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(54) **Pump action dispenser**

Pumpbetätigbarer Spender

Distributeur à pompe

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Description

[0001] The present invention relates to a delivery device adapted to deliver a pasty product. In particular, the present invention relates to a delivery device according to the preamble of claim 1, adapted to deliver a multi-component paste, i.e. comprising a main component and minor components which are distinguishable from the main component.

[0002] In the field of multi-component pastes, particularly of toothpaste, there is required a paste having cleaning and polishing qualities as well as a good visual attraction. For example, there is required a paste having a main component which consists of an opaque material containing a polishing agent and at least a minor component comprising a translucent or transparent gel, which has, for example, an anti-spot or refreshing ingredient.

[0003] There exist delivery devices adapted to obtain and deliver multi-component pastes that employ pumping systems based on the use of deformable diaphragms. These do not always ensure that the product will be delivered in an acceptable manner. Such a device is disclosed in US-A-4978037. In fact, they often combine the minor component with the main component and in this manner the delivered multi-component paste not only loses its visual attraction but does not assure a proper dosing between the components forming the paste itself. Furthermore, these devices are complex and expensive to manufacture.

[0004] Therefore, the need for a simple and cost-effective delivery device allowing multi-component type pastes to be accurately and reliably combined and delivered is felt. The object of the present invention is to provide a delivery device to solve the above problems with reference to the prior art.

[0005] This object is achieved by a delivery device according to claim 1.

[0006] Further characteristics and the advantages of the delivery device according to the present invention will be understood from the description herein below of an exemplary and non-limiting embodiment of this device, in which:

figure 1 shows a perspective view of a delivery device according to an embodiment of the invention;
figure 2 shows a side view of the delivery device from figure 1 taken on the side of arrow II from figure 1;
figure 3 shows a top plan view of the delivery device from figure 1, taken on the side of arrow III from figure 1;
figure 4 shows a cutaway perspective view of the delivery device from figure 1;
figure 5 shows a sectional view of the delivery device from figure 1 taken along the plane A from figure 2, according to an embodiment of the invention;
figure 6 shows an enlarged detail from figure 5;
figure 7 shows a sectional view of the delivery device from figure 1 taken along the plane A from figure 2,

according to a further embodiment of the invention;
figure 8 shows an enlarged detail from figure 7;
figure 9 shows a sectional view of the delivery device from figure 1 taken along the plane A from figure 2, according to a further embodiment of the invention;
figure 10 shows an enlarged detail from figure 9;
figure 11 shows a sectional view of the delivery device from figure 1 taken along the plane A from figure 2, according to a further embodiment of the invention;
figure 12 shows an enlarged detail from figure 11.

[0007] The elements or element parts in common between the embodiments described below will be designated with the same numerals.

[0008] With reference to the annexed figures, a delivery device 3 is adapted to deliver a fluid or a pasty product, particularly a multi-component paste 4, comprising at least two components, such as, for example, a main component 5 and at least a minor component 6 which is distinguishable from the main component 5.

[0009] This multi-component paste may comprise either a main component 5 being preliminarily combined with at least a minor component 6, such as the pastes of the 'deep stripes' prior art, or a main component 5 being preliminarily separated from a minor component 6 and able to combine with it while delivering, such as the pastes of the 'surface stripes' prior art.

[0010] According to an embodiment, the delivery device 3 comprises a tank 10, being preferably of a cylindrical shape, which extends along a longitudinal direction defining an X-axis.

[0011] Preferably, the tank 10 is rigid and hollow, so as to identify a main volume 12 adapted to contain a paste to be delivered, particularly the main component 5 of a multi-mould paste.

[0012] With the term rigid is meant that during the starting of the delivery device 3 in order to deliver the paste, the tank 10 does not have any substantially change in its volume and shape, i.e. it is not deformed by using the deliverer, thus maintaining a cylindrical configuration and its concentricity with the X-axis.

[0013] The tank 10 extends from a first end 16 to a second end 22, which are at opposite ends of the X-axis.

[0014] At the first end 16, the tank 10 comprises a support base 28 for the delivery device 3 as well as a thrust unit 34.

[0015] According to an embodiment known in the art, which is shown for example in figure 5, the thrust unit 34 comprises for example a sliding piston 36 inside the tank 10, a flexible ring 38, which is preferably made in aluminium and works as a non-return device, allowing the piston 36 only to move in the direction from the first end 16 to the second end 22 and a hard disk 40 which allows the flexible ring 38 to be held in position by connecting itself to the piston 36.

[0016] At the second end 22, the tank 10 provides a coupler portion 42, being substantially of a cylindrical and

hollow shape and axially-symmetrical relative to the X-axis of the tank 10, having a diameter which is lower than the diameter of the tank 10.

[0017] According to an embodiment, as shown for example in figures 6, 8 and 10, the coupler portion 42 comprises on a lateral external surface thereof a couple of circular projections 44 defining or delimiting a notch 45 which is substantially of a toroidal shape.

[0018] At the second end 22, the tank 10 is associated with a pumping device 46.

[0019] The pumping device 46 comprises operating means 50 and fastening means 51; preferably, said operating means 50 comprise an elastic diaphragm 52 and said fastening means 51 comprise a rigid jig 58.

[0020] According to an embodiment, the elastic diaphragm 52 comprises a cap portion 64, which is substantially hollow and defines a secondary volume 66 adapted to accommodate a minor component 6 of the multi-component paste, according to an embodiment illustrated for example in figures 9, 10, 11 and 12.

[0021] The cap portion 64 is adapted to be fitted onto the coupler portion 42 of the tank 10. For example, the cap portion 64 comprises at a lower edge 68 a circular rib 70 adapted to couple with said notch 45 of the coupler portion 42 of the tank 10, so as to allow the cap portion 64 to be fixed on the second end 22 of the tank 10; this fixing is adapted to assure the fluid preservation of the paste contained in the tank 10 and the cap portion 64.

[0022] The elastic diaphragm 52 is associated with an eject pipe 76, i.e. interacts with said eject pipe which is adapted to deliver the multi-component paste. Particularly, the elastic diaphragm 52 is in fluid cooperation with the eject pipe 76, in order to convey the paste through the eject pipe 76. According to an embodiment, the elastic diaphragm 52 comprises the eject pipe 76, for example of a cylindrical shape, passing through the cap portion 64; the cylindrical eject pipe 76 has its own Y-axis which is separate from the X-axis of the tank 10 and parallel to the latter.

[0023] The eject pipe 76 comprises a first portion 78 and a second portion 80, preferably of cylindrical shape and coaxial between themselves and with said Y-axis.

[0024] Preferably, said Y-axis is a symmetry axis for said eject pipe 76.

[0025] Preferably, the cap portion 64 and the eject pipe 76 are formed as a single piece.

[0026] The first portion 78 of the eject pipe 76 projects from the cap portion 64 to the lower edge 68 of the cap portion 64, i.e. inside the secondary volume 66 contained in the cap portion 64.

[0027] The second portion 80 projects from the cap portion 64 on the opposite side of the first portion 78, i.e. on the opposite side of the lower edge 68 of the cap portion 64 and the second end 22 of the combined tank 10.

[0028] The first portion 78 of the eject pipe 76 extends within the secondary volume 66.

[0029] The first portion 78 of the eject pipe 76 is pro-

vided with an inlet aperture 82 at its end, adapted to convey the paste into the eject pipe 76.

[0030] The inlet aperture 82 of the eject pipe 76, through which the paste flows in order to be dispensed, is not on the X-axis of the tank 10.

[0031] According to a further embodiment of the invention, as shown for example in figures 7 and 8, the first portion 78 of the eject pipe 76 is substantially a truncated cone shape, having a diameter increasing towards the inlet aperture 82. In this construction, the inlet aperture 82 is not on axis with the second portion 80 of the eject pipe 76; i.e. the inlet aperture has a W-axis of symmetry which is separate from the Y-axis of the second portion 80. Preferably, the inlet aperture 82 is crossed by said Y-axis of the second portion 80 of the eject pipe 76. According to an embodiment, a side edge 84 of the inlet aperture 82 substantially intersects said X-axis of the tank 10, preferably the side edge 84 is tangent to the X-axis. In other words, the inlet aperture 82 is offset relative to the second portion 80 of the eject pipe 76, said W-axis, relative to a sectional plane crossing the X-axis of the tank 10, being between the X-axis and the Y-axis.

[0032] According to an embodiment, as shown in figures 9, 10, 11 and 12, adapted to pastes comprising an only minor component 6, at a sidewall 88 of the first portion 78, there is provided at least a hole, preferably a plurality of holes 94, passing through the sidewall 88 and adapted to allow said minor component 6 to flow into the eject pipe 76; said minor component 6 being preferably housed inside the secondary volume 66 which is defined by the cap portion 64.

[0033] In this construction, the minor component 6 is loaded into the cap portion 64 so as to fill the portion of the secondary volume included between a vertex 100 of the cap which is opposite to the lower edge 68 relative to the X-axis, and the inlet aperture 82.

[0034] The second portion 80 of the eject pipe 76 is provided with an eject aperture 106 at one end opposite to the cap portion 64, being adapted to deliver the multi-component paste outside the delivery device 3.

[0035] An operating portion 108 of the cap 64 that is remote from the eject pipe 76 is to be pressed by a user's finger in order to cause the cap portion 64 to be deformed and obtain the delivery of the paste through the eject pipe 76.

