

terms of the invention, may be suitably substituted for others which are technically equivalent, and do not diverge from the essential nature of the invention, nor the scope defined by the claims included below.

## Claims

1. An improved water refilling device for toilet cisterns comprising a faucet body (1) arranged inside a toilet cistern, with a first toilet float (11) connected to a sleeve (2) which, in turn, is integral to the faucet body (1), and the first toilet float (11) being vertically moveable in relation to said sleeve (2) as a result of the buoyancy thereof according to the water level inside the cistern, said first actuating toilet float (11) being in accordance with the upward vertical movement of the closure of the passage of water through the faucet body (1) for filling the cistern; **characterised by** the fact that it further comprises a second toilet float (12) that is also connected to the same sleeve (2), and said second toilet float (12) also being vertically moveable in relation to said sleeve (2) as a result of the buoyancy thereof according to the water level inside the cistern; which further comprises a retention mechanism simultaneously connected to the sleeve (2), to the first toilet float (11) and to the second toilet float (12), such that the retention mechanism maintains the first toilet float (11) locked in the upward movement thereof, and releases the lock of said first toilet float (11) when the second toilet float (12) reaches a specific height during the vertical movement thereof due to the water level inside the cistern.
2. The improved water refilling device for toilet cisterns according to claim 1, **characterised in that** the retention mechanism comprises an anchoring latch (3) joined to the second toilet float (12) and a tooth (4) arranged and protruding from the sleeve (2), both mutually arranged and enabled for releasing the anchoring latch (3) on the tooth (4) as a result of the rise of the second toilet float (12) due to the buoyancy of the same on the water level.
3. The improved water refilling device for toilet cisterns according to claim 1, **characterised in that** the second toilet float (12) is incorporated in an upper section of the first toilet float (11).
4. The improved water refilling device for toilet cisterns according to claim 1, **characterised in that** the second toilet float (12) is smaller than the first toilet float (11).
5. The improved water refilling device for toilet cisterns according to claim 1, **characterised in that** it incorporates a mechanism for adjusting the height thereof

in relation to the water cistern itself, said height defining the volume of the water load in each filling/flushing cycle of the same cistern.

6. The improved water refilling device for toilet cisterns according to claim 5, **characterised in that** the adjustment mechanism comprises a vertical rotating screw (5) supported in the faucet body (1) by through projections (51), and which passes through the first toilet float (11), screwed in a threaded section (111) arranged in the same first toilet float (11) for said purpose, and said vertical screw (5) further having a knob (52) for adjusting the rotation thereof arranged on the upper end of the same and accessible by the user from the outside of the cistern.

