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(54) **CONNECTING PIECE FOR A FILLING NIPPLE OF A DISPENSER AND CONTAINER PROVIDED WITH THE CONNECTING PIECE**

(57) A connecting piece 7 of a liquid container has a housing 9 and a coupling piece 23 to which a bag is attached. In the housing 9 there is a cylindrical recess 11 which is open at both ends 11a and 11b. The open end 11a can be closed off by a cap 17 which is connected via a flexible hinge 19 to a flange 21. In the recess 11 in the connecting piece 7 there is a cylindrical valve which can be turned through a quarter turn to close openings 15 in the wall 13 of the housing 9. To fill the liquid container, the connecting piece 7 is slid onto a filling nipple, the filling nipple being coupled to the shut-off valve. By turning the liquid container together with the connecting piece a quarter of a turn, the openings 15 are released and liquid can flow from the filling nipple into the liquid container.

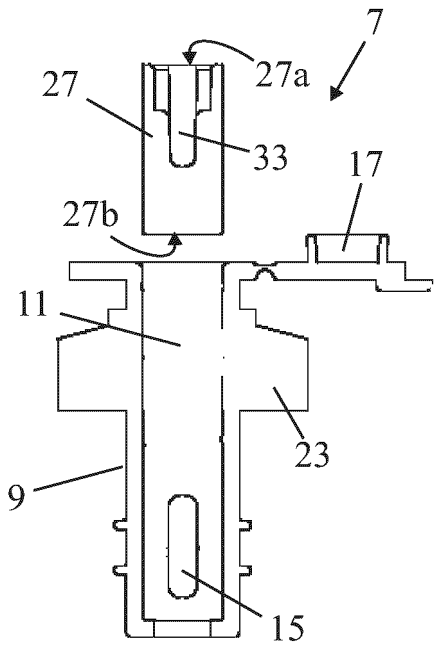

FIG. 11

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Description

Technical field of the invention

[0001] The invention relates to a connecting piece for use in a container for connecting it to a filling nipple of a dispenser, comprising:

- a housing equipped with:
  - a recess which is open at a first end and at an opposite second end, as well as
  - a protruding flange at or near the first end of the recess, for coupling to the filling nipple, and
  - a through opening in a wall of the housing,
- as well as a closing element present in the recess in the housing, which closing element is provided with:
  - a further recess which is also open at a first end of the closing element, a second end of the closing element opposite the first end being closer to the second end of the housing than the first end of the closing element, as well as
  - a through opening in a wall of the closing element,

which closing element is rotatable in the housing between an open position in which the two openings are present in front of each other and a closed position in which the two openings are present next to each other and are closed by parts of the walls of the housing and the closing element, the recess in the housing and the closing element having a circular cylindrical shape, the outside of the closing element connects liquid-tight to the inside of the recess.

[0002] In the closed position of the closing element, if there is any excess pressure in the container, only a force/pressure in radial direction is exerted on the closing element. By locking the closing element radially in the recess, the force/pressure is absorbed by the walls of the closing element and the housing. This means that no such force/pressure is exerted on the closing element that can move/rotate the closing element and thus open the connecting piece.

Background of the invention

[0003] A connecting piece according to the preamble of claim 1, which can be connected to a filling nipple, is known from US 5 425 479 A. In this known connecting piece, the closing element cannot be moved in axial direction when the connecting piece is mounted and can only be rotated about the longitudinal axis between an open and a closed position. In the known connecting piece, the closing element protrudes partly from the housing and dirt or liquid can end up between the closing element and the housing.

Summary of the invention

[0004] An object of the invention is to provide a connecting piece for a container, which can be opened and closed by cooperation with a filling nipple intended for this purpose, wherein the connecting piece closes more tight than the known connecting piece for long-term storage of the container. To this end, the connecting piece according to the invention is characterized in that the closing element, in the assembled state of the connecting piece, is slidable in the axial direction in the recess, between a first position in which the closing element is located at the location of a closed part of the wall of the housing, and a second position in which the closing element is located at a part of the wall in which the opening is present.

[0005] The closing element is preferably slightly clamping in the recess in order to obtain a good seal in the first position. Because it is not necessary to turn the closing element in the first position, it can be clamped tighter in the first position in the inside of the recess and therefore seal better. This first position is especially favorable if a filled container provided with the connecting piece is stored for a longer period.

[0006] Preferably, the closing element, in the assembled state of the connecting piece, is completely or almost completely present in the housing both in the first position and in the second position. This means that no dirt can get between the housing and the closing element when the connecting piece is closed by a cap.

[0007] An embodiment of the connecting piece according to the invention is characterized in that one side of the circumferential edge of the flange is provided with a protruding lip and/or a recess for cooperation with a congruent shape of a wall of a recessed part of the dispenser around the filling nipple. In this way it can be achieved that only containers which are provided with a connecting piece with a specifically shaped flange can be connected to a filling mouth intended for this purpose and other containers which are not intended for this purpose cannot be filled with this filling mouth. The specifically shaped flange serves as a key and can be made in different shapes, each of which is a unique key for different types of containers.

[0008] The connecting piece preferably comprises a cap for closing the recess, which cap is connected to the flange via a flexible hinge. To ensure that this cap does not form an obstruction when connecting a container to a filling mouth, the cap is preferably present on the circumferential edge of the flange opposite the protruding lip and/or recess.

[0009] The invention also relates to a container provided with the connecting piece described above. This container is preferably formed by a plastic bag.