[0036] The operating portion 108 of the elastic diaphragm 52 is distanced from the eject pipe 76; in other words, the eject pipe 76 is set in a portion of the elastic diaphragm which is not subjected to the pressure operation from a user. For example, as can be seen in figure 3, by dividing the cap portion 64 into two mid-halves by means of a diameter D, the eject pipe 76 and the operating portion 108 are each located in one of said mid-halves.

[0037] Preferably, the operating portion 108 comprises grip means, such as ribs.

[0038] With the term elastic diaphragm is indicated a diaphragm having such a thickness and material to be

deformable when pressed by a user, in order to start the delivery device 3; with the removal of the pressure operation from the user, the elastic diaphragm elastically returns to its shape-retaining cap configuration.

[0039] The rigid jig 58 provides a central body 110 adapted to connect the cap portion 64 of the elastic diaphragm 52 to the tank 10. Advantageously, the rigid jig 58 is at least partially counter-shaped relative to the elastic diaphragm 52, so as to limit the deformation thereof and assure the substantial parallelism of the eject pipe 76 while passing from the shape-retaining configuration to the deformed configuration, subsequent to the operating of the elastic diaphragm 52.

[0040] Advantageously, the fastening means 51 assure that the Y-axis of the eject pipe 76 is the same while passing from the shape-retaining configuration to the deformed configuration; in other words, the fastening means assure the substantial immobility of the eject pipe 76 so that the eject pipe 76 is fastened in position while passing from the shape-retaining configuration to the deformed configuration of the elastic diaphragm 52. Thus, following the deforming of the elastic diaphragm 52, the Y-axis of the eject pipe 76 and the X-axis of the tank 10 are parallel.

[0041] Preferably, the central body 110 is at least partially counter-shaped relative to said elastic diaphragm 52.

[0042] For example, the central body 110 is provided with a cap shape and is adapted to partially cover the cap portion 64 of the elastic diaphragm 52. Preferably, in an assembly configuration of the rigid jig 58 onto the elastic diaphragm 52, the rigid jig 58 is at least partially in connection with the elastic diaphragm 52 so as to assure that in the deformed configuration of the elastic diaphragm 52, the latter is not deformed at the contact position with the rigid jig 58. Preferably, the rigid jig is counter-shaped relative to the portion of the elastic diaphragm comprising the eject pipe 76, so that in a deformed configuration of the elastic diaphragm 52, the portion of the elastic diaphragm 52 comprising the eject pipe 76 does not substantially change its shape; in other words, the rigid jig 58 assures the substantial shape-retaining ability of that portion of the elastic diaphragm 52 in direct contact with it. Preferably, the portion of the elastic diaphragm 52 being in direct contact with the rigid jig 58 comprises the eject pipe 76, so as to assure that the eject pipe 76 in the shape-retaining configuration is parallel to the eject pipe 76 in the deformed configuration.

[0043] The central body 110 comprises a fixing portion 114, preferably of a cylindrical shape, adapted to fasten the central body 110 at the second end 22 of the tank 10, so as to block in position the lower edge 68 of the diaphragm 52 in contact with the tank 10.

[0044] In other words, in an assembled configuration of the rigid jig 58 onto the second end 22 of the tank 10, the fixing portion 114 covers the coupler portion 42 of the tank 10 thanks to a forced coupling, so as to press the lower edge 68 of the cap portion 64 against said coupler

portion 42.

[0045] Particularly, the fixing portion 114 assures the fixation of the circular projections 44 of the diaphragm in the notch 45 of the tank 10; the lower edge 68 of the cap portion 64 is fixed between the fixing portion 114 and the coupler portion 42.

[0046] Furthermore, the fixing portion 114 contributes to confer rigidity to the lower edge 68 of the diaphragm so as to avoid the possibility of paste passing through the lower edge itself.

[0047] Advantageously, the rigid jig 58 provides a window 118, so that in an assembled configuration of the rigid jig onto the elastic diaphragm, this window overlaps at least partially said operating portion 108 of the cap 64.

[0048] In this manner, the operating portion 108 of the cap 64 is easy to access by an operator through the window, so as to allow a finger to press it in order to cause the cap to be deformed and obtain the delivery of the paste through the eject pipe.

[0049] The rigid jig 58 comprises a ring 122, being substantially hollow and rigidly connected to the central body 110, and adapted to coupling at least partially with said eject pipe, particularly with the second portion 80 of the eject pipe 76.

[0050] Said ring 122 at one end opposite to the fixing portion 114 comprises a cylindrical length 126 ending with a tip 128 having a hole 130 so that in an assembly configuration of the rigid jig onto the elastic diaphragm, said hole 130 coincides with the eject aperture 106.

[0051] The tip 128 has a circular ring shape so as to form a cut-off for the second portion 80 of the eject pipe 76 towards the Y-axis and in a direction removed from the cap itself.

[0052] The cylindrical length 126 is adapted to accommodate at least partially the second portion of the eject pipe, so as to limit the shifting of the eject pipe to a plane perpendicular to the Y-axis.

[0053] Preferably, a cap 136 is associated to said ring 122, and it is adapted to close the hole 130 and the eject pipe 106.

[0054] With the term rigid jig is indicated a jig having such a material and configuration that it is not deformed during the dispensing action of the delivery device 3 i.e. while the elastic diaphragm 52 is passing from the shape-retaining configuration to the deformed configuration.

[0055] In other words, the function of the rigid jig 58 is to control the deformation of the elastic diaphragm 52 while operating; for example, the ring 122 prevents the eject pipe 76 from moving or inclining so that the Y-axis of the eject pipe is substantially parallel to the X-axis of the tank 10.

[0056] According to a further embodiment, as illustrated for example in figures 11 and 12, the rigid jig 58 and the elastic diaphragm 52 are enbloc moulded, for example by means of double-moulding techniques.

[0057] In this case, the eject pipe is not part of the elastic diaphragm 52, but forms part of the rigid jig 58. The elastic diaphragm 52 comprises a housing 138 to

which the eject pipe 76 is associated.

[0058] According to an embodiment, the cylindrical length 126 of the rigid jig 58 is integrally connected with the second portion 80 of the eject pipe 76.

[0059] In other words, the eject pipe 76 is connected or cantilevered relative to the rigid jig 58, i.e. the second portion 80 of the eject pipe 76 is rigidly connected to the cylindrical length 126 of the rigid jig 58, whereas the first portion 78 penetrates into the elastic diaphragm 52 through said housing 138, without being connected with the elastic diaphragm 52. Accordingly, the first portion 78 is cantilevered relative to the second portion 80 which is rigidly fastened to the rigid jig 58.

[0060] Preferably, the ring 122 comprises a stiffening wall 140 which cooperates with the cap 136 and substantially abuts on the vertex 100 of the cap portion 64, so as to limit the deformation of the cap portion along the X-axis. Preferably, said stiffening wall 140 is included between said X-axis and Y-axis.

[0061] The operation of the delivery device according to the invention will be now described below.

[0062] Firstly, the cap 136 is opened, then the operator presses the elastic diaphragm 52 with one finger in the direction of the thrust unit 34.

[0063] The piston 36 of the thrust unit 34 is supported by the flexible ring 38, thus it can not move to the first end 16 of the tank 10 along the X-axis.

[0064] Therefore, the paste contained in the tank 10 is pressurised and obliged to flow through the first portion 78 of the eject pipe 76.

[0065] Particularly, the volume of the paste ejected is substantially equal to the volume obtained by deforming the cap portion 64, i.e. the difference between the volumes of the shape-retaining cap portion 64 and the deformed cap portion 64.

[0066] In the case of a delivery device 3 for pastes with one minor component 6, as illustrated for example in figures 9, 10, 11 and 12, the minor component 6 flows through the holes 94 of the eject pipe 76 combining with the main component 5 which is conveyed through the inlet aperture 82 to the eject pipe 76.

[0067] In the case of a delivery device 3 comprising a multi-component paste 4 having several components in the tank 10, as illustrated for example in figures 5, 6, 7 and 8, the paste is conveyed to the inlet aperture 82 of the eject pipe 76.

[0068] When the operator releases the elastic diaphragm 52, the latter regains its original shape, due to its elasticity; therefore, an under-pressure is generated inside the tank 10, i.e. a pressure lower than the pressure acting on the outer surface of the piston 36 of the thrust unit 34.

[0069] This under-pressure has the effect of pushing the piston 36 towards the second end 22 of the tank 10, causing the feed of the piston itself.

[0070] Furthermore, said under-pressure being generated inside the delivery device has the effect of drawing in an amount of air through the eject aperture 106 so as

to push an amount of paste that is in the eject pipe towards the inlet aperture 82 of the pipe itself. The length and section of the eject pipe are set up by physical and geometrical parameters of the paste and the tank, as known in the art, so as to assure that the eject pipe is never completely empty, thus preventing that the air may enter the tank.

[0071] Furthermore, the feed of the piston assures that the outlet length, i.e. the second portion 80 of the eject pipe 76 is always filled at the end of each paste pumping, so as to avoid the forming of a vortex which would compromise the visual aspect as well as the paste composition.

[0072] Before first use of the delivery device, the eject pipe is at least partially filled with paste, so that when the elastic diaphragm is first put into operation, the paste completely fills up the eject pipe, thus preventing that the air may enter during the following intake or under-pressure step.

[0073] During the pumping step the presence of fastening means 51, particularly of the rigid jig 58 assures that the eject pipe 76 in its shape-retaining condition is parallel to the eject pipe 76 in its deformed configuration.

[0074] As it can be appreciated from what has been stated, the delivery device 3 according to the invention allows drawbacks that may exist in the delivery devices of the prior art to be overcome.

