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(54) Hand-held dispenser

(57) The invention relates to a device for dispensing a fluid, in particular a carbonated liquid from a container, comprising:
- a dosing chamber that is connectable to an outlet of the container, said dosing chamber having at least one inlet and at least one outlet;
- first valve means cooperating with the inlet of the dosing chamber and movable between a position in which said inlet is open and a position in which said inlet is closed;
- second valve means cooperating with the outlet of the dosing chamber and movable between a position in which said outlet is open and a position in which said outlet is closed; and
- control means operatively connected to said first and second valve means for moving them between their open and closed positions;

wherein the first and second valve means are controlled such that when one of said valve means is in its open position the other is in said closed position.
The invention further relates to an assembly for dispensing a fluid, in particular a carbonated liquid, comprising a container having an outlet and a dispensing device as described above connected to the container outlet.

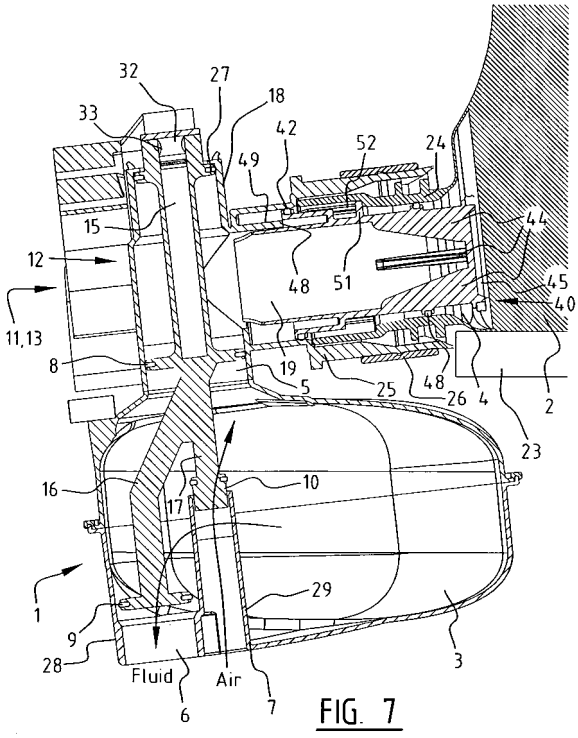


FIG. 7

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Description

[0001] The present invention relates to a device for dispensing a fluid, in particular a carbonated liquid from a container.

[0002] When dispensing fluids from containers, like e.g. bottles, it is often desirable to avoid any direct communication between the interior of the container and the surroundings. This is the case for instance when the quality of the fluid remaining in the container might be negatively affected by direct contact with ambient air. In particular when the fluid is a carbonated liquid, like e.g. cola or another sparkling softdrink, direct communication between the interior of the container and the ambient air may lead to carbonic acid dissolving from the liquid and escaping from the container, which would lead to a loss of sparkle that will affect the taste of the remaining liquid. Since the trend in packaging calls for carbonated softdrinks being sold in ever larger bottles, from which a greater number of doses (glasses) may be dispensed before the bottle is emptied, the problem of gaseous carbonic acid escaping from the bottle has become a more serious issue over the years.

[0003] The invention has for its object to provide a dispensing device of the type described above, with which this problem may be at least partly obviated. In accordance with the invention, this is accomplished when such a dispensing device is provided with:

- a dosing chamber that is connectable to an outlet of the container; said dosing chamber having at least one inlet and at least one outlet;
- first valve means cooperating with the inlet of the dosing chamber and movable between a position in which said inlet is open and a position in which said inlet is closed;
- second valve means cooperating with the outlet of the dosing chamber and movable between a position in which said outlet is open and a position in which said outlet is closed; and
- control means operatively connected to said first and second valve means for moving them between their open and closed positions;

wherein the first and second valve means are controlled such that when one of said valve means is in its open position the other is in said closed position.

[0004] By arranging a dosing chamber having controllable inlet and outlet valves on the outlet of the container, direct communication between the interior of the container and the surrounding atmosphere during dispensing may be avoided.

[0005] Preferred embodiments of the dispensing device of the invention form the subject matter of dependent claims 2 to 12.

[0006] The invention also relates to an assembly for dispensing a fluid, in particular a carbonated liquid. A dispensing assembly in accordance with the present invention comprises a container having an outlet and a dispensing device of the type defined above, which is connected to the container outlet.

[0007] In order to prevent any gaseous components, in particular carbonic acid, from dissolving from the fluid and escaping from the container, the dosing chamber is preferably arranged below the container outlet when the assembly is in use for dispensing the fluid.

[0008] Further preferred embodiments of the inventive dispensing assembly are defined in dependent claims 15 to 20.

[0009] In the following detailed description the invention will be illustrated by way of two exemplary embodiments thereof, with reference being made to the annexed drawings. In these drawings features in the second embodiment are identified by reference numerals that have been increased with "100" with respect to those identifying the corresponding features in the first embodiment. In the drawings:

Figures 1A and 1B are a side view and a front view, respectively, of a dispensing assembly in accordance with a first embodiment of the present invention in a storage or transport position;

Figure 2 is a side view of the dispensing assembly of Fig. 1 in its position of use;

Figures 3A and 3B are detailed side views on a larger scale showing how the dispensing assembly is formed from a container and a dispensing device;

Figures 4A to 4D are partially cut-away perspective views showing the dispensing device being turned from its storage and transport position to its position of use;

Figures 5A to 5C are top views of the dispensing assembly in its position of use, with the control means being shown in its locked, unlocked and operative positions, respectively;

Figure 6 is a longitudinal sectional view of the dispensing device with the valve means in their position of rest;

Figure 7 is a view corresponding to Fig. 6 showing the valve means in their operative positions;

Figures 8A and 8B are views corresponding with those of Fig. 1 of a second embodiment of the dispensing assembly;

Figure 9 is a side view of the dispensing assembly of Fig. 8 during use;

Figure 10 is a view corresponding with Fig. 6 of the second embodiment; and

Figure 11 is a view corresponding with Fig. 7 of the second embodiment.

[0010] An assembly 20 for dispensing a fluid F, in particular a carbonated liquid, comprises a container 2 having an outlet 4 and a dispensing device 1 that may be connected to an outlet 4 of the container 2. The dispensing device 1 is movable with respect to the container 2 between a first position for storage and/or transport (Figs.

1A and 1B) and a second position for use (Fig. 2), in which the fluid may be dispensed from the container 2.

[0011] In order to protect the dispensing device 1 against damage during transport and storage, the container 2 is shaped to accommodate the dispensing device 1 in its first position. To this end the outlet 4 is arranged near a sidewall 21 of the container 2 (Fig. 3A), rather than centrally, thus defining a receiving space 22 for accommodating the dispensing device.

[0012] The container 2 is arranged to be held in a horizontal position when the dispensing device 1 is in its second position for use, in which the fluid F may be dispensed from the container 2. The container 2 will then be lying on a shelf 23 in a refrigerator. To provide a stable position, the sidewall 21 of the container 2 adjacent the outlet 4 has a somewhat flattened configuration. Under these circumstances, the dispensing device 1 is arranged below the container outlet 4 when the assembly 20 is in use for dispensing the fluid F, which prevents gaseous components from escaping from the container 2.

[0013] The container 2 has a neck 24 bordering the outlet 4 and the dispensing device 1 is connected to the container 2 by first lowering a resiliently deformable sleeve 25 over the neck 24 (Fig. 3A) and then tensioning this sleeve 25 around the neck 24 by pushing a locking ring 26 downward (Fig. 3B).

[0014] The dispensing device 1 includes a dosing chamber 3 that has an inlet 5 for introducing fluid F from the container 2, as well as an outlet 6 through which the fluid F is dispensed from the dosing chamber 3. The dosing chamber 3 may be dimensioned such that its internal volume corresponds to a single dose of the fluid F. When the assembly 20 is used for dispensing a carbonated softdrink, the volume of the dosing chamber 3 may correspond to that of a single glass, i.e. around 200 ml. In the illustrated embodiment the dosing chamber 3 is further provided with a vent opening 7, through which air A may enter the dosing chamber 3 when a dose of fluid F is dispensed. Venting the dosing chamber 3 will prevent an underpressure from developing and will promote a smooth outflow of fluid F from the outlet 6.

[0015] In order to isolate the dosing chamber 3 from the container 2, the dispensing device 1 includes first valve means 8, which cooperates with the inlet 5 of the dosing chamber 3. This first valve means 8 is movable between a position in which the inlet 5 is open (Fig. 6) and fluid F from the container 2 may enter the dosing chamber 3, and a position in which the inlet 5 is closed (Fig. 7).

[0016] The dispensing device 1 also includes second valve means 9 that cooperates with the outlet 6 of the dosing chamber 3. This second valve means 9 is also movable between a position in which the outlet 6 is open and fluid may be dispensed from the dosing chamber 3 (Fig. 7) and a position in which the outlet 6 is closed (Fig. 5).