[0010] The invention furthermore relates to an assembly of a dispenser provided with a filling nipple and a container provided with the connecting piece described above, which can be connected to the filling nipple.

[0011] An embodiment of the assembly is characterized in that the closing element and the filling nipple are provided with mutually cooperating parts which are configured such that the closing element can be blocked against rotation by the filling nipple when the housing of the connecting piece is rotated. As a result, the closing element can be opened and closed by rotating the container relative to the filling nipple.

[0012] The through opening in the wall of the closing element is preferably formed by a slot extending from the open end of the closing element in a direction to the opposite end, wherein the filling nipple fits into the further recess of the closing element and being provided with a projection that fits into the slot in the closing element. This allows the closing element to be blocked against rotation by the filling nipple when the housing of the connecting piece is rotated.

[0013] A further embodiment of the assembly is characterized in that the dispenser is provided with a recess with a limiting edge, wherein this limiting edge and the circumferential edge of the flange of the connecting piece are formed in such a way that the connecting piece can only be fitted in one position sufficiently far over the filling nipple to couple the filling nipple to the closing element to block it against rotation. The closing element can only be turned if the connecting piece has been pushed sufficiently (completely) over the filling nipple so that the filling nipple is coupled to the closing element and blocks the latter against rotation. The connecting piece can only be slid sufficiently (completely) over the filling nipple in a certain position and also can only be removed from the filling nipple in this position. In this position the closing element is in the closed position so that the container can only be removed from the filling nipple in the closed position.

[0014] Preferably, one side of the circumferential edge of the flange is provided with a protruding lip and/or a recess, and the boundary edge has an inverse shape. As a result, only containers that are provided with a connecting piece with a specifically shaped flange can be connected to a filling mouth intended for this purpose.

Brief description of the drawings

[0015] The invention will be explained in more detail below on the basis of an exemplary embodiment of the connecting piece, a container provided with the connecting piece and an assembly of a container and a dispenser according to the invention shown in the drawings, whereby:

Figure 1 shows a dispenser with a container in side view;
Figure 2 shows the dispenser with container in front view;
Figure 3 shows the container with connecting piece in longitudinal section;
Figure 4 shows the connecting piece of the container in perspective;
Figure 5 shows the connecting piece in top view;
Figure 6 shows a closing element of the connecting piece;
Figure 7 shows the closing element in top view;
Figure 8 shows the connecting piece in side view;
Figure 9 shows the housing of the connector in longitudinal section;
Figure 10 shows the connecting piece in front view;
Figure 11 shows the connecting piece with the closing element removed;
Figure 12 shows the connecting piece with the closing element in a first position;
Figure 13 shows the connecting piece with closing element in a second position;
Figure 14 shows the connecting piece for connection to the filling nipple;
Figure 15 shows the connecting piece partly pushed onto the filling nipple;
Figure 16 shows the connecting piece fully pushed onto the filling nipple;
Figure 17 shows the connecting piece rotated a quarter of a turn on the filling nipple;
Figure 18 shows the dispenser with filling nipple;
Figure 19 shows detail A enlarged in figure 18;
Figure 20 shows the connecting piece in closed position on the filling nipple; and
Figure 21 shows the connecting piece in open position on the filling nipple.

Detailed description of the drawings

[0016] Figures 1 and 2 show a dispenser 1 in the form of a dispenser for disinfection liquid. The dispenser 1 is provided with a dispenser nozzle 2 for dispensing dispenser liquid and a filling nipple 3 (see figure 1) to which a connecting piece 7 of a container 5 can be connected (see figure 2). In this embodiment, the container 5 is designed as a plastic bag, but can also be designed differently, such as for instance a bottle.

[0017] In figure 3 the container 5 is shown in cross-section. The connecting piece 7 has a housing 9 provided with a cylindrical recess 11, which is open at its axial end 11a that protrudes from the pocket 6 and at the opposite axial end 11b. In the wall 13 of the housing 9 near the end 11b there are two opposite through openings 15, via which the space in the bag 6 communicates with the open end 11a of the recess 11. The recess 11 can be closed at this open end 11a by a cap 17 which is connected via a flexible hinge 19 to a flange 21 at the open end 11a of the recess 11.

[0018] In figure 4 the connecting piece 7 is shown in perspective. On the housing 9 there is a coupling piece 23 to which the bag 6 can be attached. A lip 25 is present on the cap 17 for easily pulling the cap 17 in the closed position out of the recess 11. In figure 5 the connecting piece 7 is shown from above.

[0019] During use, a cylindrical closing element 27,

shown in perspective in Figure 6, is present in the recess 11 in the connecting piece 7. This closing element is provided with a further recess 29 which is also open at a first axial end 27a of the closing element 27. Also in the wall 31 of the closing element 27 near a second axial end 27b are two opposing through openings 33 formed by slots extending from the open end 27a. A partition 35 is present in the recess 29 for reinforcement. In figure 7 the closing element 27 is shown in top view.

[0020] For clarification, the connecting piece 7 is shown in various views in Figures 8 and 10 and the connecting piece is shown in longitudinal section in Figure 9.

[0021] Figures 11 to 13 illustrate the cooperation between the housing 9 of the connector 7 and the closing element 27. The cylindrical closing element 27 is pushed with the closed end 27b into the cylindrical recess 11, see figure 11. The recess 11 is then closed by the cap 17, see figure 12. In this position, the closing element 27 closes the recess 11 so that via the openings 15 incoming liquid cannot escape. In this position of the closing element 27, the connecting piece 7 is properly closed and this position is particularly suitable for long-term storage of the liquid in the container. The recess 11 in the housing 9 and the closing element 27 fit together clampingly, so that the outside of the closing element 27 connects fluid-tight to the inside of the recess 11.