[0075] The described delivery device allows a multi-component type paste to be delivered by assuring the composition and the desired aesthetical aspect thereof.

[0076] In the case of a delivery device for pastes having one main component and one minor component, the main component is contained in the tank and the minor component in the cap portion. By actuating on the cap portion, the piston pushes the main component into the eject pipe and the elastic diaphragm directly conveys the minor component to the same duct, so as to provide a multi-component paste having for example, a form consisting of the main component and a certain number of stripes, equal to the number of holes that are on the side-wall of the eject pipe, being composed by the minor component and equally spaced around the main component. The fastening means of the eject pipe assures the fixing in position of the eject pipe and the desired aesthetical aspect for the delivered paste.

[0077] In the case of a delivery device for pastes having a main component and several minor components, the various components are contained in the tank, comprising for example a central pipe containing the main component and a lateral tube nest containing the various minor components. By acting on the cap portion, the piston pushes the various bodies in the eject pipe so as to provide the desired multi-component configuration; following the operation of the elastic diaphragm, the parallelism of the eject pipe assures the preservation of the paste thus combined in the duct itself.

[0078] Therefore, the parallelism of the eject pipe with the X-axis of the tank, while passing from the shape-

retaining configuration to the deformed configuration and vice versa assures that the main component is properly combined with the minor components, thus avoiding the forming of a vortex inside the paste, which would compromise the aesthetical aspect of and the composition of the delivered paste.

[0079] Moreover, the delivery device is cost-effective in production and assembly.

[0080] Obviously, those skilled in the art will be able to carry out modifications to and variations of the invention described above, all of them being contemplated within the scope of the invention such as defined in the claims below.

Claims

1. A delivery device (3), adapted to deliver a multi-component type paste comprising at least two components (5,6), said device comprising

- a rigid tank (10) to contain at least one of said components (5,6),
- an eject pipe (76), in fluid communication with said tank (10), to dispense said paste,
- an elastic diaphragm (52), being associated to said tank (10), said elastic diaphragm (52) comprising a deformable operating portion (108) to be pressed by an operator in order to pass from a shape-retaining configuration to a deformed configuration, so as to pump said paste through said eject pipe (76),

fastening means (51) for said eject pipe (76), to fasten the eject pipe so that the eject pipe (76) in the shape-retaining configuration of the elastic diaphragm (52) is substantially parallel to the eject pipe (76) in the deformed configuration of the elastic diaphragm (52),

characterised in that

said fastening means (51) comprise a rigid jig (58) being at least partially counter-shaped relative to said elastic diaphragm (52), so as to limit the deformation of the elastic diaphragm (52) while passing from the shape-retaining configuration to the deformed configuration.

2. The delivery device (3) according to claim 1, wherein said elastic diaphragm (52) comprises a cap portion (64), adapted to be fitted onto a coupler portion (42) of the tank (10), said cap portion (64) being substantially hollow, so as to define a secondary volume (66) to accommodate at least one component (5,6) of the multi-mould paste (4).
3. The delivery device (3) according to claim 2, wherein said eject pipe (76) passes through said cap portion (64).

4. The delivery device (3) according to claim 2 or 3, wherein said cap portion (64) comprises a circular rib (70), adapted to couple with a notch (45) of said coupler portion (42) of the tank (10), so as to allow the cap portion (64) to be fixed on the tank (10).
5. The delivery device (3) according to any preceding claim, wherein said eject pipe (76) is substantially of a cylindrical shape around an axis (Y) that is substantially parallel to a longitudinal axis (X) of the tank (10).
6. The delivery device (3) according to any of claims 2 to 5, wherein said eject pipe (76) comprises a first portion (78) projecting from the cap portion (64) to a lower edge (68) of the cap portion (64) and a second portion (80) projecting from the cap portion (64) on the opposite side relative to the first portion (78).
7. The delivery device (3) according to claim 6, wherein said first portion (78) of the eject pipe (76) is provided at the end with an inlet aperture (82) to convey the paste into the eject pipe (76), and said second portion (80) is provided with an eject aperture (106) to dispense said paste.
8. The delivery device (3) according to claim 6 or 7, wherein said first and second portion (78,80) are formed as one piece.
9. The delivery device (3) according to any of claims 6 to 8, wherein said first and second portion (78,80) are cylindrical and coaxial relative to said axis (Y).
10. The delivery device (3) according to any of claims 7 to 9, wherein said inlet aperture (82) is coaxial with said axis (Y) and separate from said axis (X) of the tank (10).
11. The delivery device (3) according to any of claims 7 to 10, wherein said inlet aperture (82) and said eject aperture (106) are coaxial.
12. The delivery device (3) according to any of claims 6 to 11, wherein said first portion (78) of the eject pipe (76) is substantially a truncated cone, having a diameter increasing in a direction away from said second portion (80).
13. The delivery device (3) according to claim 12, wherein said inlet aperture (82) is symmetrical about an axis (W) which is separate from said axis (Y) of the second portion (80).
14. The delivery device (3) according to any of claims 7 to 13, wherein said inlet aperture (82) is crossed by said axis (Y) of the second portion (80) of the eject pipe (76).

15. The delivery device (3) according to any of claims 6 to 14, wherein at a sidewall (88) of the second portion (80) there is provided at least one hole (94), passing through said sidewall (88), to allow said minor component (6) to flow into the eject pipe (76). 5
16. The delivery device (3) according to any of claims 2 to 15, wherein at least one minor component (6) is loaded into the cap portion (64) so as to fill a portion of the secondary volume (66) included between a vertex (100) of the cap portion (64) opposite to the lower edge (68) relative to the axis (X) and the inlet aperture (82) of the eject pipe (76). 10
17. The delivery device (3) according to any of claims 2 to 16, wherein said cap portion (64) comprises an operating portion (108), remote from the eject pipe (76), to be pressed by a user's finger in order to allow the cap portion (64) to be deformed. 15
18. The delivery device (3) according to claim 17, wherein said operating portion (108) comprises grip means. 20
19. The delivery device (3) according to any preceding claim, wherein said elastic diaphragm (52) and said eject pipe (76) are formed as a single piece. 25
20. The delivery device (3) according to any of claims 2 to 19, wherein said rigid jig (58) comprises a central body (110) being at least partially counter-shaped relative to said cap portion (64) of the elastic diaphragm (52). 30
21. The delivery device (3) according to claim 20, wherein the central body (110) comprises a fixing portion (114) to fasten the rigid jig (58) to the tank (10), so as to fix a lower edge (68) of the elastic diaphragm (52) in contact with the tank (10). 35
22. The delivery device (3) according to claim 20 or 21, wherein said central body (110) comprises a window (118) so that in an assembled configuration of the rigid jig (58) onto the elastic diaphragm (52), said window (118) overlaps said operating portion (108) of the cap (64) partially, allowing a user to have access to the operating portion (108). 40
23. The delivery device (3) according to any of claims 20 to 22, wherein said rigid jig (58) comprises a ring (122), being rigidly connected to the central body (110) to couple with said second portion (80) of the eject pipe (76). 45
24. The delivery device (3) according to claim 23, wherein said ring (122) at the end opposite to the fixing portion (114) comprises a cylindrical length (126) having a tip (128) with a hole (130) which is substantially coaxial with said axis (Y), so that in an assembled configuration of the rigid jig (58) onto the elastic diaphragm (52), said hole (130) substantially coincides with the eject aperture (106). 50
25. The delivery device (3) according to claim 24, wherein said tip (128), having a circular ring shape forms a cut-off for the second portion (80) of the eject pipe (76) towards the axis (Y) and in a direction removed from the cap portion (64). 55
26. The delivery device (3) according to claim 24 or 25, wherein said cylindrical length (126) is adapted to accommodate, at least partially, the second portion (80) of the eject pipe (76) according to a forced coupling, so as to constrain the shifting of the eject pipe (76) to a plane perpendicular to the axis (Y).
27. The delivery device (3) according to any claim 23 to 26, wherein a cap (136) is associated to said ring (122) and it is adapted to close the hole (130) of the tip (128).
28. The delivery device (3) according to any of claims 20 to 27, wherein said rigid jig (58) comprises said eject pipe (76).
29. The delivery device (3) according to claim 28, wherein said rigid jig (58) is integrally connected with the second portion (80) of the eject pipe (76).
30. The delivery device (3) according to claim 28 or 29, wherein said rigid jig (58) and the second portion (80) of the eject pipe (76) are formed as a single piece.
31. The delivery device (3) according to any of claims 28 to 30, wherein said elastic diaphragm (52) comprises a housing (138) to which said eject pipe (76) is associated.
32. The delivery device (3) according to any of claims 28 to 31, wherein said eject pipe (76) is cantilevered relative to said rigid jig (58).
33. The delivery device (3) according to claim 32, wherein the second portion (80) of the eject pipe (76) is rigidly connected to the cylindrical length (126) and the first portion (78) penetrates into the elastic diaphragm (52) so as to be cantilevered relative to the second portion (80).
34. The delivery device (3) according to any of claims 28 to 33, wherein the rigid jig (58) and the elastic diaphragm (52) are enbloc moulded by means of double-moulding.
35. The delivery device (3) according to any of claims

23 to 34, wherein said ring (122) comprises a stiffening wall (140) which abuts on the vertex (100) of the cap portion (64), so as to constrain the deformation of the cap portion (64) along the longitudinal axis (X).

36. The delivery device (3) according to claim 35, wherein said stiffening wall (140) is located between the axes (X) and (Y).