*FIG. 1*

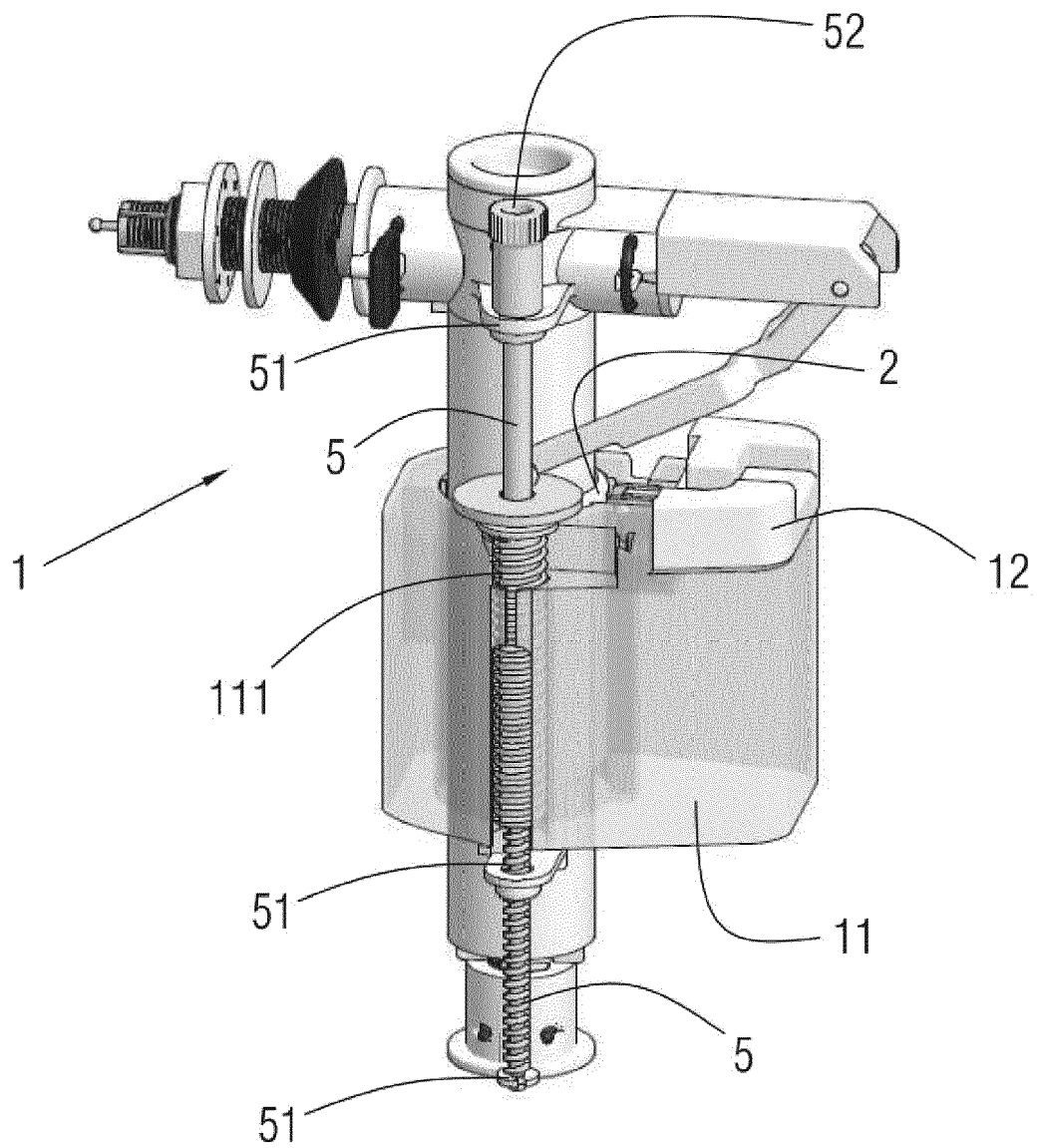
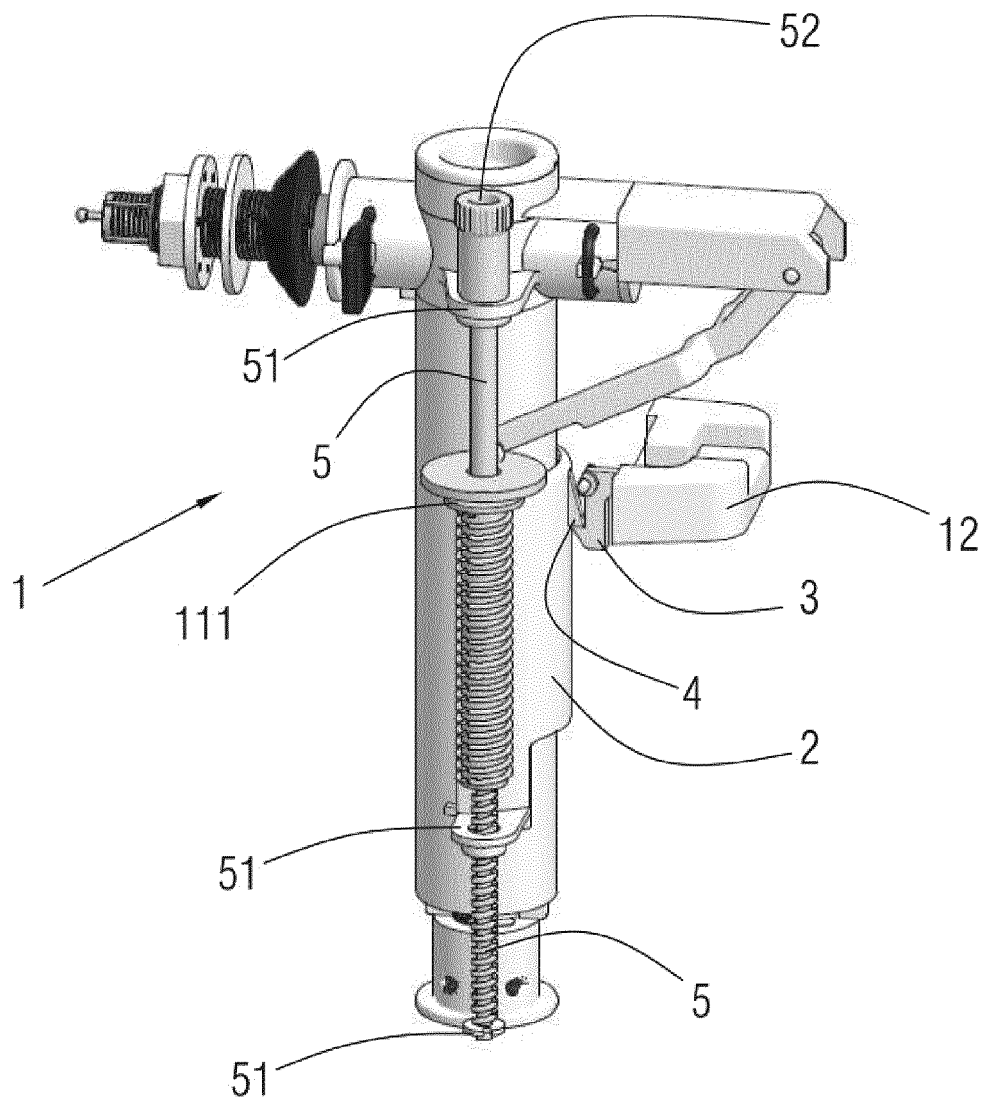