[0017] Finally, the dispensing device 1 includes third valve means 10 cooperating with the vent opening 7. Again, this third valve means 10 is movable between a position in which the vent opening 7 is open so that air A may enter the dosing chamber 3 while fluid F is being dispensed (Fig. 7) and a position in which the vent opening 7 is closed (Fig. 6).

[0018] For selectively opening and closing the inlet 5, the outlet 6 and the vent opening 7 the dispensing device 1 is provided with control means 11 that are operatively connected to first, second and third valve means 8, 9 and 10, respectively, for moving them between their open and closed positions.

[0019] The first and second valve means 8 and 9, respectively, are controlled such that when the first valve means 8 is in its open position the second valve means 9 is in its closed position and the other way around. At the same time, the second and third valve means 9 and 10, respectively, are controlled such that they move concurrently between their open and closed positions.

[0020] In the illustrated embodiment, this coordination between the various movements is obtained in that the first, second and third valve means 8, 9, 10 are mutually connected. In fact, these three valve means 8, 9 and 10 are integrally formed by a single valve member 12. This reduces the number of separate parts and further facilitates coordination and control of the valve means.

[0021] In the shown embodiment the single valve member 12 is substantially y-shaped, having a stem 15 for connection to the control means 11, which stem 15 also supports the first valve means 8, and branches 16, 17 carrying the second and third valve means 9, 10 at their respective ends. The stem 15 is guided for sliding movement in an extended part 18 of an inlet conduit 19, which will be discussed in detail below. In order to prevent fluid F from leaking past the stem 15, it includes a sealing ring 27 that is slidably received in the extension 18. The second and third valve means 9, 10 are also slidably received in corresponding tubular extensions 28, 29 bordering the fluid outlet 6 and vent opening 7, respectively. These extensions 28, 29 are dimensioned such that the fluid outlet 6 and vent opening 7 are opened only after the first valve means 8 has securely sealed the fluid inlet 5.

[0022] In order to prevent any fluid from leaking from the container 2 when the dispensing device 1 is not in use, the device 1 includes biasing means 13 operatively connected to the first, second and/or third valve means 8, 9, 10 to force these valve means to a position of rest in which the fluid outlet 6 and the vent opening 7 are closed (Fig. 6). Because of the coordination between the movement of the various valve means, the first valve means 8 is open when the second and third valve means 9, 10 are closed, so that fluid F from the container 2 may then enter the dosing chamber 3 through the inlet 5. At the same time any air A that may have entered the dosing chamber 3 through the vent opening 7 during dispensing may migrate to the container 2 through the fluid inlet 5, which then serves as air outlet.

[0023] In the illustrated embodiment, the biasing

means 13 comprises a plurality of leaf springs 14 which engage the control means 11. In fact, the biasing springs 14 are integrally molded with the control means 11, which comprises two curved bending arms 30 that are supported in brackets 31 on the dispensing device 1 and are mutually connected at the center 32. This center connection 32 is essentially C-shaped and is adapted to snap around a corresponding pin 33 at the top of the stem 15, thus connecting the control means 11 and biasing means 13 to the first, second and third valve means 8, 9 and 10.

[0024] The two upper leaf springs 14 have downwardly extending protrusions 34 engaging the adjacent leaf spring 14, thus ensuring that the individual springs 14 will move as a spring pack. Before the dispensing assembly 20 is used for the first time, the leaf springs are held in a first, downwardly directed over-center position by an anti-tamper provision 35 that is integrally molded with the springs 14 and control means 11 (Fig. 5A). This anti-tamper provision 35 includes a pin 36 that is snapped into a corresponding opening on the body of the dispensing device 1 and serves as a fulcrum. The anti-tamper provision 35 further includes two thin strips 37 which serve to hold the springs 14 in their first over-center position. Finally, the anti-tamper provision 35 has an arm 38 extending from the pin 36. In order to activate the dispensing device 1, the arm 38 is pivoted upward, thus tearing the strips 37 loose from the lower spring 14 (Fig. 5B). The arm 38 then pushes the springs 14 upward to their second over-center position and subsequently serves as a stop.

[0025] This ensures that when the bending arms 31 of the control means 11 are pressed together (Fig. 5C), both the leaf springs 14 and the control means 11 will bend upwards and the valve member 12 will be moved upwards to move the first, second and third valve means 8, 9, 10 from their position of rest (Figure 6) to their fluid dispensing position (Fig. 7). As soon as the arms 31 are released, the leaf springs 14 and the arms 31 themselves will try to assume a relaxed, unbent state, thus returning the valve means 8, 9, 10 to their position of rest. The movement of the springs 14 and arms 31 is limited by the arm 38 serving as stop.

[0026] As mentioned above, the inlet 5 of the dosing chamber 3 is not connected directly to the container outlet 4. Instead, the dosing chamber inlet 5 is connected to an inlet conduit 19 that is defined by a substantially T-shaped adapter 39. This adapter 39 carries the deformable sleeve 25 and locking ring 26 by which the dispensing device 1 is attached to the container neck 24. In order to prevent any fluid F leaking from the container 2 during transport or storage, a seal 40 is arranged in the inlet conduit 19. This seal 40 is adapted to be opened before first use of the dispensing assembly 20. To this end, the seal 40 is designed such that it is automatically opened when the dispensing device 1 is moved from its storage and transport position (Fig. 1) to its dispensing position (Fig. 2).

[0027] The seal 40 includes a tubular member 41 having upper and lower sealing rings 42, 43 which are slidably received in the upper part of the adapter 39 and in the container neck 24, respectively. These sealing rings 42, 43 ensure sealing once the dispensing device 1 has been moved to its position of use (Fig. 4D). The tubular member 41 carries four support arms 44, which in turn carry a main sealing element 45. This element 45 seals the container outlet 4 when the dispensing device 1 is in its storage and transport position (Fig. 4A).

[0028] The tubular member 41 is slidably received in both the adapter 39 and the container neck 24. It is further rotatable with respect to the adapter 39, but fixed against rotation with respect to the container neck 24 by a protrusion 51 that is slidable in a groove 52. The tubular member 41 has a helical camming surface 46 which forms the bottom of a groove 47. The adapter 39 also has a helical camming surface 48, which forms the edge of a tubular protrusion 49 extending into the groove 47. The orientation of the helical camming surfaces 46, 48 is such, that a pivoting movement of the dispensing device 1 around the container neck 24 from its storage position to its position of use will cause the tubular member 41 to be slid downwardly into the adapter 39 and container neck 24, thus freeing the container outlet 4 (Figs. 4A to 4D). As shown in these Figures, the tubular member 41 has a recess 50 in its upper edge for receiving the stem 15 of the valve member 12 when the dispensing device 1 is in its storage position, which serves as an additional locking provision against unintended movement of the dispensing device 1.

[0029] In an alternative embodiment the dispensing assembly 120 includes separate means 150 for locking the dispensing device 101 in its first position for storage and/or transport (Figs. 8A, 8B). These locking means 150 comprise an extended part 153 of the dosing chamber 103, which includes a groove 154 for receiving a ridge 155 that protrudes from the exterior of the container 102.

[0030] In this alternative embodiment the control means 111 is form-retaining and movable, rather than deformable as in the first embodiment. The control means 111 comprises a substantially Y-shaped lever having a central stem 132 and two branches 130 forming the operating parts of the lever. The stem 132 is pivotally connected to the dosing chamber 103 near the fluid outlet 106 at 131. The lever further includes an actuating part 156 which cooperates with an actuating part 157 of the valve member 112. The actuating part 156 of the lever includes an opening 158 through which the dosing chamber outlet 106 protrudes.

[0031] The single valve member 112 is substantially H-shaped in this embodiment, and comprises a first leg 115 carrying the first and second valve means 108, 109 and a second leg 117 carrying the third valve means 110 and the actuating part 157. This actuating part 157 is slidably received in a tubular extension 159 adjacent the extensions 128, 129 for the second and third valve means 109, 110.

[0032] In this alternative embodiment of the dispensing

device 101, the biasing means 113 comprises a substantially V-shaped bending spring 114 that is arranged in the dosing chamber 103. This spring 114 engages the first, second and/or third valve means 108, 109, 110, rather than the control means as in the first embodiment. In fact, the spring 114 is integrally molded with the valve member 112, thus further reducing the number of separate parts and simplifying assembly of the dispensing device 101. The spring 114 has a free end 160 engaging a support 161 protruding from a wall of the dosing chamber 103.

[0033] In this embodiment the tubular seal member 141 does not have a separate camming surface. Instead, it has a straight upper edge 146 which cooperates with the helical lower edge 148 of a protrusion 149 of the adapter 139.