37. The delivery device (3) according to any preceding claim, wherein the axis (Y) of the eject pipe (76) in the shape-retaining configuration of the elastic diaphragm (52) coincides with the axis (Y) of the eject pipe (76) in the deformed configuration of the elastic diaphragm (52).

Patentansprüche

1. Abgabe- bzw. Liefervorrichtung (3), die angepasst ist, eine Paste des Multikomponententyps abzugeben bzw. zu liefern, die wenigstens zwei Komponenten (5, 6) umfasst, wobei die Vorrichtung umfasst

- einen starren Tank (10), der wenigstens eine der Komponenten (5, 6) enthält,
- ein Ausstoßrohr (76) in Fluidkommunikation bzw. -verbindung mit dem Tank (10), um die Paste abzugeben,
- eine elastische Membran (52), die dem Tank (10) zugeordnet ist, wobei die elastische Membran (52) einen verformbaren Bedienabschnitt (108) umfasst, der von einer Bedienperson zu drücken ist, um aus einer Formbeibehaltungskonfiguration in eine verformte Konfiguration überzugehen, um die Paste durch das Ausstoßrohr (76) zu pumpen,
- Befestigungsmittel (51) für das Ausstoßrohr (76), um das Ausstoßrohr so zu befestigen, dass das Ausstoßrohr (76) in der Formbeibehaltungskonfiguration der elastischen Membran (52) im Wesentlichen parallel zu dem Ausstoßrohr (76) in der verformten Konfiguration der elastischen Membran (52) ist,

dadurch gekennzeichnet, dass

die Befestigungsmittel (51) eine starre Einrichtung (58) umfassen, die zumindest teilweise gegensätzlich relativ zu der elastischen Membran (52) geformt ist, um so die Verformung der elastischen Membran (52) während des Übergangs aus der Formbeibehaltungskonfiguration in die verformte Konfiguration zu begrenzen.

2. Abgabevorrichtung (3) nach Anspruch 1, wobei die elastische Membran (52) einen Kappenabschnitt (64) umfasst, der angepasst ist, auf einen Koppel-

abschnitt (42) des Tanks (10) gepasst zu sein, wobei der Kappenabschnitt (64) im Wesentlichen hohl ist, um ein sekundäres Volumen (66) bzw. Raum zu definieren, das bzw. der wenigstens eine Komponente (5, 6) der Multiformpaste (4) aufnimmt.

3. Abgabevorrichtung (3) nach Anspruch 2, wobei das Ausstoßrohr (76) durch den Kappenabschnitt (64) verläuft.

4. Abgabevorrichtung (3) nach Anspruch 2 oder 3, wobei der Kappenabschnitt (64) eine kreisförmige Rippe (70) umfasst, die angepasst ist, mit einer Kerbe (45) des Koppelabschnitts (42) des Tanks (10) zu koppeln, um zu erlauben, dass der Kappenabschnitt (64) an dem Tank (10) befestigt wird.

5. Abgabevorrichtung (3) nach einem der vorhergehenden Ansprüche, wobei das Ausstoßrohr (76) in einer im Wesentlichen zylindrischen Form um eine Achse (Y) ist, die im Wesentlichen parallel zu einer Längsachse (X) des Tanks (10) ist.

6. Abgabevorrichtung (3) nach einem der Ansprüche 2 bis 5, wobei das Ausstoßrohr (76) einen ersten Abschnitt (78), der von dem Kappenabschnitt (64) zu einer unteren Kante bzw. Rand (68) des Kappenabschnitts (64) vorsteht, und einen zweiten Abschnitt (80) umfasst, der von dem Kappenabschnitt (64) an der entgegengesetzten bzw. gegenüberliegenden Seite relativ zu dem ersten Abschnitt (78) vorsteht.

7. Abgabevorrichtung (3) nach Anspruch 6, wobei der erste Abschnitt (78) des Ausstoßrohrs (76) an dem Ende mit einer Einlassöffnung (82) versehen ist, um die Paste in das Ausstoßrohr (76) zu befördern, und der zweite Abschnitt (80) mit einer Ausstoßöffnung (106) versehen ist, um die Paste abzugeben.

8. Abgabevorrichtung (3) nach Anspruch 6 oder 7, wobei der erste und der zweite Abschnitt (78, 80) einstückig gebildet sind.

9. Abgabevorrichtung (3) nach einem der Ansprüche 6 bis 8, wobei der erste und der zweite Abschnitt (78, 80) zylindrisch und coaxial relativ zu der Achse (Y) sind.

10. Abgabevorrichtung (3) nach einem der Ansprüche 7 bis 9, wobei die Einlassöffnung (82) coaxial mit bzw. zu der Achse (Y) und getrennt von der Achse (X) des Tanks (10) ist.

11. Abgabevorrichtung (3) nach einem der Ansprüche 7 bis 10, wobei die Einlassöffnung (82) und die Ausstoßöffnung (106) coaxial sind.

12. Abgabevorrichtung (3) nach einem der Ansprüche 6

- bis 11, wobei der erste Abschnitt (78) des Ausstoßrohrs (76) im Wesentlichen ein Kegelstumpf mit einem Durchmesser ist, der sich in einer Richtung weg von dem zweiten Abschnitt (80) vergrößert.
- 13.** Abgabevorrichtung (3) nach Anspruch 12, wobei die Einlassöffnung (82) symmetrisch um eine Achse (W) ist, die von der Achse (Y) des zweiten Abschnitts (80) getrennt ist.
- 14.** Abgabevorrichtung (3) nach einem der Ansprüche 7 bis 13, wobei die Einlassöffnung (82) von der Achse (Y) des zweiten Abschnitts (80) des Ausstoßrohrs (76) gekreuzt wird.
- 15.** Abgabevorrichtung (3) nach einem der Ansprüche 6 bis 14, wobei an einer Seitenwand (88) des zweiten Abschnitts (80) wenigstens ein Loch (94) vorgesehen ist, das durch die Seitenwand (88) verläuft, um der kleineren Komponente (6) zu erlauben, in das Ausstoßrohr (76) zu fließen.
- 16.** Abgabevorrichtung (3) nach einem der Ansprüche 2 bis 15, wobei wenigstens eine kleinere Komponente (6) in den Kappenabschnitt (64) geladen ist bzw. wird, um einen Teil des sekundären Volumens bzw. Raums (66) zu füllen, das bzw. der zwischen einem Scheitelpunkt (100) des Kappenabschnitts (64) entgegengesetzt bzw. gegenüberliegend der unteren Kante bzw. Rand (68) relativ zu der Achse (X) und der Einlassöffnung (82) des Ausstoßrohrs (76) enthalten ist.
- 17.** Abgabevorrichtung (3) nach einem der Ansprüche 2 bis 16, wobei der Kappenabschnitt (64) einen Bedienabschnitt (108) entfernt von dem Ausstoßrohr (76) umfasst, der von dem Finger einer Bedienperson zu drücken ist, um zu erlauben, dass der Kappenabschnitt (64) verformt wird.
- 18.** Abgabevorrichtung (3) nach Anspruch 17, wobei der Bedienabschnitt (108) Greifmittel umfasst.
- 19.** Abgabevorrichtung (3) nach einem der vorhergehenden Ansprüche, wobei die elastische Membran (52) und das Ausstoßrohr (76) als ein einzelnes Stück gebildet sind.
- 20.** Abgabevorrichtung (3) nach einem der Ansprüche 2 bis 19, wobei die starre Einrichtung (58) einen zentralen Körper (110) umfasst, der zumindest teilweise gegensätzlich relativ zu dem Kappenabschnitt (64) der elastischen Membran (52) geformt ist.
- 21.** Abgabevorrichtung (3) nach Anspruch 20, wobei der zentrale Körper (110) einen Fixierabschnitt (114) umfasst, um die starre Einrichtung (58) an dem Tank (10) zu befestigen, um die untere Kante bzw. Rand (68) der elastischen Membran (52) in Kontakt mit dem Tank (10) zu fixieren.
- 22.** Abgabevorrichtung (3) nach Anspruch 20 oder 21, wobei der zentrale Körper (110) ein Fenster (118) umfasst, so dass das Fenster (118) in einer zusammengesetzten Konfiguration der starren Einrichtung (58) auf der elastischen Membran (52) den Bedienabschnitt (108) der Kappe (64) teilweise überlappt, was einer Bedienperson einen Zugang zu dem Bedienabschnitt (108) erlaubt.
- 23.** Abgabevorrichtung (3) nach einem der Ansprüche 20 bis 22, wobei die starre Einrichtung (58) einen Ring (122) umfasst, der starr mit dem zentralen Körper (110) verbunden ist, um mit dem zweiten Abschnitt (80) des Ausstoßrohrs (76) zu koppeln.
- 24.** Abgabevorrichtung (3) nach Anspruch 23, wobei der Ring (122) an dem Ende entgegengesetzt bzw. gegenüberliegend des Fixierabschnitts (114) eine Zylinderlänge (126) umfasst, die eine Spitze (128) mit einem Loch (130) aufweist, das im Wesentlichen koaxial mit bzw. zu der Achse (Y) ist, so dass das Loch (130) in einer zusammengesetzten Konfiguration der starren Einrichtung (58) auf der elastischen Membran (52) im Wesentlichen mit der Ausstoßöffnung (106) übereinstimmt bzw. -fällt.
- 25.** Abgabevorrichtung (3) nach Anspruch 24, wobei die Spitze (128), die eine kreisförmige Ringform aufweist, einen Ausschnitt für den zweiten Abschnitt (80) des Ausstoßrohrs (76) zu der Achse (Y) hin und in einer Richtung entfernt von dem Kappenabschnitt (64) bildet.
- 26.** Abgabevorrichtung (3) nach Anspruch 24 oder 25, wobei die Zylinderlänge (126) angepasst ist, den zweiten Abschnitt (80) des Ausstoßrohrs (76) gemäß einer forcierten Kopplung wenigstens teilweise aufzunehmen, um die Verschiebung bzw. das Gleiten des Ausstoßrohrs (76) zu einer Ebene senkrecht zu der Achse (Y) einzugrenzen.
- 27.** Abgabevorrichtung (3) nach einem der Ansprüche 23 bis 26, wobei eine Kappe (136) dem Ring (122) zugeordnet ist und angepasst ist, das Loch (130) der Spitze (128) zu schließen.
- 28.** Abgabevorrichtung (3) nach einem der Ansprüche 20 bis 27, wobei die starre Einrichtung (58) das Ausstoßrohr (76) umfasst.
- 29.** Abgabevorrichtung (3) nach Anspruch 28, wobei die starre Einrichtung (58) integral bzw. einstückig mit dem zweiten Abschnitt (80) des Ausstoßrohrs (76) verbunden ist.