[0022] By pushing the closing element 27 further into the recess 11, see figure 13, the openings 33 in the closing element are positioned before the openings 15 in the housing, so that the overlapping parts 37 of the two openings form a passage for liquid. By turning the closing element in this position a quarter of a turn, the openings 15 are closed off by the wall of the closing element 27. This position is particularly suitable during use where the container in which the connecting piece has been used, regularly runs empty and needs to be filled.

[0023] In figures 14 to 17 the cooperation between the filling nipple 3 and the connecting piece 7 is illustrated. The closing element 27 is slidable in the axial direction in the recess 11, between a first position in which the closing element 27 is located at the location of a closed part 13a (see figure 9) of the wall 13 of the housing 9, see figures 14 and 15, and a second position in which the closing element 27 is located at a part 13b (see figure 9) of the wall 13 in which the openings 15 are present, see figures 16 and 17.

[0024] Figure 14 shows the situation in which the connecting piece 7 with the closing element 27 is in the first position before it is slid onto the filling nipple 3. In this position, the closing element 27 is pressed into the housing 9 when the container is manufactured. To fill the container, it is pressed with the closing piece 7 onto the filling nipple 3, whereby a protrusion 39 of the filling nipple 3 enters the slots 33 in the closing element 27 and blocks the closing element 27 against rotation relative to the filling nipple 3, see figure 15. When pressing the filling nipple 3 of the connecting piece 7 further, the closing element 27 is moved to the second position, see figure 16. The openings 15 in the housing 9 are closed in this position of the closing element 27 by wall parts of the closing element and the openings 33 in the closing element 27 are closed by wall parts of the housing 9. In order to be able to fill the container, it must be turned a quarter turn, whereby the connecting piece 7 also turns a quarter turn relative to the filling nipple 3. This is shown in figure 17. The openings 15 and 33 are positioned in front of each other, so that a passage is formed via which liquid can flow from the filling nipple 3 into the container.

[0025] The connecting piece 7 can only be slid onto the filling nipple 3 and can only be removed from the filling nipple 3 in a specific position. In this specific position, the closing element is in the closed position. This will be clarified below with reference to figures 18 to 21. Around the filling nipple 3 of the dispenser 1 there is a recess 43 in the wall 47 of the dispenser, see figure 19 in which the part A in figure 18 of the dispenser 1 is enlarged, but then viewed from above.

[0026] Part of the boundary edge 45 of the recess 43 has a shape that is congruent with a side of the flange 21 that has a specific contour, see figure 20. In this embodiment, the flange 21 is rectangular and there is a protruding lip 41 on this side of the flange 21. This protruding lip 41 is at distance from the center of this side. As a result, the connecting piece 7 can only be fitted completely onto the filling nipple 3 in a specific position. A differently shaped flange of another container does not fit on the filling nipple 3 of this dispenser 1.

[0027] To open the connecting piece 7, it should be rotated a quarter of a turn to the position shown in figure 21. Under the boundary edge 45, which limits the recess 43, there is a recess 49 in which the lip 41 can rotate. In this position, the connecting piece 7 is open and cannot be removed from the filling nipple 3. In order to release the container from the filling nipple 3, this together with the connecting piece 7 must first be turned back a quarter of a turn to the position shown in figure 20 in which the connecting piece 7 is closed again.

[0028] Although the present invention is elucidated above on the basis of the given drawings, it should be noted that this invention is not limited whatsoever to the embodiments shown in the drawings. The invention also extends to all embodiments deviating from the embodiments shown in the drawings within the scope of the invention defined by the appended claims. In the embodiment shown, the connecting piece serves for connecting the container to the filling nipple, so that the container functions as a reservoir for the dispenser. The connecting piece can also be used during filling of the container in a filling device, so that the container can be reused.

Claims

1. Connecting piece (7) for use in a container (5) for connecting it to a filling nipple (3) of a dispenser (1), comprising:

- a housing (9) equipped with:

  - a recess (11) which is open at a first end (11a) and at an opposite second end (11b), as well as
  - a protruding flange (21) at or near the first end (11a) of the recess (11), for coupling to the filling nipple (3), and
  - a through opening (15) in a wall (13) of the housing (9),

- as well as a closing element (27) present in the recess (11) in the housing (9), which closing element (27) is provided with:

  - a further recess (29) which is also open at a first end (27a) of the closing element (27), a second end (27b) of the closing element (27) opposite the first end (27a) being closer to the second end (11b) of the housing (9) than the first end (27a) of the closing element (27), as well as
  - a through opening (33) in a wall (31) of the closing element (27),

which closing element (27) is rotatable in the housing (9) between an open position in which the two openings (15, 33) are present in front of each other and a closed position in which the two openings (15, 33) are present next to each other and are closed by parts of the walls (13, 31) of the housing (9) and the closing element (27), the recess (11) in the housing (9) and the closing element (27) having a circular cylindrical shape, the outside of the closing element (27) connects liquid-tight to the inside of the recess (11), **characterized in that** the closing element (27), in the assembled state of the connecting piece (7), is slidable in the axial direction in the recess (11), between a first position in which the closing element (27) is located at a closed part of the wall (13) of the housing (9), and a second position in which the closing element (27) is located at a part of the wall (13) in which the opening (15) is present.