[0034] After the dispensing device 101 has been brought into its position of use, a user may dispense a dose of fluid F from this second embodiment of the dispensing assembly by pulling the control means 111 forward, i.e. away from the container 102 with two fingers, while at the same time pushing on a top surface 162 of the adapter 139 with the thumb. This movement will cause the control means 111 to pivot around the point 131, thus forcing the actuating part 156 into engagement with the actuating part 157 of the valve member 112 and moving the first, second and third valve menas 108, 109, 110 from their position of rest (Fig. 10) to their dispensing position (Fig. 11). This movement will cause the spring 114 to be flexed. As soon as the control means 111 is released, the spring 114 will return to its relaxed position, thus moving the valve means 108, 109, 110 back to their position of rest.

[0035] Since the control means 111 in this second embodiment of the dispensing assembly 120 is actuated by pulling, rather than by pushing, there is no risk of the dispensing device 101 being unintentionally actuated by closing the door of the refrigerator in which the assembly 120 is stored. A similar precaution against unintentional dispensing by closing the refrigerator door is provided by the device 1 of the first embodiment, where the control means 11 is actuated from the sides of the container 2.

[0036] The dispensing assembly and dispensing device disclosed above allow a fluid to be dispensed from a container in several well-defined doses, without the remaining fluid ever being in direct contact with the surrounding atmosphere. Therefore, the quality of the fluid in the container is not affected, even if dispensing takes place over an extended period of time.

[0037] Although the invention has been shown and described by way of two exemplary embodiments, it will be clear that it is not limited thereto, but could be modified and adapted in various ways without departing from the scope of the invention, which is defined by the following claims.

Claims

1. A device for dispensing a fluid, in particular a carbonated liquid from a container, **characterized by:**

   - a dosing chamber that is connectable to an outlet of the container, said dosing chamber having at least one inlet and at least one outlet;
   - first valve means cooperating with the inlet of the dosing chamber and movable between a position in which said inlet is open and a position in which said inlet is closed;
   - second valve means cooperating with the outlet of the dosing chamber and movable between a position in which said outlet is open and a position in which said outlet is closed; and
   - control means operatively connected to said first and second valve means for moving them between their open and closed positions;

   wherein the first and second valve means are controlled such that when one of said valve means is in its open position the other is in said closed position.

2. The dispensing device as claimed in claim 1, **characterized in that** the first and second valve means are mutually connected.

3. The dispensing device as claimed in claim 2, **characterized in that** the first and second valve means are integrally formed.

4. The dispensing device as claimed in any of the preceding claims, **characterized by:**

   - at least one vent opening arranged in the dosing chamber; and
   - third valve means cooperating with said vent opening and movable between a position in which the vent opening is open and a position in which the vent opening is closed, said third valve means being controllably connected to the control means;

   wherein the second and third valve means are controlled such that they move concurrently between their open and closed positions.

5. The dispensing device as claimed in claim 4, **characterized in that** the second and third valve means are mutually connected.

6. The dispensing device as claimed in claim 5, **characterized in that** the second and third valve means are integrally formed.

7. The dispensing device as claimed in any of the preceding claims, **characterized by** biasing means op-

eratively connected to said first, second and/or third valve means to force said valve means to a position of rest in which the first valve means is open, and the second and/or third valve means is/are closed.

8. The dispensing device as claimed in claim 7, **characterized in that** said biasing means comprises at least one spring engaging said first, second and/or third valve means.

9. The dispensing device as claimed in claim 7, **characterized in that** said biasing means comprises at least one spring engaging said control means.

10. The dispensing device as claimed in claim 9, **characterized in that** said biasing spring is integrally formed with said control means.

11. The dispensing device as claimed in any of the preceding claims, **characterized in that** the inlet of the dosing chamber is connected to an inlet conduit that is connectable to the outlet of the container, a seal being arranged in said inlet conduit.

12. The dispensing device as claimed in claim 9, **characterized in that** said seal is arranged to be opened before first use of the device.

13. An assembly for dispensing a fluid, in particular a carbonated liquid, comprising a container having an outlet and a dispensing device as claimed in any of the preceding claims connected to the container outlet.

14. The dispensing assembly as claimed in claim 13, **characterized in that** the dosing chamber is arranged below the container outlet when the assembly is in use for dispensing the fluid.

15. The dispensing assembly as claimed in claim 13 or 14, **characterized in that** the dispensing device is movable with respect to the container between a first position for storage and or transport and a second position for use, in which the fluid may be dispensed from the container.

16. The dispensing assembly as claimed in any of claims 13 to 15, including the dispensing device of claim 12, **characterized in that** the seal is arranged to be opened when the dispensing device is moved from its first to its second position.

17. The dispensing assembly as claimed in claim 16, **characterized in that**:

- the dispensing device includes an adapter that is connected to the container so as to be fixed in an axial direction of the outlet and be rotatable around the axis of the outlet;
- the seal is slidably arranged in both the adapter and the container outlet, and is rotatable with respect to the adapter but fixed against rotation in the outlet; and
- the seal and the adapter have cooperating camming surfaces.

18. The dispensing assembly as claimed in any of claims 13 to 17, **characterized in that** the container is shaped to accommodate the dispensing device in its first position for storage and/or transport.

19. The dispensing assembly as claimed in claim 18, **characterized by** means for locking the dispensing device in its first position for storage and/or transport.

20. The dispensing assembly as claimed in any of claims 13 to 19, **characterized in that** the container is arranged to be held in a horizontal position when the dispensing device is in its second position for use, in which the fluid may be dispensed from the container.