30. Abgabevorrichtung (3) nach Anspruch 28 oder 29, wobei die starre Einrichtung (58) und der zweite Abschnitt (80) des Ausstoßrohrs (76) als ein einzelnes Stück gebildet sind.
31. Abgabevorrichtung (3) nach einem der Ansprüche 28 bis 30, wobei die elastische Membran (52) ein Gehäuse (138) umfasst, dem das Ausstoßrohr (76) zugeordnet ist.
32. Abgabevorrichtung (3) nach einem der Ansprüche 28 bis 31, wobei das Ausstoßrohr (76) freitragend relativ zu der starren Einrichtung (58) ist.
33. Abgabevorrichtung (3) nach Anspruch 32, wobei der zweite Abschnitt (80) des Ausstoßrohrs (76) starr mit der Zylinderlänge (126) verbunden ist und der erste Abschnitt (78) in die elastische Membran (52) penetriert, um freitragend relativ zu dem zweiten Abschnitt (80) zu sein.
34. Abgabevorrichtung (3) nach einem der Ansprüche 28 bis 33, wobei die starre Einrichtung (58) und die elastische Membran (52) en bloc mittels Doppelguß geformt bzw. gegossen sind.
35. Abgabevorrichtung (3) nach einem der Ansprüche 23 bis 34, wobei der Ring (122) eine Versteifungswand (140) umfasst, die an den Scheitelpunkt (100) des Kappenabschnitts (64) anschlägt bzw. anliegt, um die Verformung des Kappenabschnitts (64) entlang der Längsachse (X) einzuschränken.
36. Abgabevorrichtung (3) nach Anspruch 35, wobei die Versteifungswand (140) zwischen den Achsen (X) und (Y) angeordnet ist.
37. Abgabevorrichtung (3) nach einem der vorhergehenden Ansprüche, wobei die Achse (Y) des Ausstoßrohrs (76) in der Formbeibehaltungskonfiguration der elastischen Membran (52) mit der Achse (Y) des Ausstoßrohrs (76) in der verformten Konfiguration der elastischen Membran (52) übereinstimmt bzw. -fällt.

Revendications

1. Dispositif de distribution (3), adapté pour distribuer une pâte du type à plusieurs composants comprenant au moins deux composants (5,6), ledit dispositif comprenant un réservoir rigide (10) pour contenir au moins l'un desdits composants (5,6), un tuyau d'éjection (76), en communication fluide avec ledit réservoir (10), pour délivrer ladite pâte, un diaphragme élastique (52), qui est associé audit réservoir (10), ledit diaphragme élastique (52) com-

prenant une partie d'exploitation déformable (108) devant être pressée par un opérateur afin de passer d'une configuration retenant sa forme à une configuration déformée, de manière à pomper ladite pâte à travers ledit tuyau d'éjection (76), un moyen de fixation (51) pour ledit tuyau d'éjection (76), pour fixer le tuyau d'éjection de sorte que le tuyau d'éjection (76) dans la configuration retenant sa forme du diaphragme élastique (52) soit essentiellement parallèle au tuyau d'éjection (76) dans la configuration déformée du diaphragme élastique (52),
caractérisé en ce que ledit moyen de fixation (51) comprend un gabarit rigide (58) ayant au moins en partie une contre-forme par rapport audit diaphragme élastique (52), de manière à limiter la déformation du diaphragme élastique (52) tout en passant de la configuration retenant sa forme à la configuration déformée.

2. Dispositif de distribution (3) selon la revendication 1, dans lequel ledit diaphragme élastique (52) comprend une partie de capot (64), adaptée pour être ajustée sur une partie de coupleur (42) du réservoir (10), ladite partie de capot (64) étant essentiellement creuse, de manière à définir un volume secondaire (66) pour accueillir au moins un composant (5, 6) de la pâte multi-moule (4).
3. Dispositif de distribution (3) selon la revendication 2, dans lequel ledit tuyau d'éjection (76) passe à travers ladite partie de capot (64).
4. Dispositif de distribution (3) selon la revendication 2 ou 3, dans lequel ladite partie de capot (64) comprend une nervure circulaire (70), adaptée pour s'accoupler avec une encoche (45) de ladite partie de coupleur (42) du réservoir (10), de manière à permettre à la partie de capot (64) d'être fixée sur le réservoir (10).
5. Dispositif de distribution (3) selon l'une quelconque des revendications précédentes, dans lequel ledit tuyau d'éjection (76) a une forme essentiellement cylindrique autour d'un axe (Y) qui est essentiellement parallèle à un axe longitudinal du réservoir (10).
6. Dispositif de distribution (3) selon l'une quelconque des revendications 2 à 5, dans lequel ledit tuyau d'éjection (76) comprend une première partie (78) se projetant depuis la partie de capot (64) vers un bord inférieur (68) de la partie de capot (64) et une deuxième partie (80) se projetant depuis la partie de capot (64) sur le côté opposé par rapport à la première partie (78).
7. Dispositif de distribution (3) selon la revendication 6, dans lequel ladite première partie (78) du tuyau

- d'éjection (76) est dotée à l'extrémité d'une ouverture d'entrée (82) pour transporter la pâte dans le tuyau d'éjection (76), et ladite deuxième partie (80) est dotée d'une ouverture d'éjection (106) pour délivrer ladite pâte.
8. Dispositif de distribution (3) selon la revendication 6 ou 7, dans lequel lesdites première et deuxième parties (78, 80) sont formées comme une seule pièce.
9. Dispositif de distribution (3) selon l'une quelconque des revendications 6 à 8, dans lequel lesdites première et deuxième parties (78, 80) sont cylindriques et coaxiales par rapport audit axe (Y).
10. Dispositif de distribution (3) selon l'une quelconque des revendications 7 à 9, dans lequel ladite ouverture d'entrée (82) est coaxiale avec ledit axe (Y) et séparée dudit axe (X) du réservoir (10).
11. Dispositif de distribution (3) selon l'une quelconque des revendications 7 à 10, dans lequel ladite ouverture d'entrée (82) et ladite ouverture d'éjection (106) sont coaxiales.
12. Dispositif de distribution (3) selon l'une quelconque des revendications 6 à 11, dans lequel ladite première partie (78) du tuyau d'éjection (76) est essentiellement un cône tronqué ayant un diamètre qui augmente dans une direction éloignée de ladite deuxième partie (80).
13. Dispositif de distribution (3) selon la revendication 12, dans lequel ladite ouverture d'entrée (82) est symétrique autour d'un axe (W) qui est séparé dudit axe (Y) de la deuxième partie (80).
14. Dispositif de distribution (3) selon l'une quelconque des revendications 7 à 13, dans lequel ladite ouverture d'entrée (82) est traversée par ledit axe (Y) de la deuxième partie (80) du tuyau d'éjection (76).
15. Dispositif de distribution (3) selon l'une quelconque des revendications 6 à 14, dans lequel au niveau d'une paroi latérale (88) de la deuxième partie (80) on prévoit au moins un trou (94) passant à travers ladite paroi latérale (88), afin de permettre audit composant mineur (6) de s'écouler dans le tuyau d'éjection (76).
16. Dispositif de distribution (3) selon l'une quelconque des revendications 2 à 15, dans lequel au moins un composant mineur (6) est chargé dans la partie de capot (64) de manière à remplir une partie du volume secondaire (66) incluse entre un sommet (100) de la partie de capot (64) opposé au bord inférieur (68) par rapport à l'axe (X) et l'ouverture d'entrée (82) du tuyau d'éjection (76).
17. Dispositif de distribution (3) selon l'une quelconque des revendications 2 à 16, dans lequel ladite partie de capot (64) comprend une partie d'exploitation (108), distante du tuyau d'éjection (76), devant être pressée par le doigt d'un utilisateur afin de permettre à la partie de capot (64) d'être déformée.
18. Dispositif de distribution (3) selon la revendication 17, dans lequel ladite partie d'exploitation (108) comprend un moyen de saisie.
19. Dispositif de distribution (3) selon l'une quelconque des revendications précédentes, dans lequel ledit diaphragme élastique (52) et ledit tuyau d'éjection (76) sont formés comme une seule pièce.
20. Dispositif de distribution (3) selon l'une quelconque des revendications 2 à 19, dans lequel ledit gabarit rigide (58) comprend un corps central (110) étant au moins en partie en contre-forme par rapport à ladite partie de capot (64) du diaphragme élastique (52).
21. Dispositif de distribution (3) selon la revendication 20, dans lequel le corps central (110) comprend une partie de fixation (114) pour fixer le gabarit rigide (58) au réservoir (10), de manière à fixer un bord inférieur (68) du diaphragme élastique (52) en contact avec le réservoir (10).
22. Dispositif de distribution (3) selon la revendication 20 ou 21, dans lequel ledit corps central (110) comprend une fenêtre (118) de sorte que dans une configuration assemblée du gabarit rigide (58) sur le diaphragme élastique (52), ladite fenêtre (118) chevauche partiellement ladite partie d'exploitation (108) du capot (64), permettant à un utilisateur d'avoir accès à la partie d'exploitation (108).
23. Dispositif de distribution (3) selon l'une quelconque des revendications 20 à 22, dans lequel ledit gabarit rigide (58) comprend un anneau (122), étant relié de manière rigide au corps central (110) pour s'accoupler avec ladite deuxième partie (80) du tuyau d'éjection (76).
24. Dispositif de distribution (3) selon la revendication 23, dans lequel ledit anneau (122) à l'extrémité opposée à la partie de fixation (114) comprend une longueur cylindrique (126) ayant une pointe (128) avec un trou (130) qui est essentiellement coaxial avec ledit axe (Y), de sorte que dans une configuration assemblée du gabarit rigide (58) sur le diaphragme élastique (52), ledit trou (130) coïncide essentiellement avec l'ouverture d'éjection (106).
25. Dispositif de distribution (3) selon la revendication 24, dans lequel ladite pointe (128), ayant une forme d'anneau circulaire forme une coupure pour la