2. Connecting piece (7) according to claim 1, **characterized in that** the closing element (27), in the assembled state of the connecting piece, is completely or almost completely present in the housing (9) both in the first position and in the second position.

3. Connecting piece (7) according to claim 1 or 2, **characterized in that** the circumferential edge of the flange (21) is provided with a protruding lip (41) and/or a recess for cooperation with a congruent shape of an edge (45) of a recessed part (43) of the dispenser (1) around the filling nipple (3).

4. Connecting piece (7) according to claim 1, 2 or 3, **characterized in that** it comprises a cap (17) for closing the recess (11), which cap (17) is connected via a flexible hinge (19) with the flange.

5. Connecting piece (7) according to claims 3 and 4, **characterized in that** the cap (17) is present on the circumferential edge of the flange (21) opposite the protruding lip (41) and/or the recess.

6. Container (5) provided with a connecting piece according to any one of the preceding claims.

7. Container (5) according to claim 6, **characterized in that** the container is formed by a plastic bag.

8. Assembly of a dispenser (1) provided with a filling nipple (3) and a container (5) provided with a connecting piece (7) according to any one of the preceding claims, which can be connected to the filling nipple (3).

9. Assembly according to claim 8, **characterized in that** the closing element (27) and the filling nipple (3) are provided with mutually cooperating parts which are configured in such a way that, when turning the housing (9) of the connecting piece (7), the closing element (27) can be blocked against rotation by the filling nipple (3), so that the closing element can be opened and closed by turning the container relative to the filling nipple.

10. Assembly according to claim 9, **characterized in that** the through opening (33) in the wall (31) of the closing element (27) is formed by a slot extending from the open end (27a) of the closing element (27) in a direction towards the opposite end (27b), the filling nipple (3) fitting into the further recess (29) of the closing element (27) and having a protrusion (39) which fits into the slot in the closing element (27), so that the closing element (27) can be blocked against rotation by the filling nipple (3) when the housing (9) of the connecting piece (7) is rotated.

11. Assembly according to claim 8, 9 or 10, **characterized in that** around the filling nipple (3), the dispenser (1) is provided with a recess (43) with a boundary edge (45), wherein this boundary edge (45) and the circumferential edge of the flange (21) of the connecting piece (7) are shaped in such a way that the connecting piece (7) only in one position can be fitted over the filling nipple (3) far enough to couple the filling nipple (3) to the closing element (27) to lock it against rotation.

12. Assembly according to claim 11, **characterized in that** one side of the circumferential edge of the flange (21) is provided with a protruding lip (41) and/or a recess, and the boundary edge (45) has an inverse

shape, so that only a container (5) with a specific shape of the flange (21) can cooperate with a dispenser (1) with a corresponding shape of the boundary edge (45) of the recess (43) around the filler nipple (3).