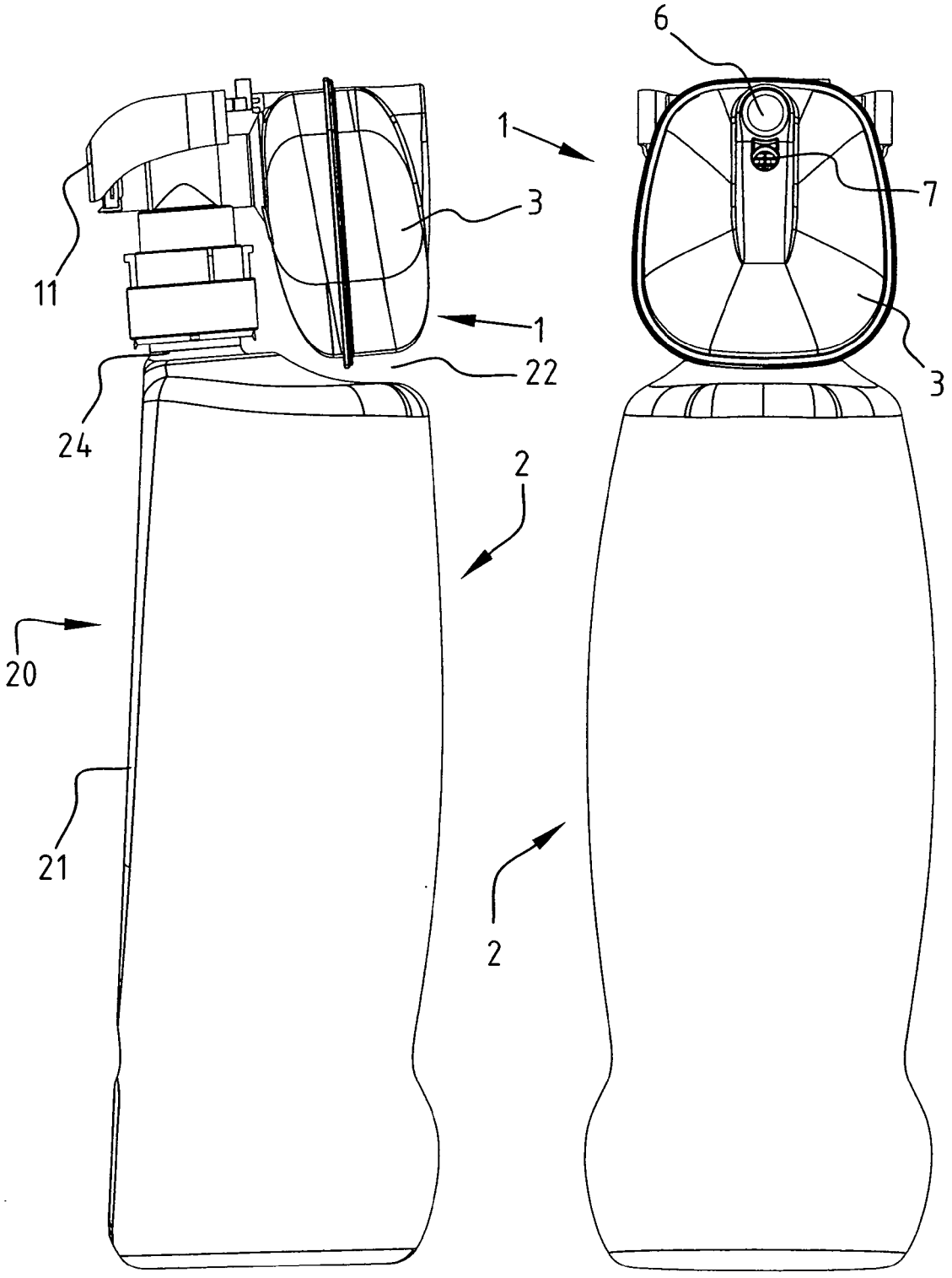


FIG. 1A

FIG. 1B

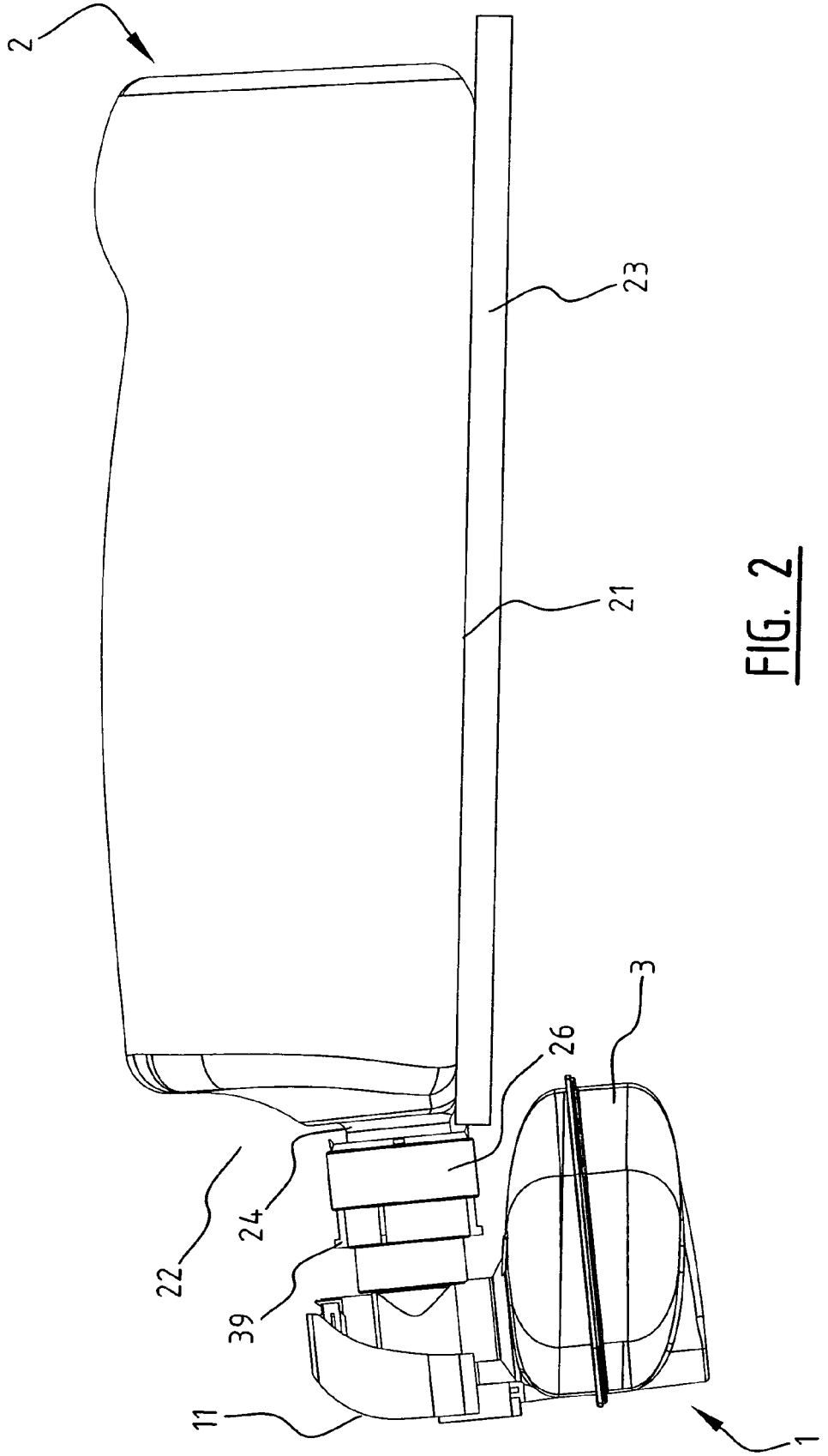


FIG. 2

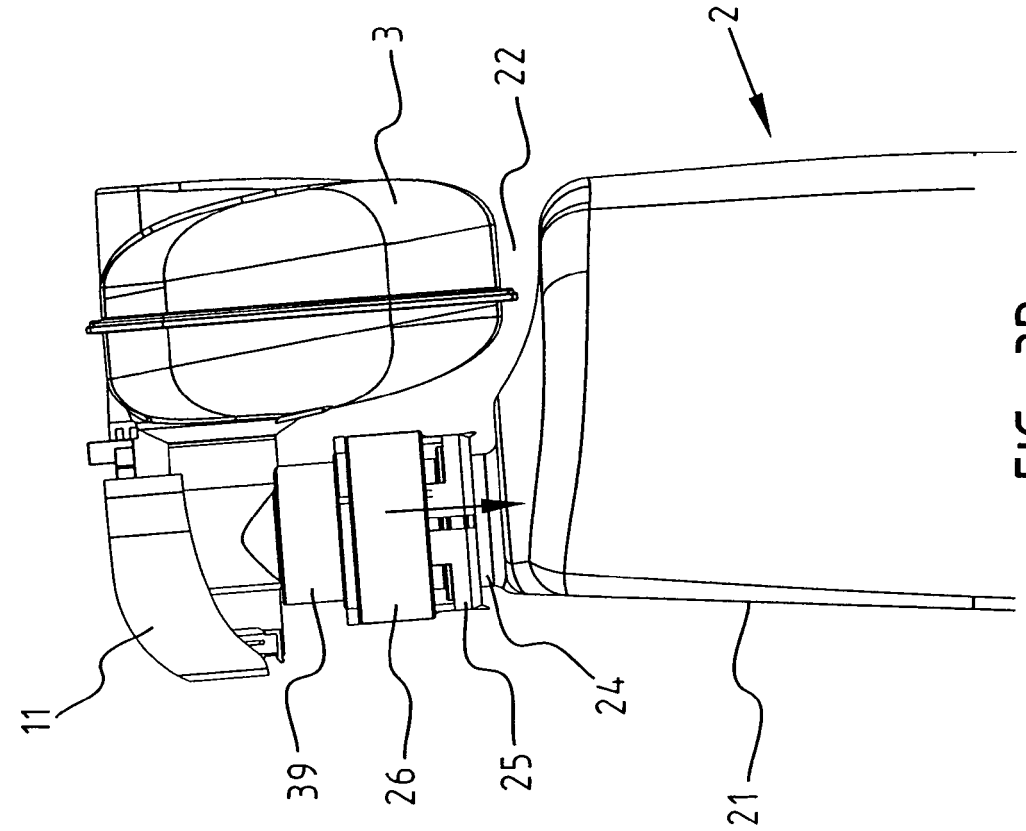


FIG. 3B

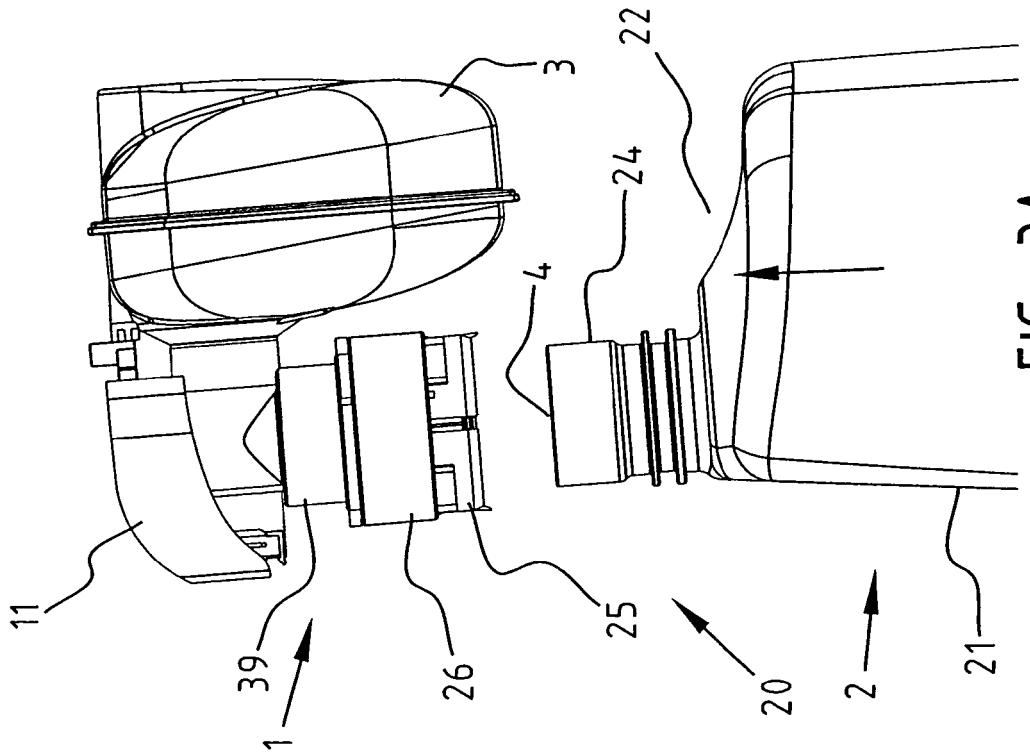


FIG. 3A

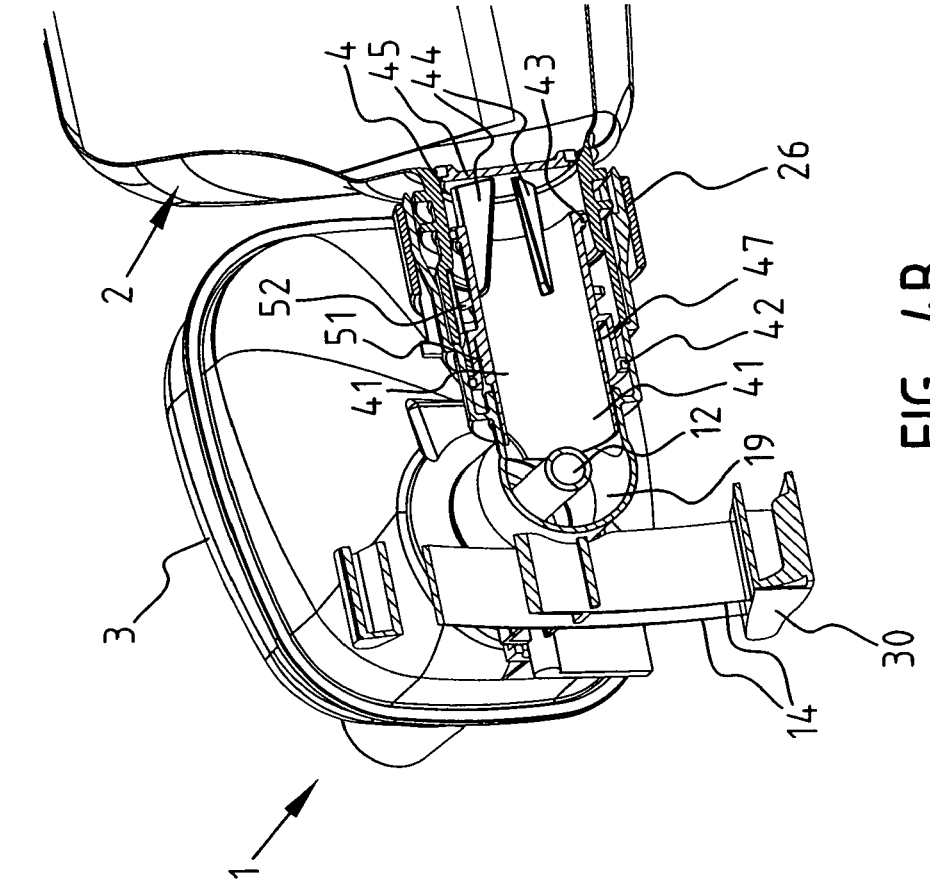

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FIG. 4B

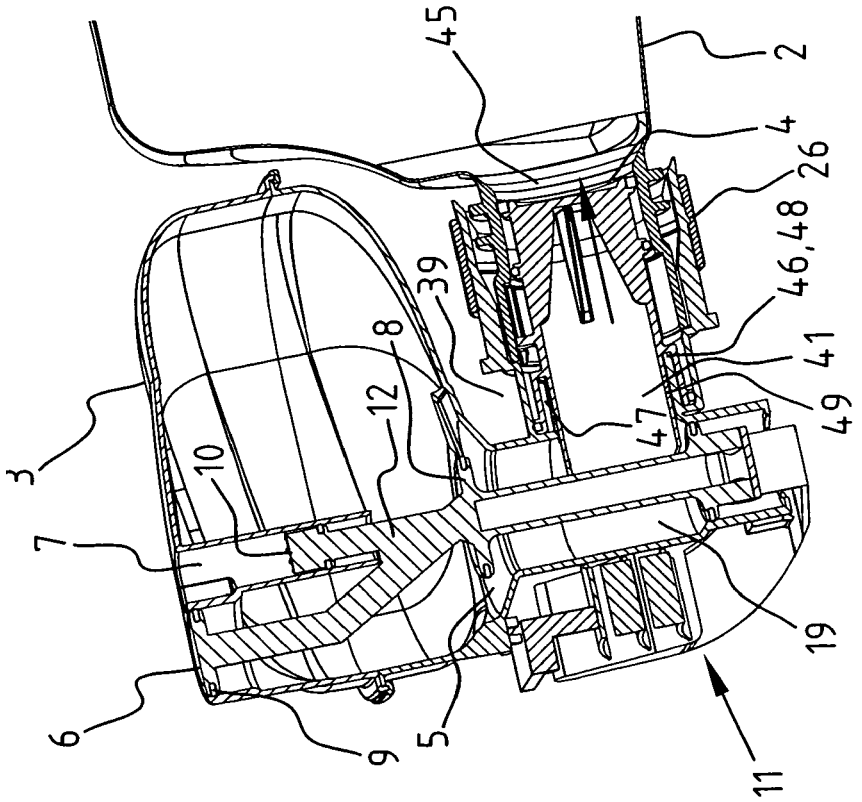

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FIG. 4A

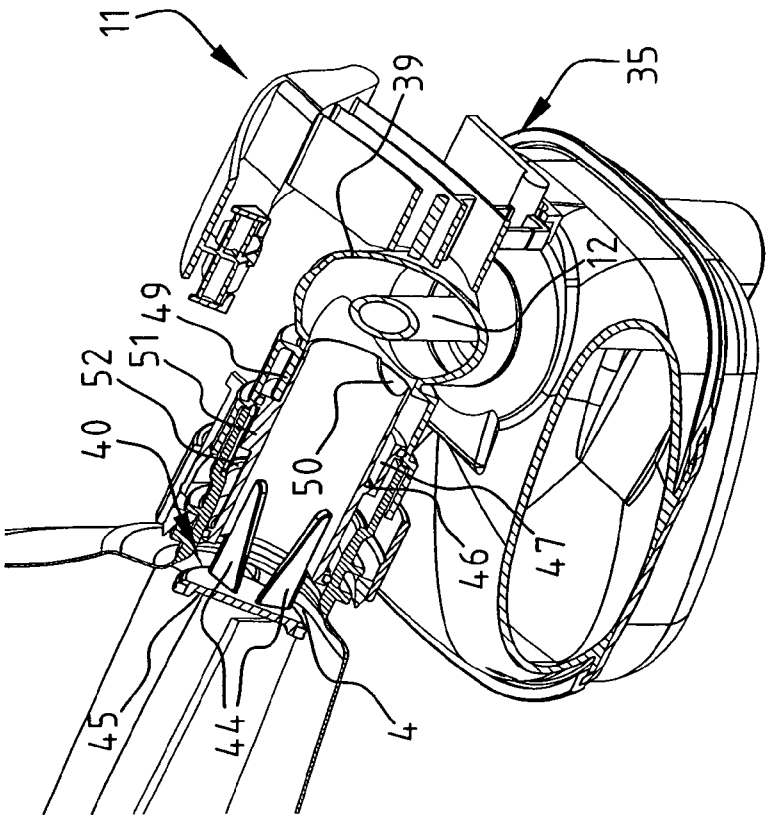