deuxième partie (80) du tuyau d'éjection (76) vers l'axe (Y) et dans une direction distante de la partie de capot (64).

- 26.** Dispositif de distribution (3) selon la revendication 24 ou 25, dans lequel ladite longueur cylindrique (126) est adaptée pour accueillir, au moins partiellement, la deuxième partie (80) du tuyau d'éjection (76) selon un accouplement forcé, de manière à contraindre le déplacement du tuyau d'éjection (76) à un plan perpendiculaire à l'axe (Y). 5 10
- 27.** Dispositif de distribution (3) selon l'une quelconque des revendications 23 à 26, dans lequel un capot (136) est associé audit anneau (122) et il est adapté pour fermer le trou (130) de la pointe (128). 15
- 28.** Dispositif de distribution (3) selon l'une quelconque des revendications 20 à 27, dans lequel ledit gabarit rigide (58) comprend ledit tuyau d'éjection (76). 20
- 29.** Dispositif de distribution (3) selon la revendication 28, dans lequel ledit gabarit rigide (58) est relié intégralement à la deuxième partie (80) du tuyau d'éjection (76). 25
- 30.** Dispositif de distribution (3) selon la revendication 28 ou 29, dans lequel ledit gabarit rigide (58) et la deuxième partie (80) du tuyau d'éjection (76) sont formés comme une seule pièce. 30
- 31.** Dispositif de distribution (3) selon l'une quelconque des revendications 28 à 30, dans lequel ledit diaphragme élastique (52) comprend un logement (138) auquel ledit tuyau d'éjection (76) est associé. 35
- 32.** Dispositif de distribution (3) selon l'une quelconque des revendications 28 à 31, dans lequel ledit tuyau d'éjection (76) est en porte-à-faux par rapport audit gabarit rigide (58). 40
- 33.** Dispositif de distribution (3) selon la revendication 32, dans lequel la deuxième partie (80) du tuyau d'éjection (76) est reliée de manière rigide à la longueur cylindrique (126) et la première partie (78) pénètre dans le diaphragme élastique (52) de manière à être en porte-à-faux par rapport à la deuxième partie (80). 45
- 34.** Dispositif de distribution (3) selon l'une quelconque des revendications 28 à 33, dans lequel le gabarit rigide (58) et le diaphragme élastique (52) sont moulés en bloc par le biais d'un double moulage. 50
- 35.** Dispositif de distribution (3) selon l'une quelconque des revendications 23 à 34, dans lequel ledit anneau (122) comprend une paroi de renforcement (140) qui vient en butée sur le sommet (100) de la partie de

capot (64), de manière à contraindre la déformation de la partie de capot (64) le long de l'axe longitudinal (X).

- 36.** Dispositif de distribution (3) selon la revendication 35, dans lequel ladite paroi de renforcement (140) est située entre les axes (X) et (Y).
- 37.** Dispositif de distribution (3) selon l'une quelconque des revendications précédentes, dans lequel l'axe (Y) du tuyau d'éjection (76) dans la configuration retenant sa forme du diaphragme élastique (52) coïncide avec l'axe (Y) du tuyau d'éjection (76) dans la configuration déformée du diaphragme élastique (52).