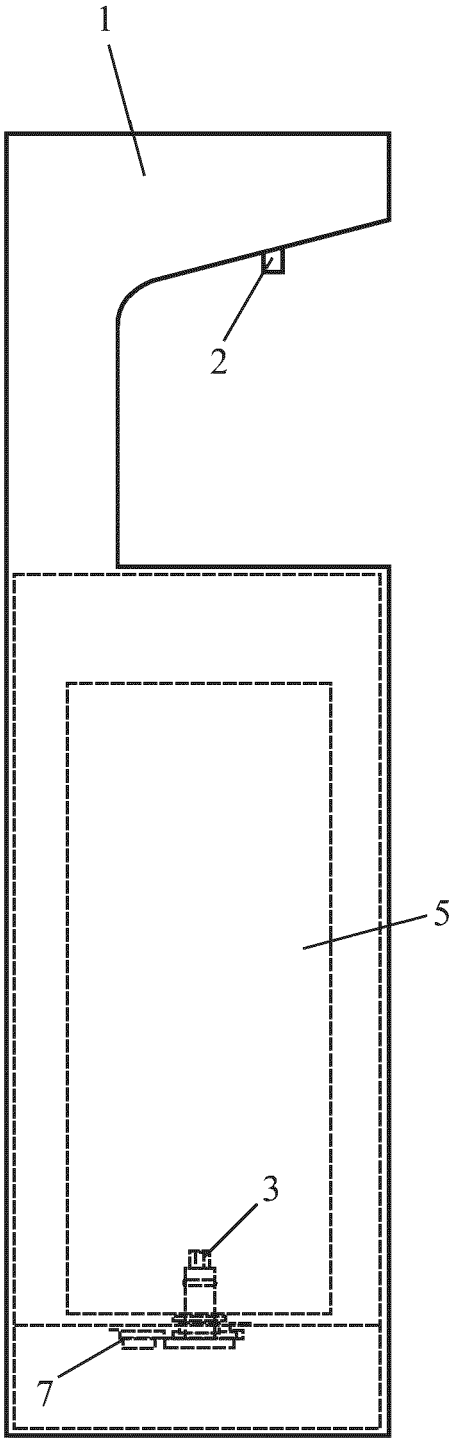

FIG. 1

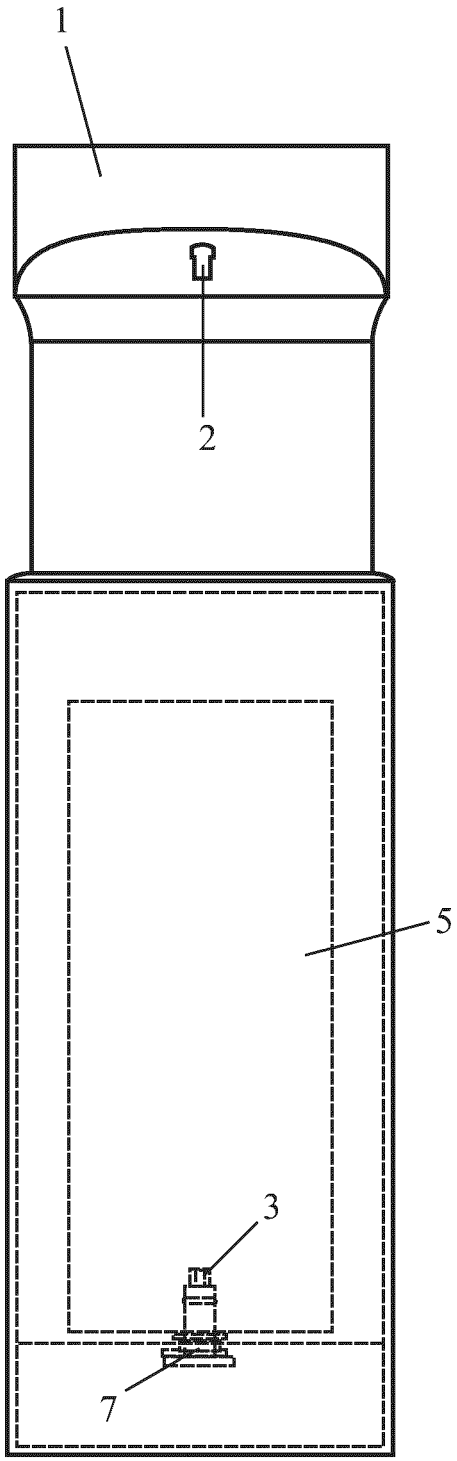

FIG. 2

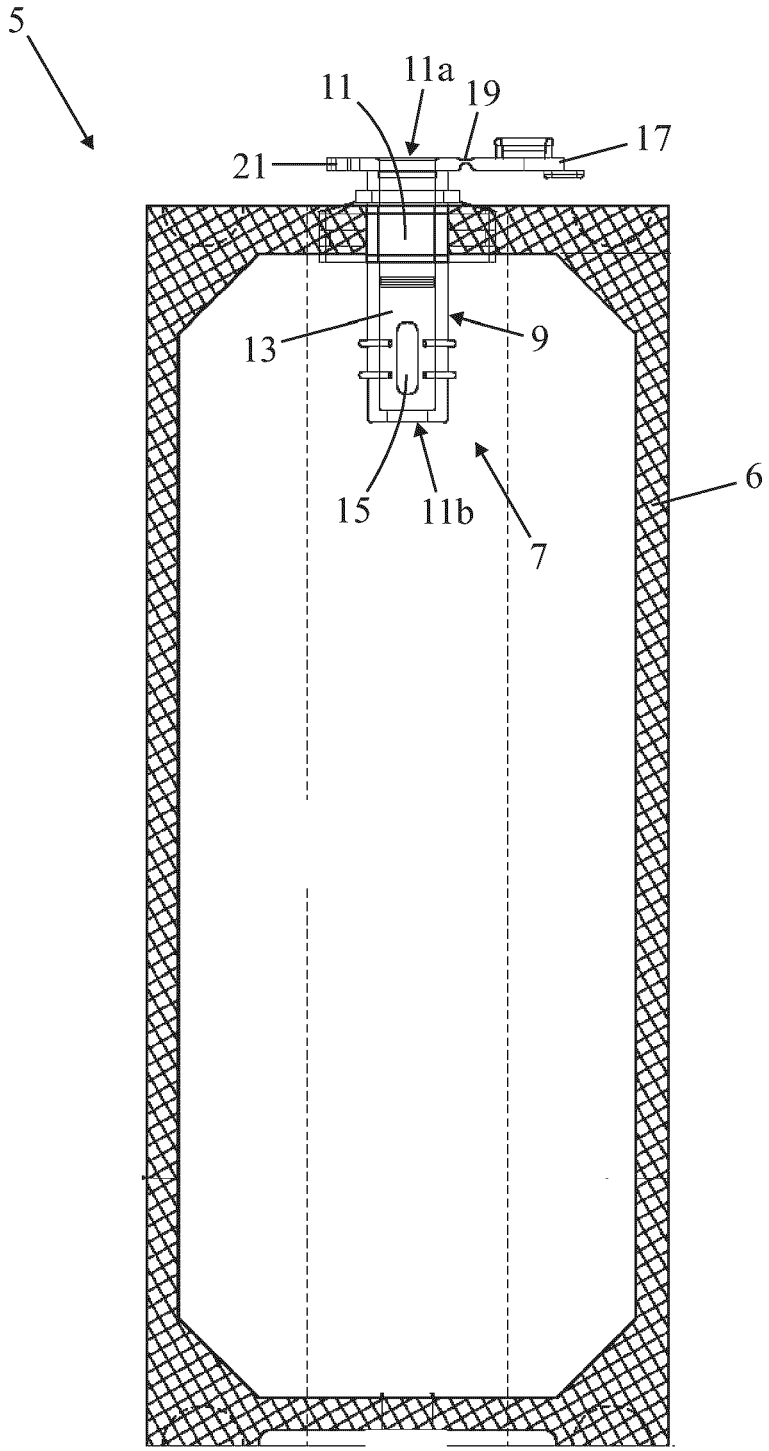

FIG. 3

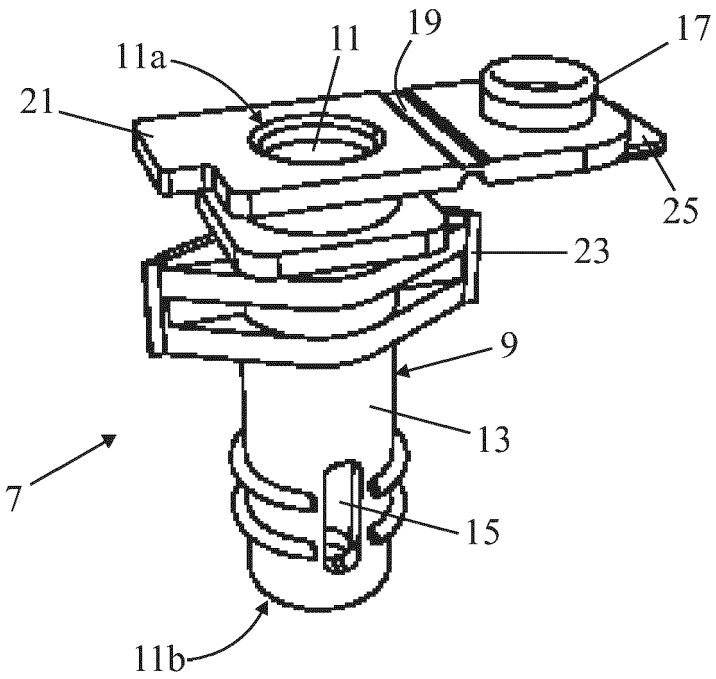

FIG. 4

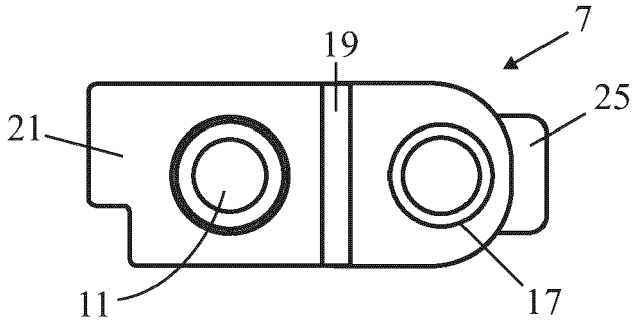

FIG. 5

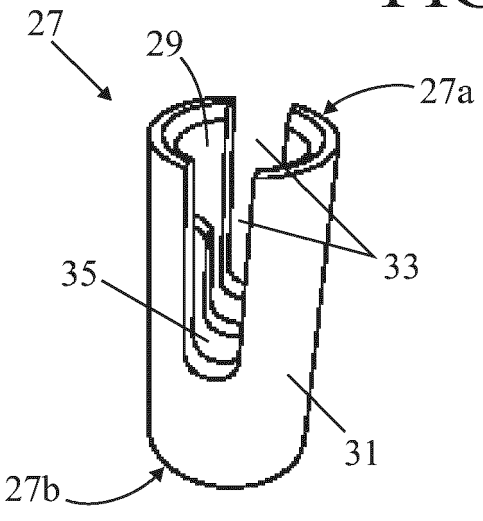

FIG. 6

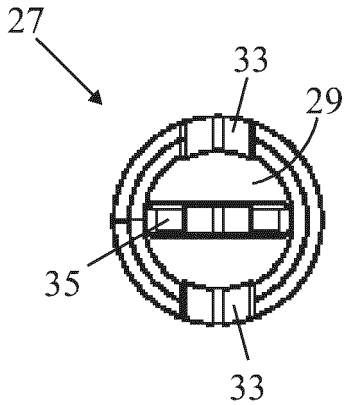

FIG. 7

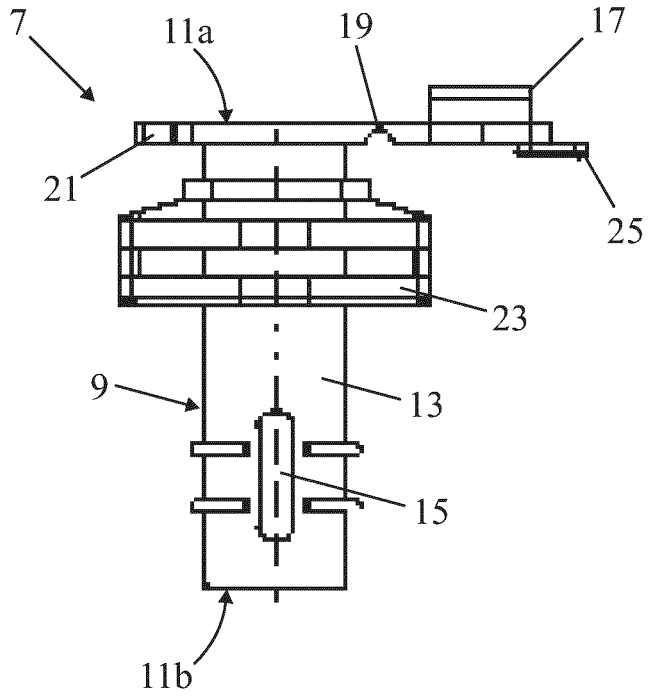

FIG. 8

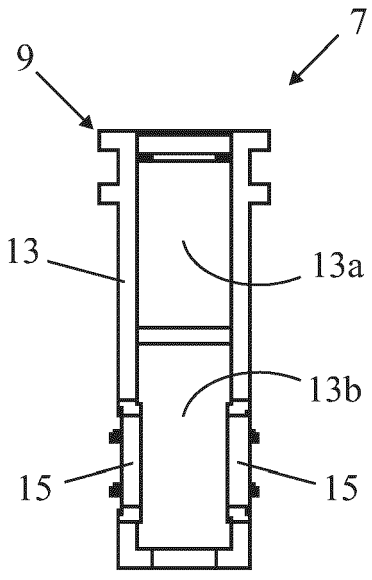

FIG. 9