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FIG. 4D

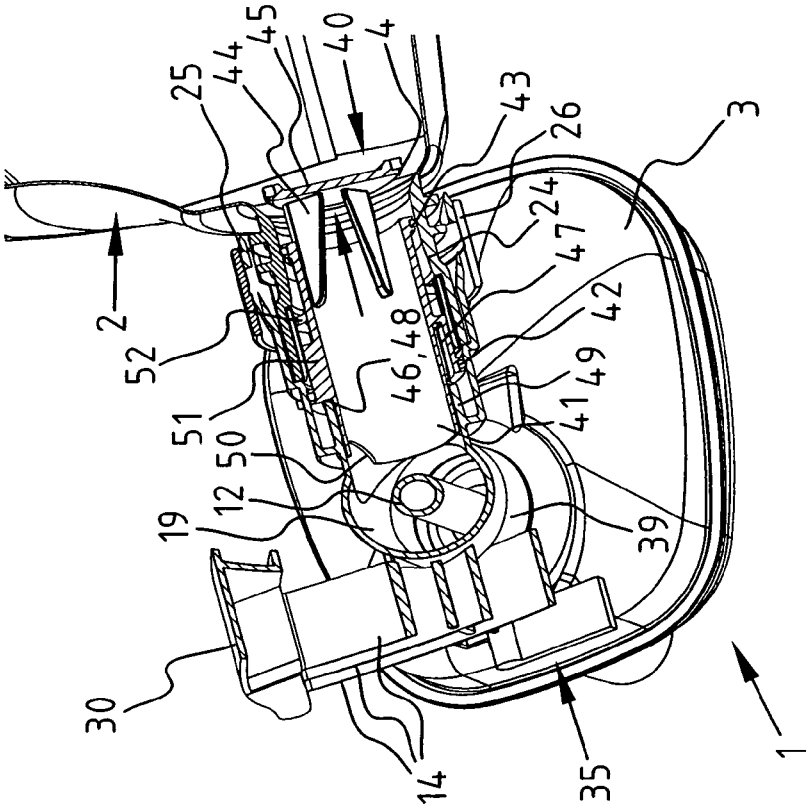

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FIG. 4C

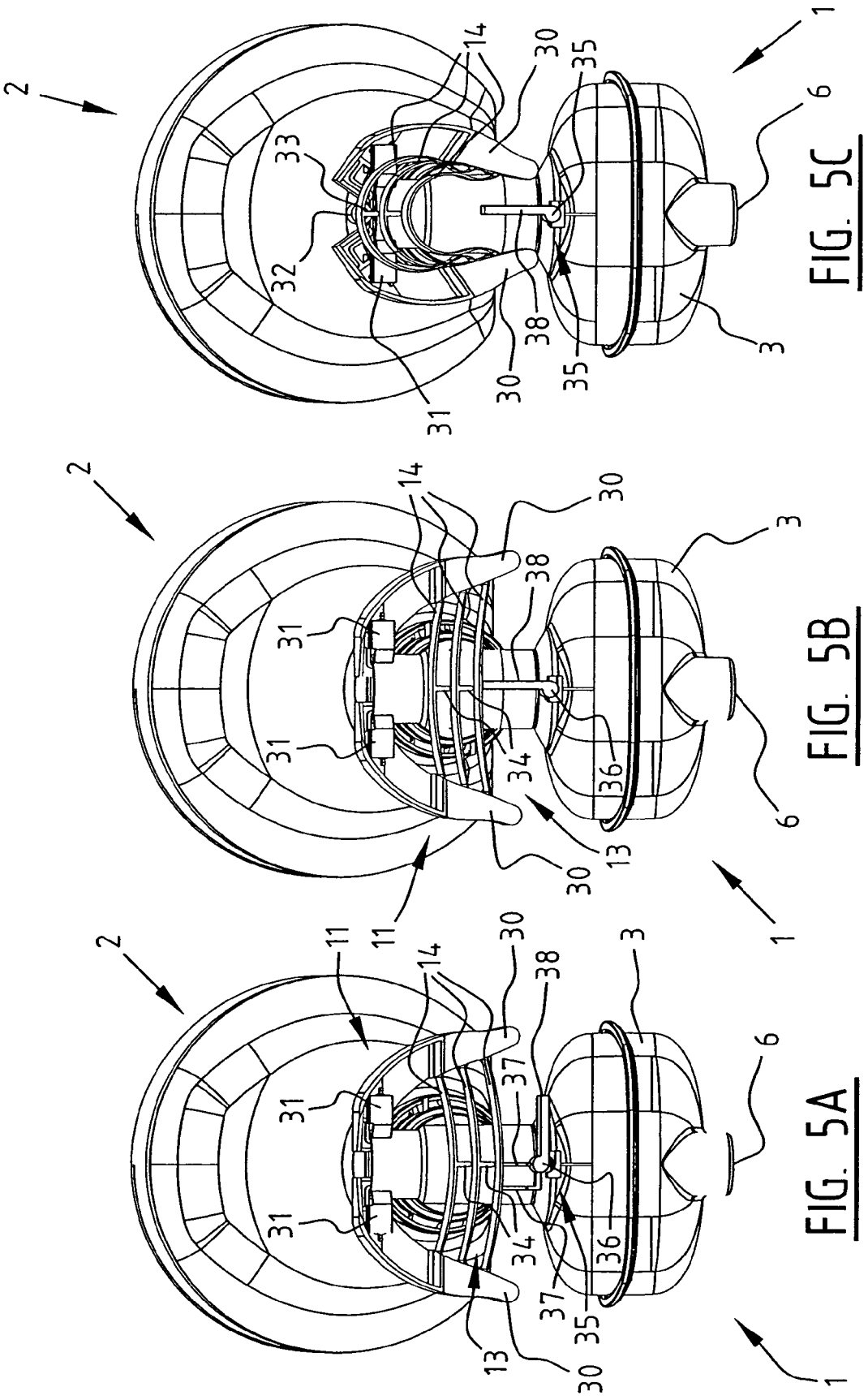


FIG. 5C

FIG. 5B

FIG. 5A

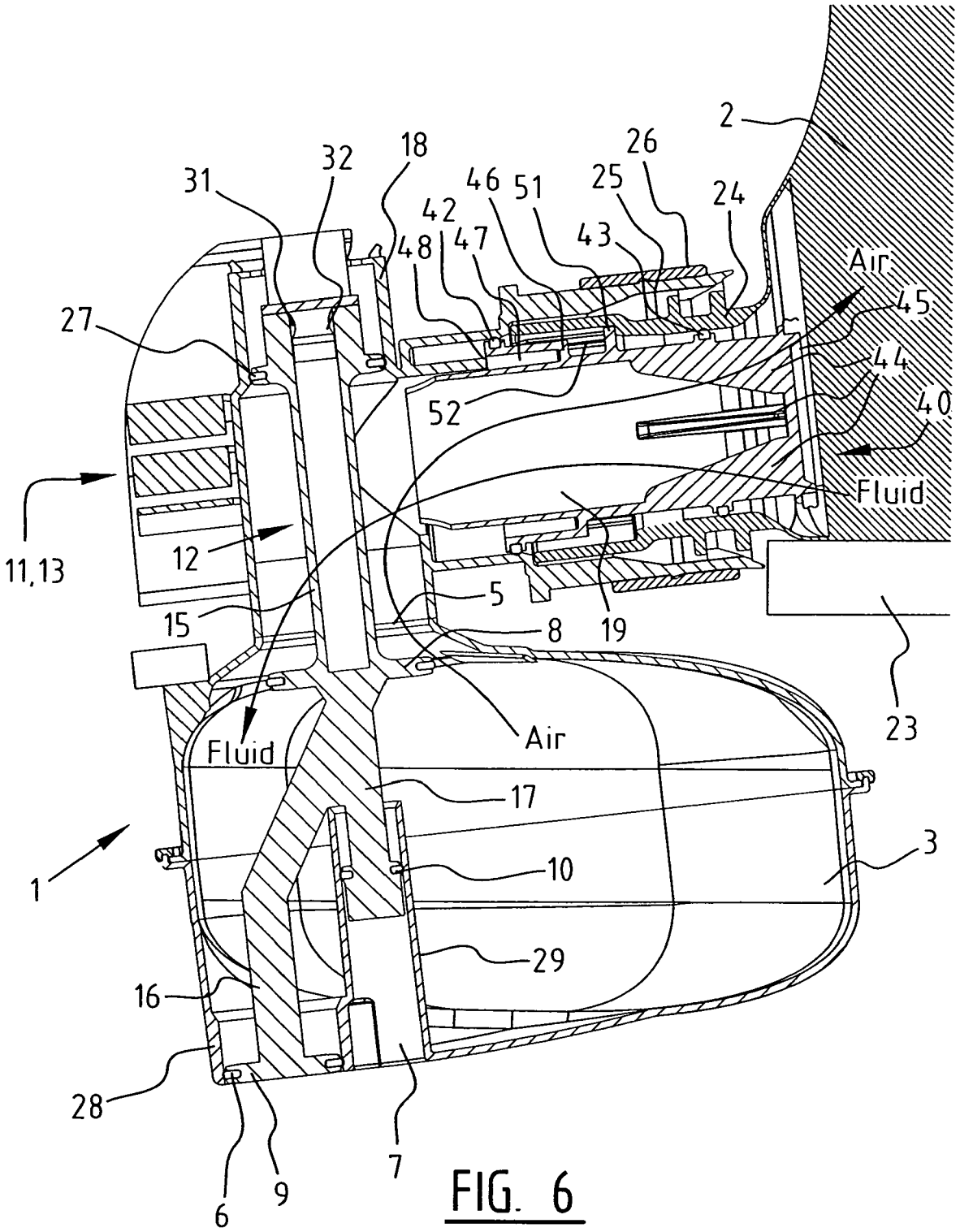

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FIG. 6

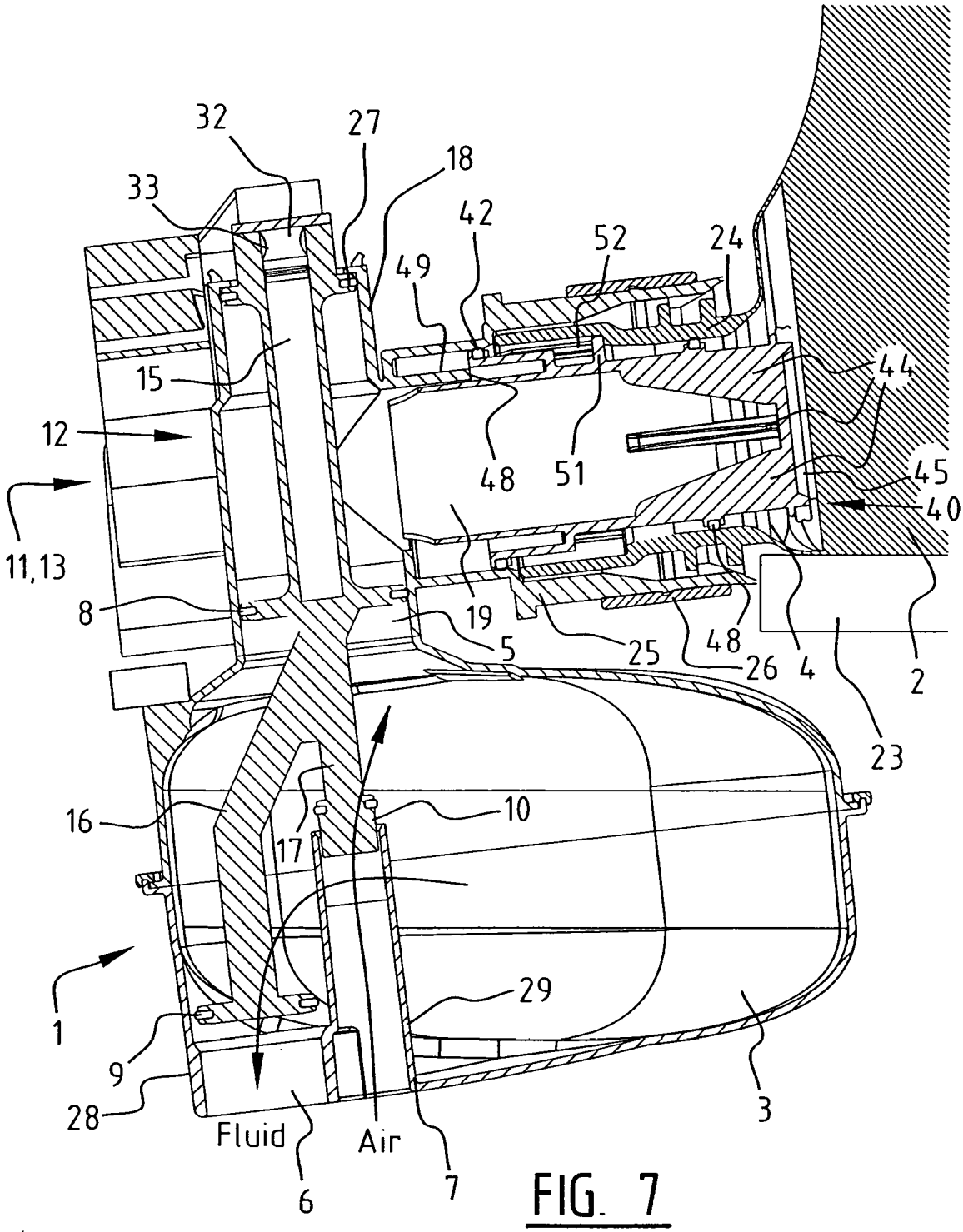

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FIG. 7