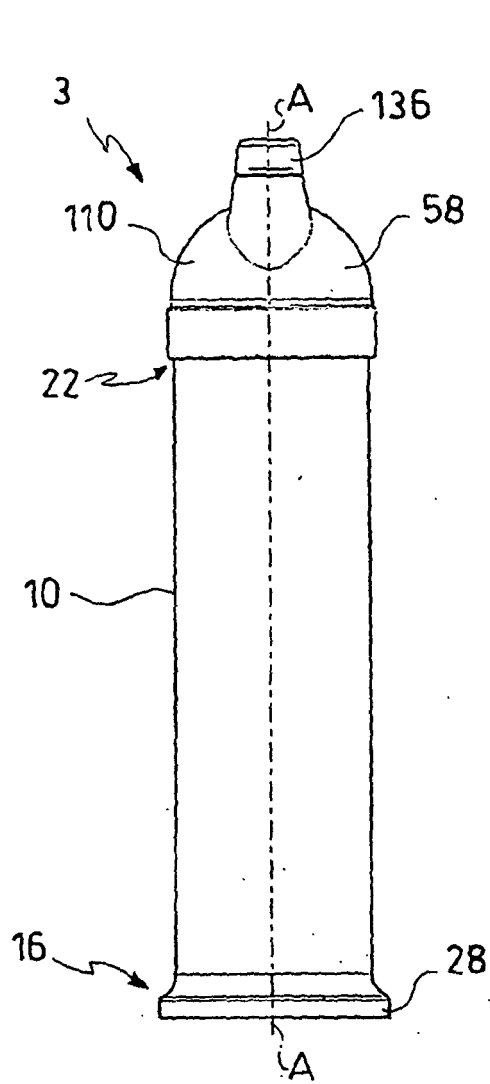


FIG. 2

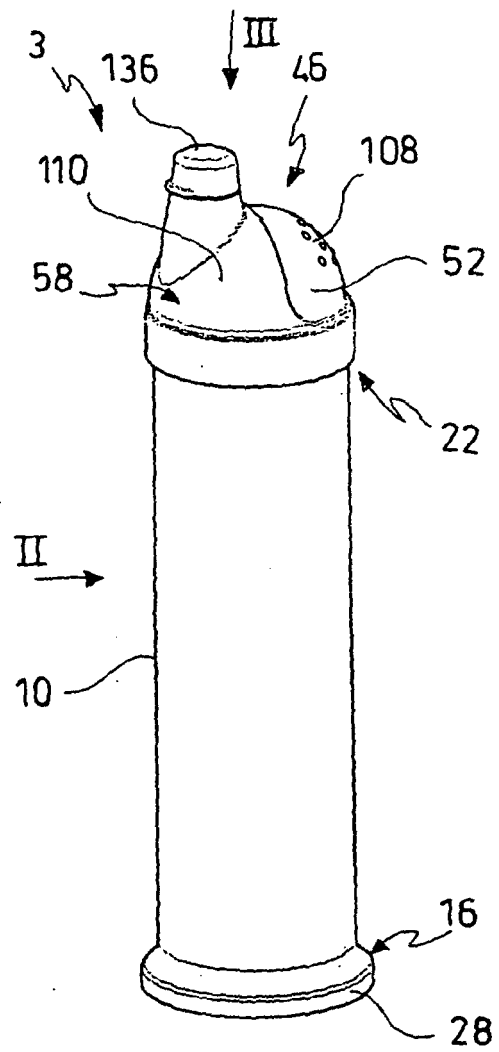


FIG. 1

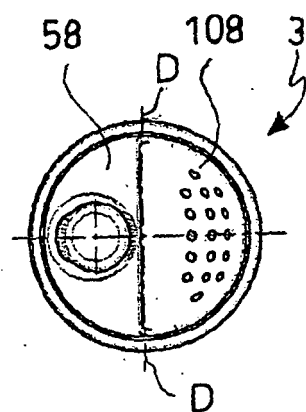


FIG. 3

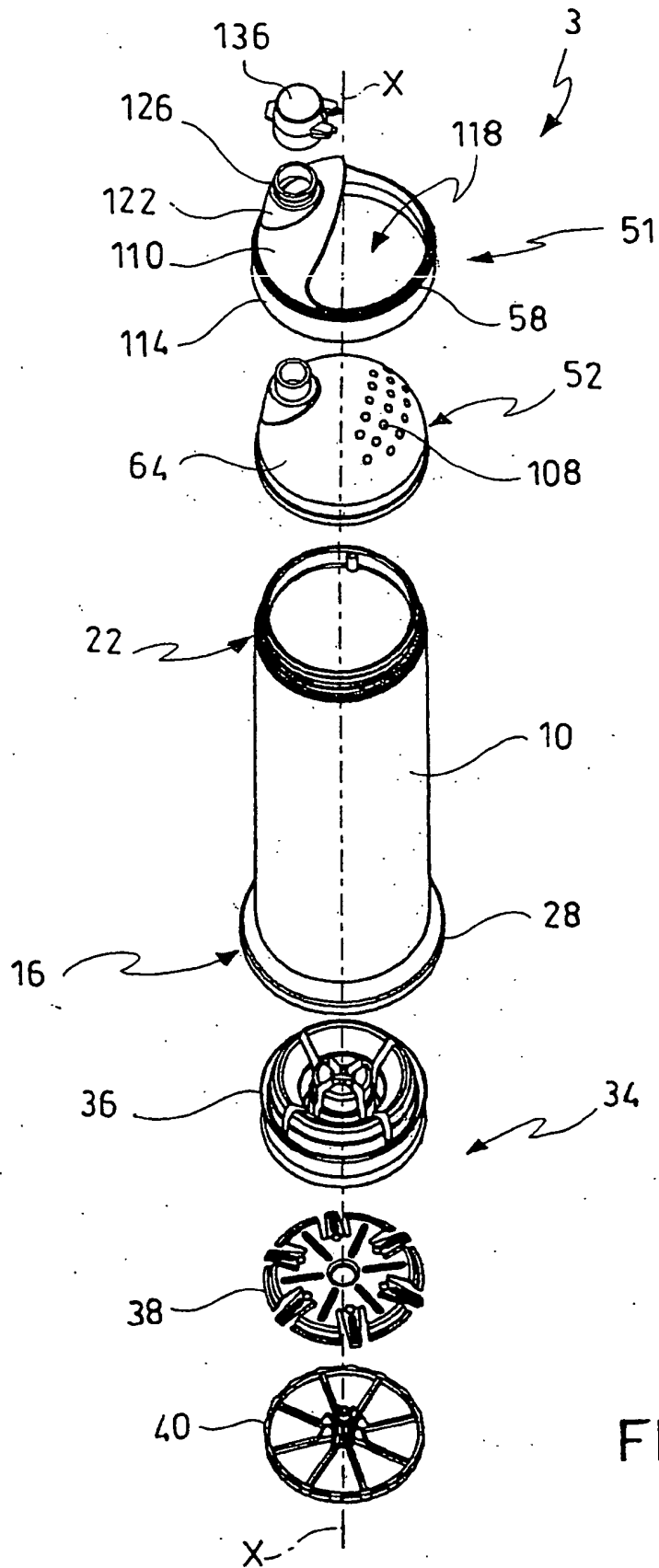


FIG. 4

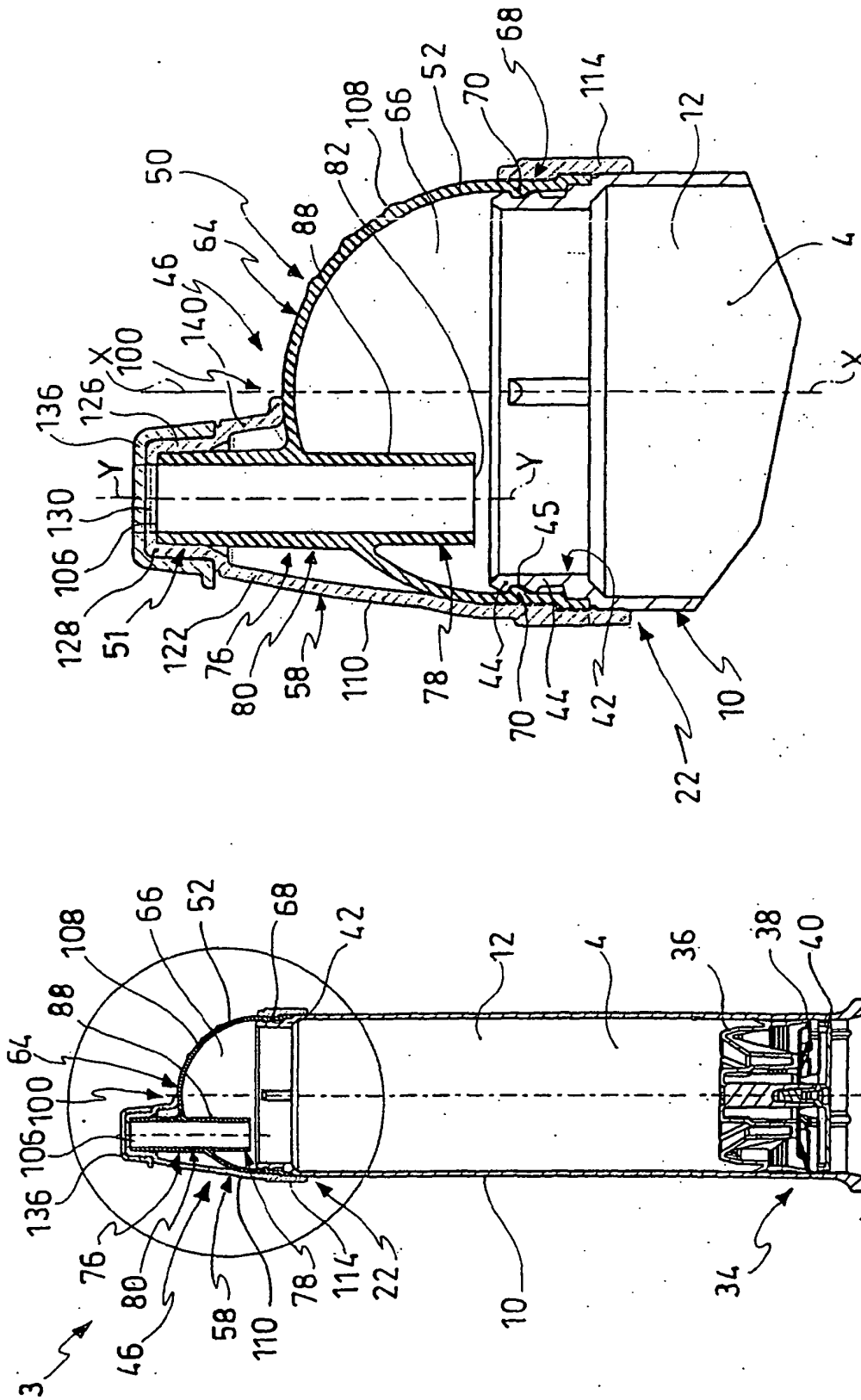
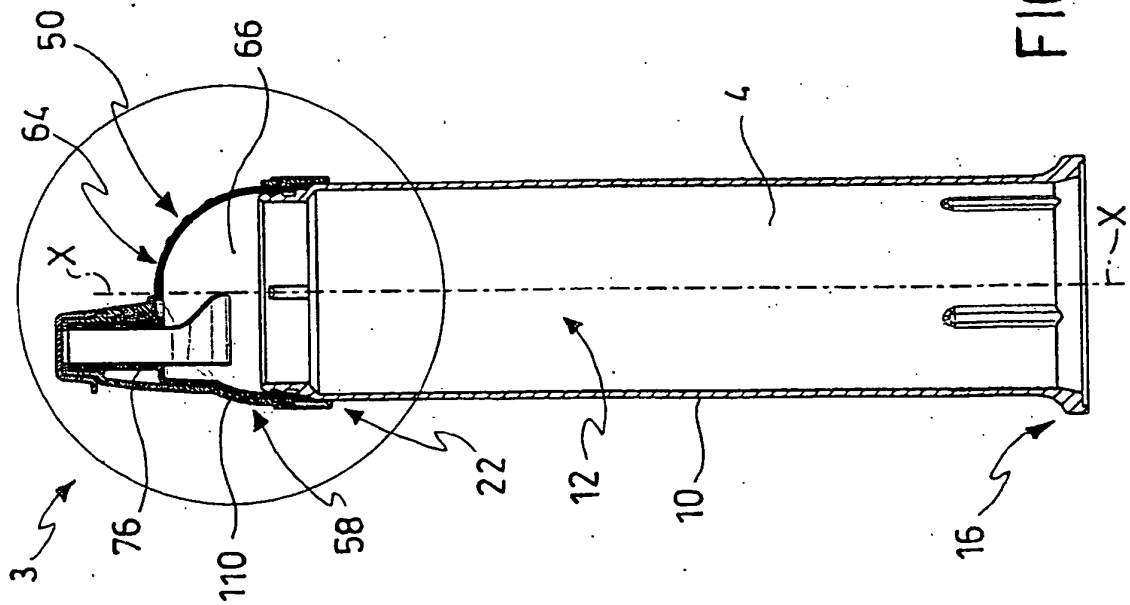