FIG.2



*FIG. 3*

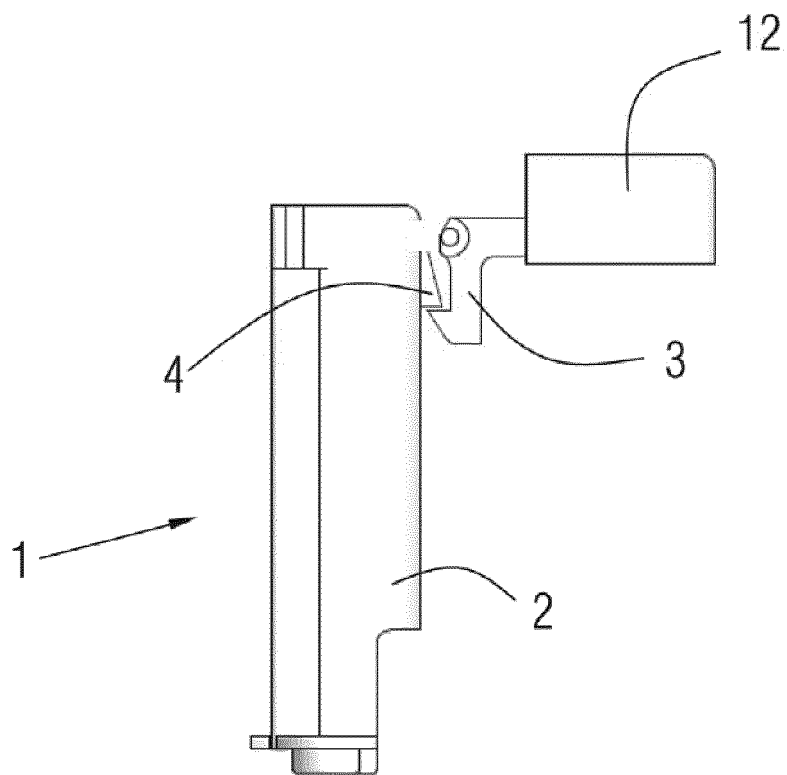
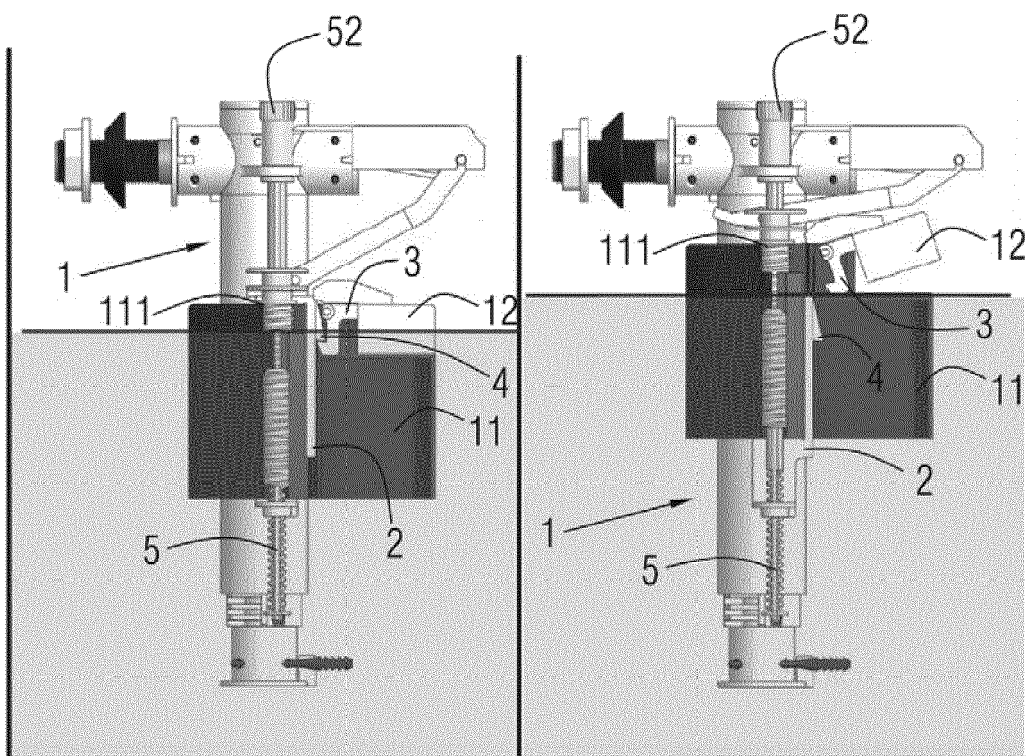


FIG. 4





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Application Number  
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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                      |                                                                                                                                                                                                                                                                                       |                                         |
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| Category                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                        | Relevant to claim                                                                                                                                                                                                                                                                     | CLASSIFICATION OF THE APPLICATION (IPC) |
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| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                      |                                                                                                                                                                                                                                                                                       |                                         |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                       |                                                                                                      | Date of completion of the search<br><b>28 May 2019</b>                                                                                                                                                                                                                                | Examiner<br><b>Horst, Werner</b>        |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                      | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                         |

EPO FORM 1503 03/02 (P04C01)

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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