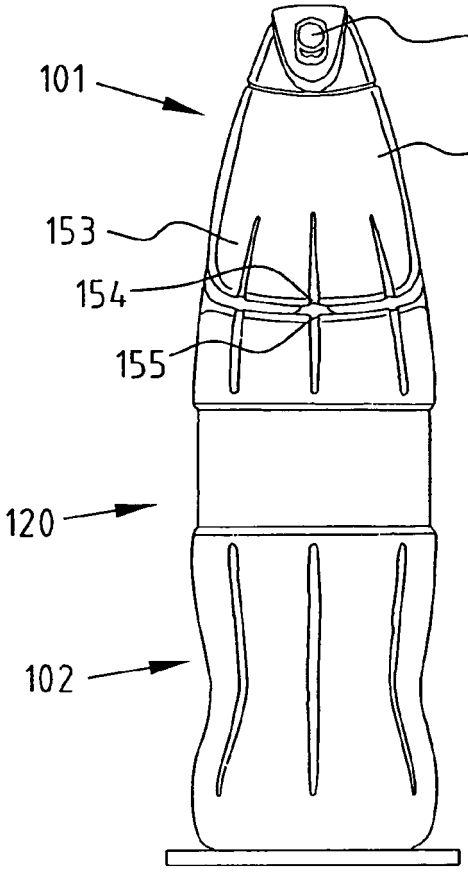


FIG. 8A

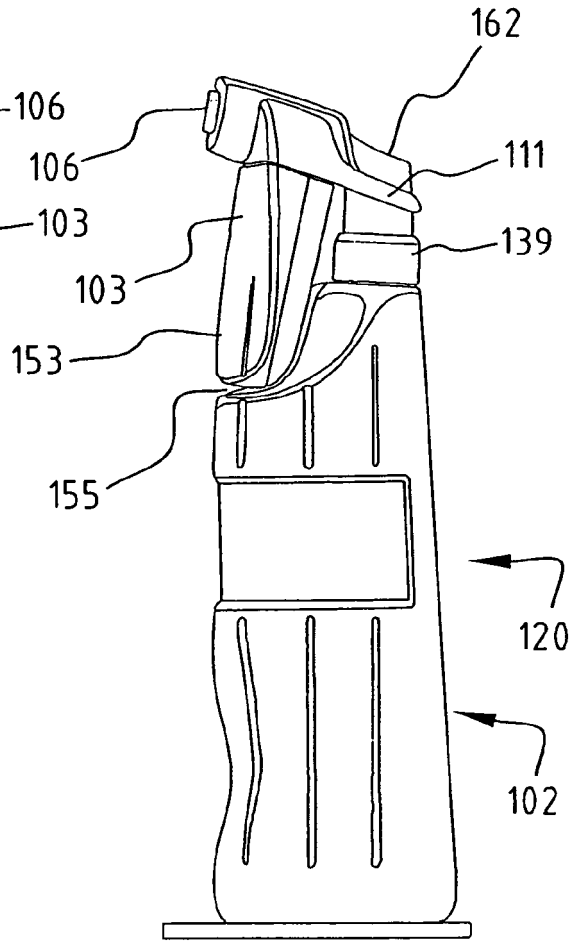


FIG. 8B

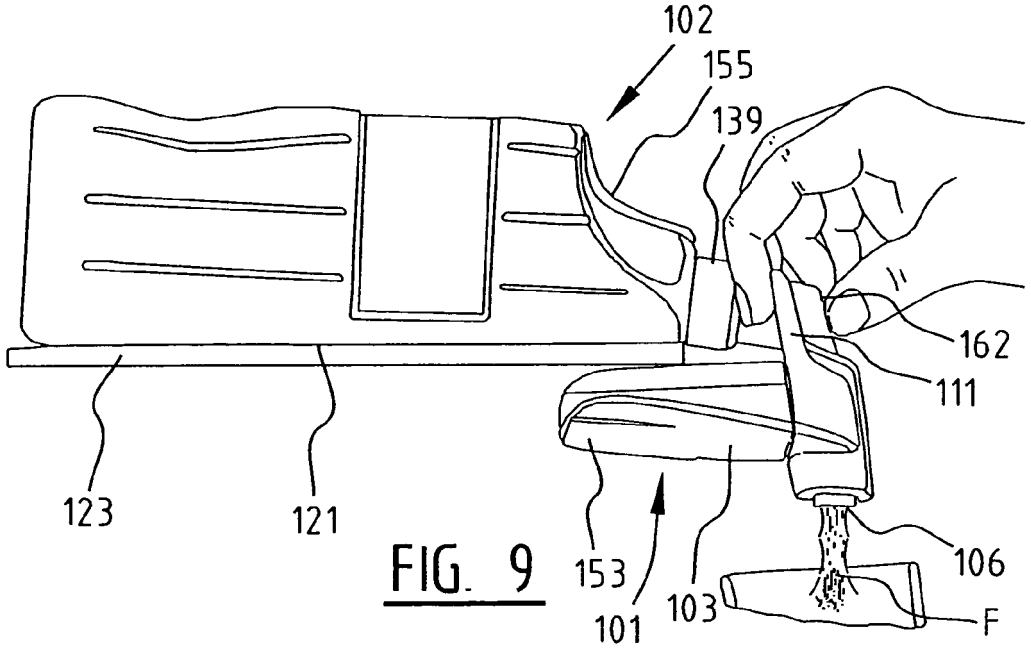


FIG. 9

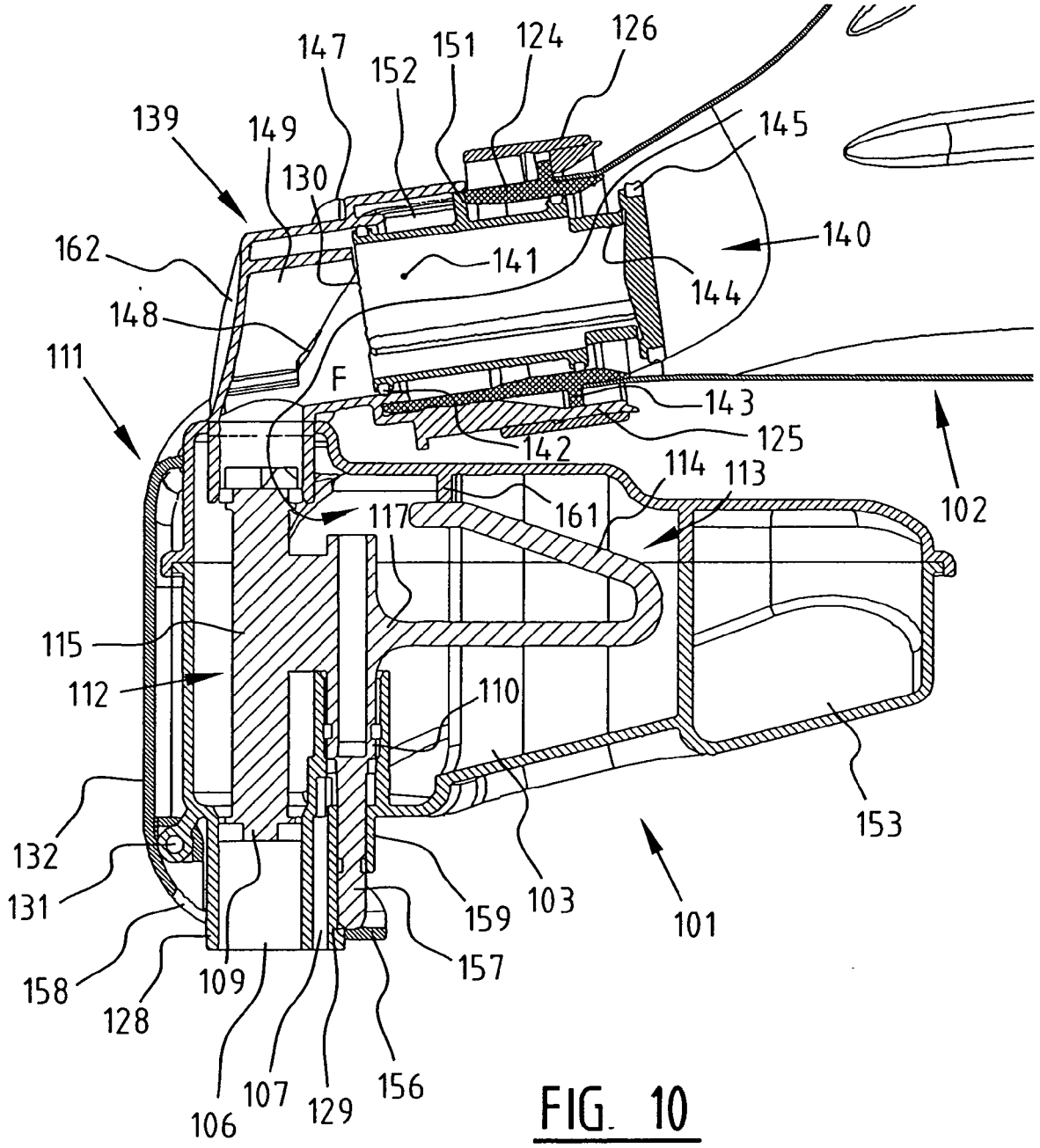

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FIG. 10

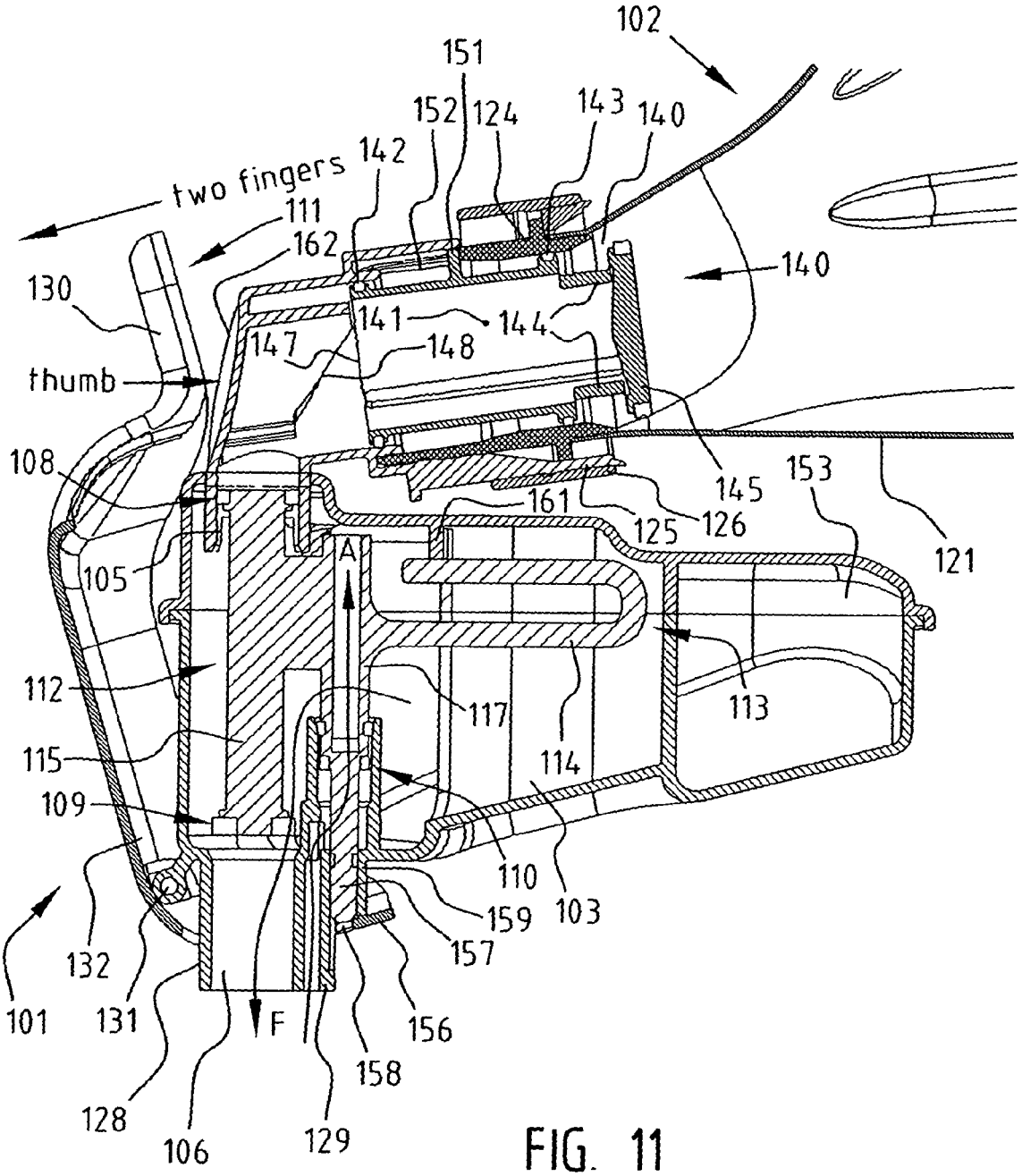

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FIG. 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 1665

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2006/005601 A (ENGLISH NIALL [IE]) 19 January 2006 (2006-01-19) * page 10, line 7 - page 11, line 20; figures 1,2,5 *	1-16,18, 19	INV. B67D3/02 ADD. B67D3/04
X	GB 2 381 258 A (BEAUMONT TM LTD [GB]) 30 April 2003 (2003-04-30) * page 11, line 18 - page 12, line 7; figures 1,2 *	1,20	
A	DE 12 94 255 B (ATLAN EUGENE W) 30 April 1969 (1969-04-30)		
A	US 5 507 411 A (PECKELS ARGANIOUS E [US]) 16 April 1996 (1996-04-16)		
A	FR 2 497 787 A (BRIFFAULT SA [FR]) 16 July 1982 (1982-07-16)		

TECHNICAL FIELDS SEARCHED (IPC)
B67D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 January 2007	Mueller, Claus

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30-01-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006005601 A	19-01-2006	NONE	
GB 2381258 A	30-04-2003	NONE	
DE 1294255 B	30-04-1969	NONE	
US 5507411 A	16-04-1996	US 6409046 B1	25-06-2002
FR 2497787 A	16-07-1982	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82