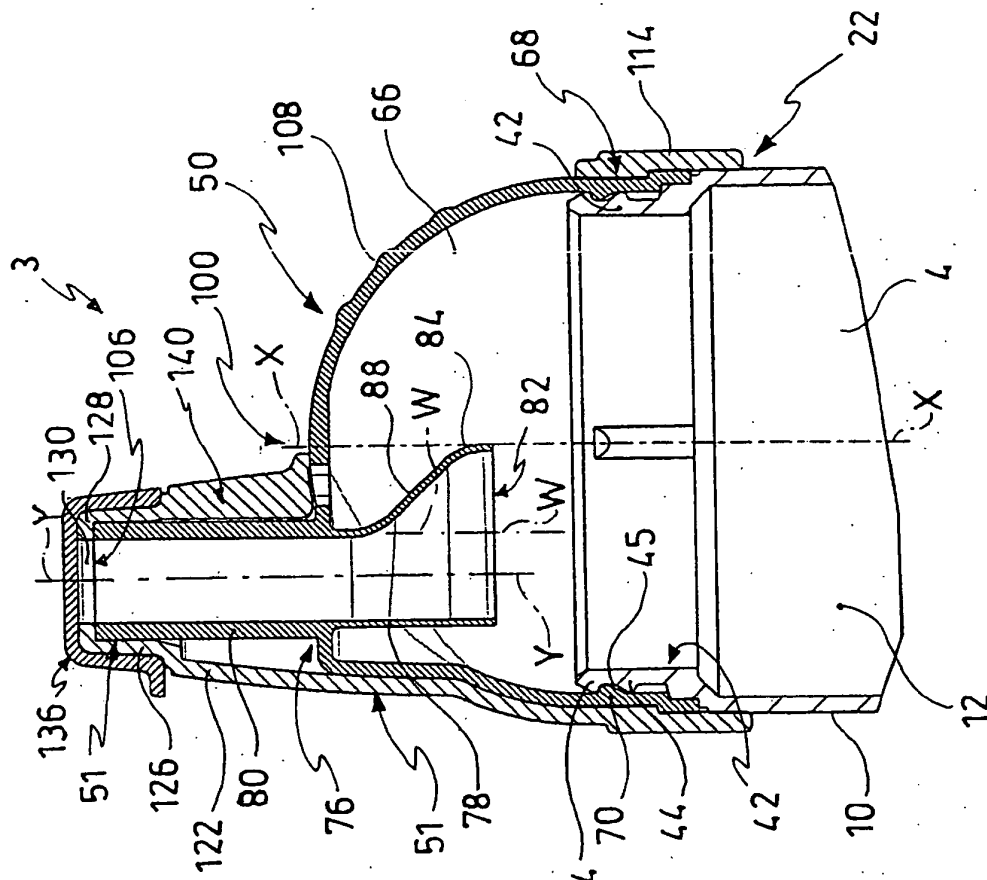
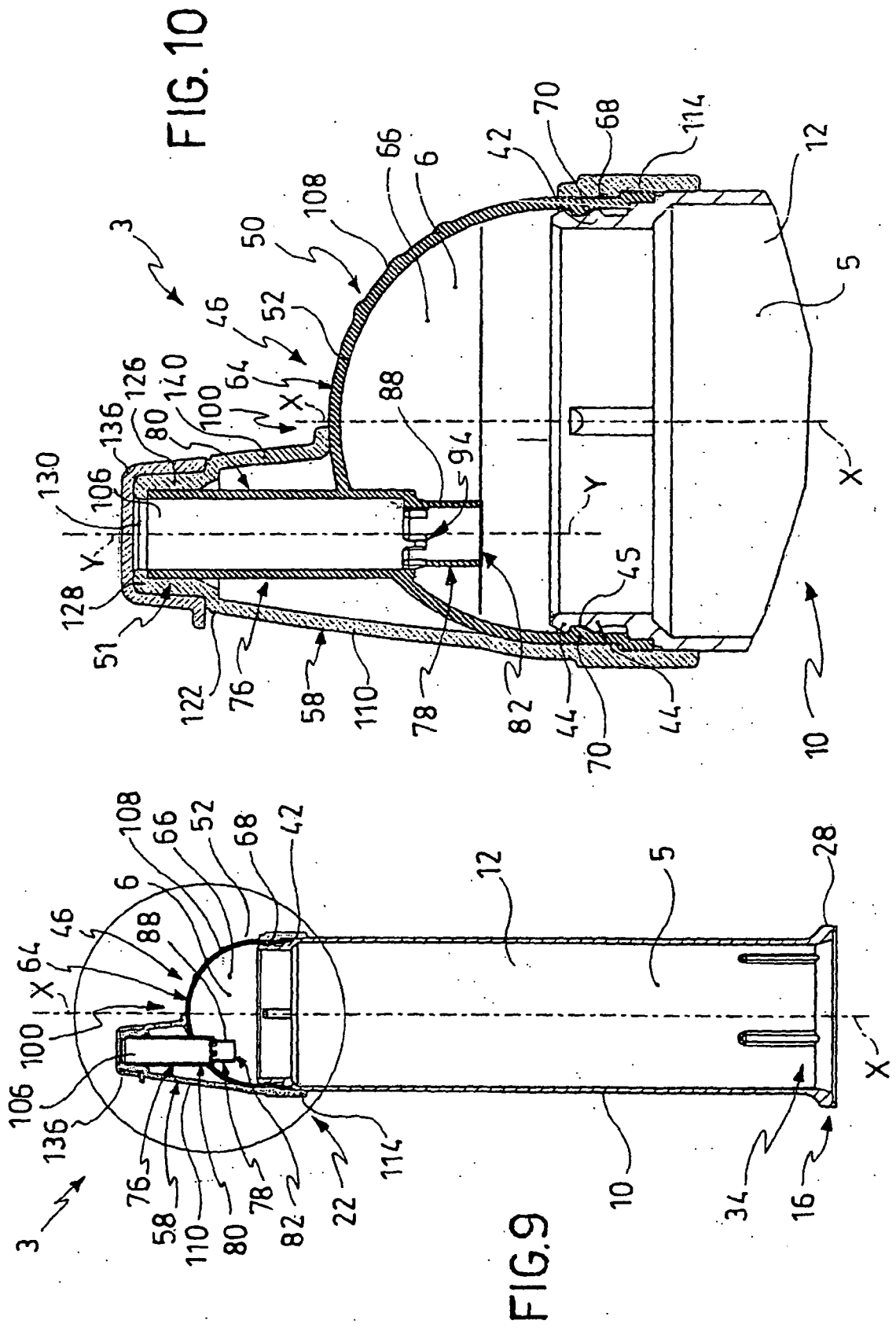
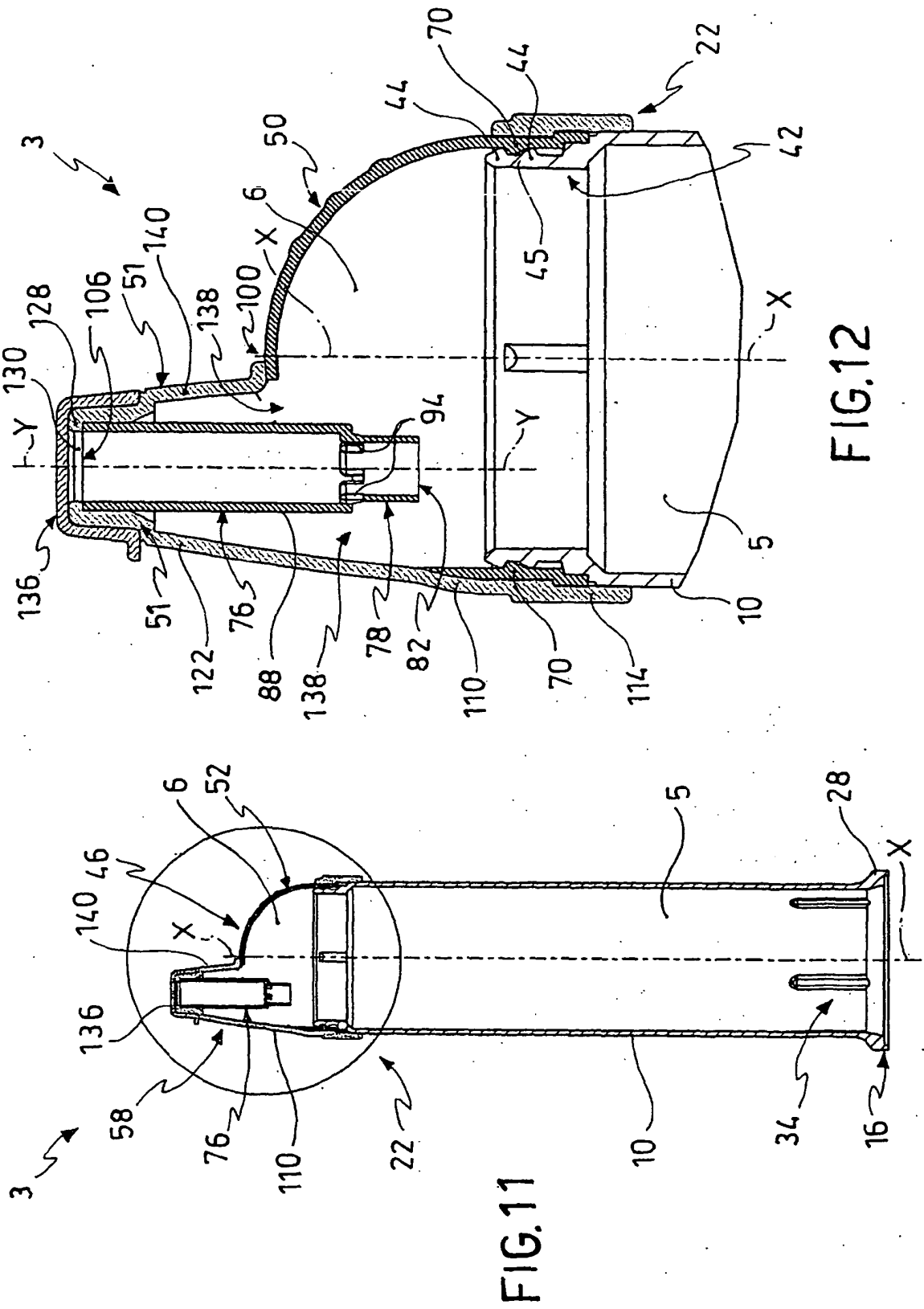


FIG. 6

FIG. 5







REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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