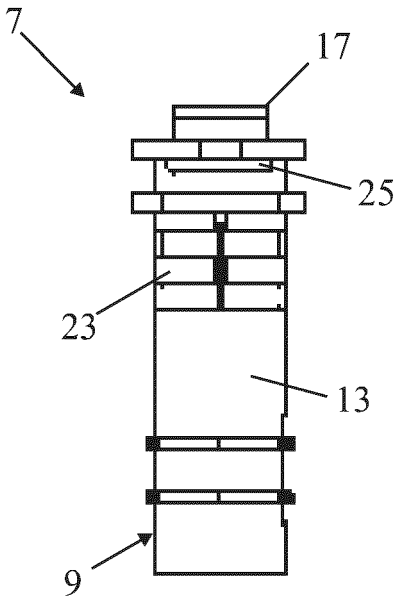

FIG. 10

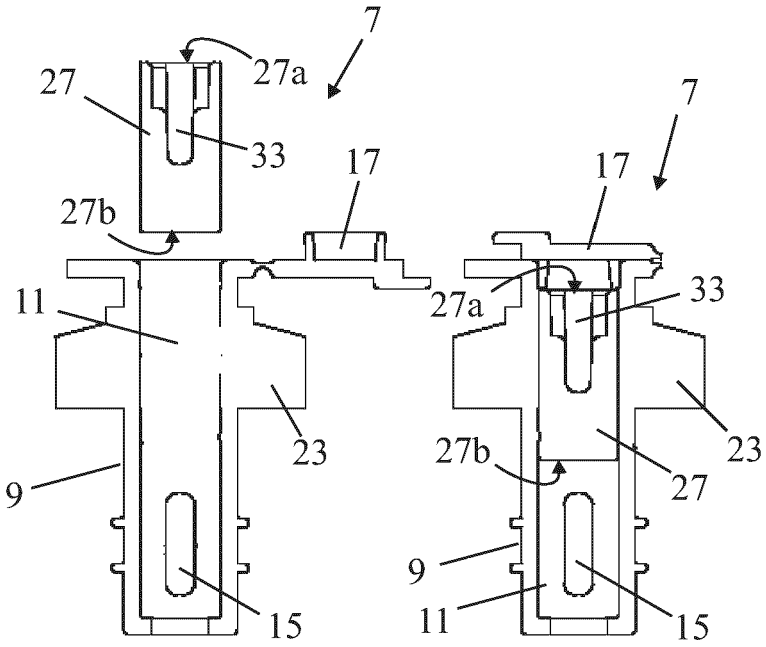

FIG. 11

FIG. 12

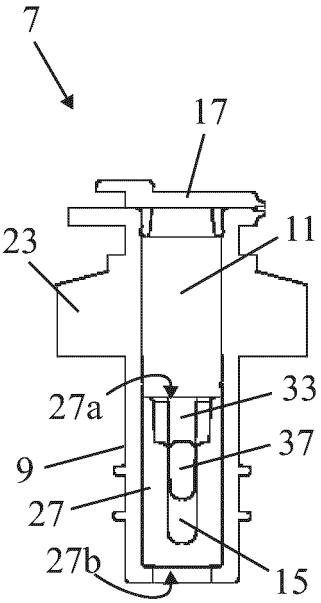

FIG. 13

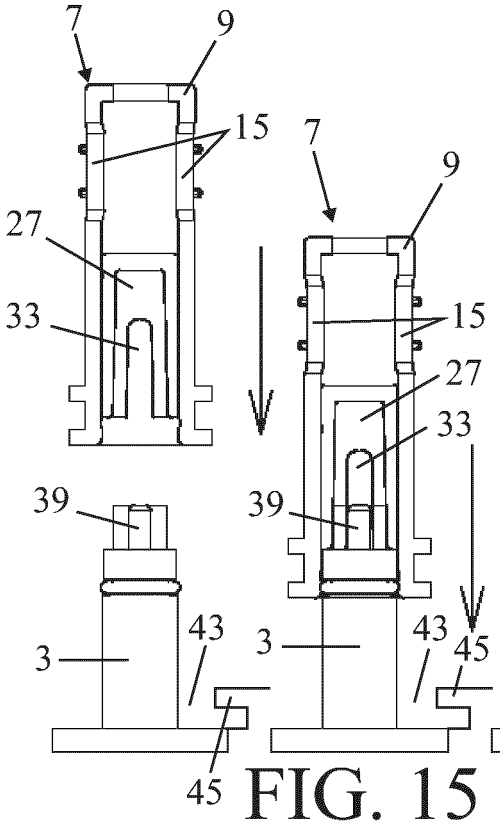

FIG. 14

FIG. 15

FIG. 16

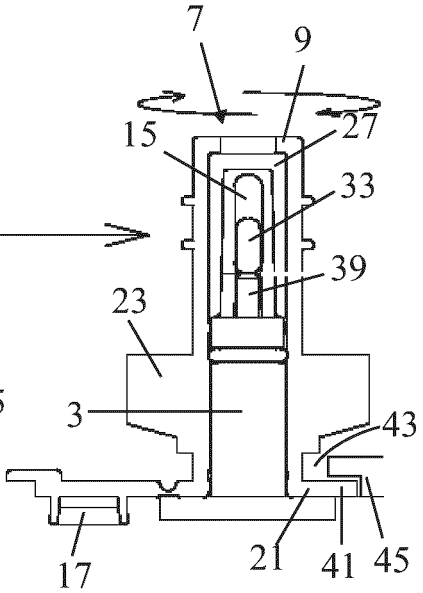

FIG. 17

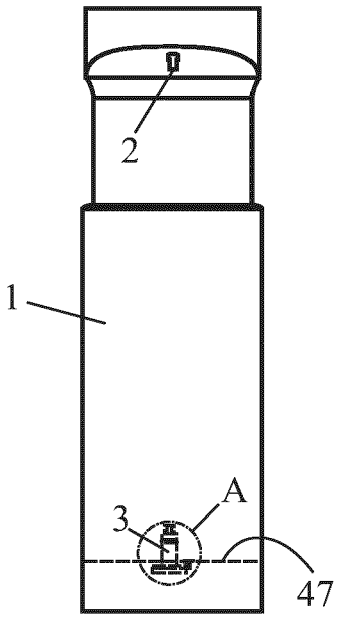

FIG. 18

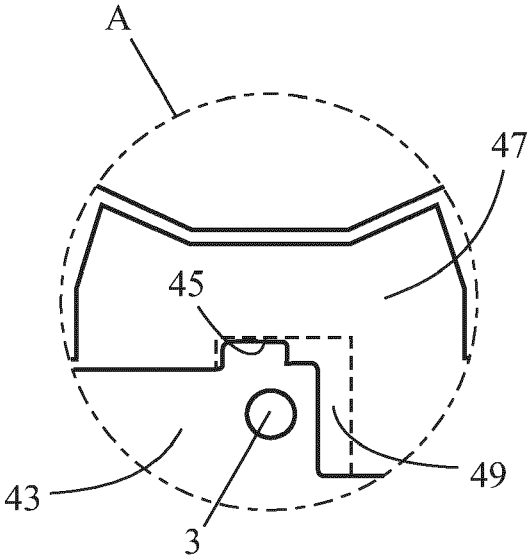

FIG. 19

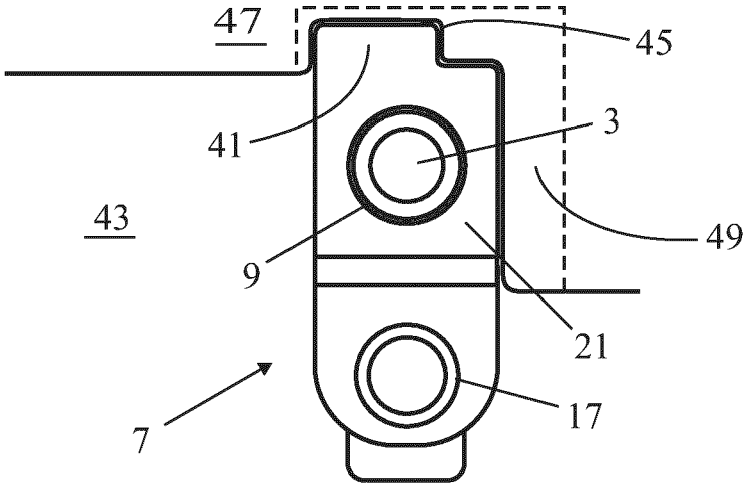

FIG. 20

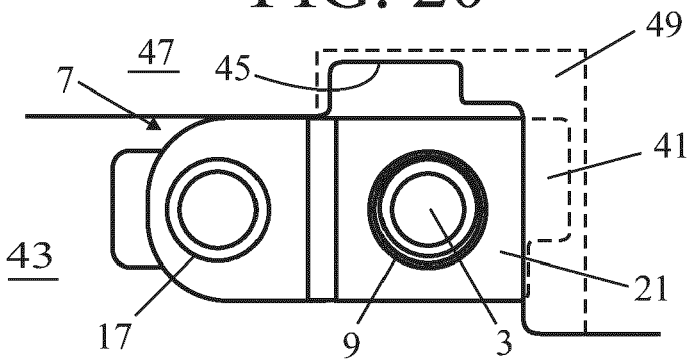

FIG. 21

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EUROPEAN SEARCH REPORT

Application Number
EP 22 20 9315

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 425 479 A (CREDLE JR WILLIAM S [US]) 20 June 1995 (1995-06-20) * column 2, line 20 - line 24; figures 1-4 *	1-12	INV. B65D47/26 B65D75/58 B67D3/04 B65D47/28
A	NL 2 010 320 C2 (FILOFORM BV) 21 August 2014 (2014-08-21) * figures 8a-8c *	1-12	B65D47/08

TECHNICAL FIELDS SEARCHED (IPC)

B65D
B67D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	6 April 2023	Sundell, Olli

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 20 9315

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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06-04-2023

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		BR 9508007 A	12-08-1997
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- US 5425479 A **[0003]**