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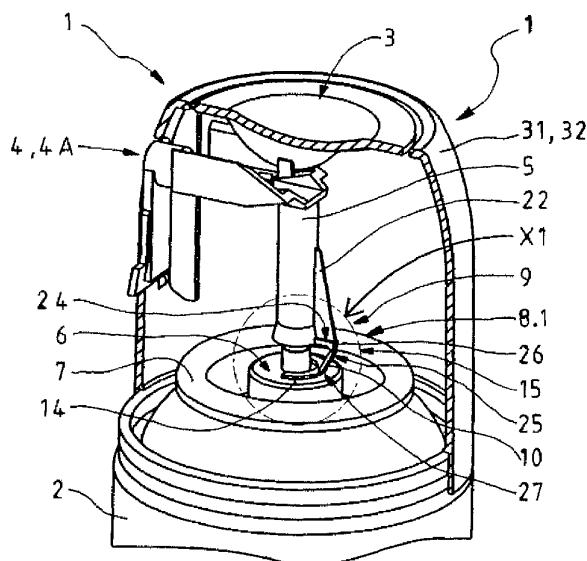
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(54) Title: CAP WITH ACTUATION PROTECTION FOR A PRESSURIZED CONTAINER



(57) Abstract: A cap (1) for a pressurized container (2) with an actuation button (3) arranged at the top, which is provided for discharging a metered spray or foam quantity of a product from a nozzle (4) or opening (4A) via a channel (5), wherein the channel (5) communicates with a short-stroke valve (6) of a valve disk (7) for the pressurized container (2) and the actuation button (3). The actuation button (3) communicates with an actuation protection device (8.1-8.4) for first-time activation. The cap (1) with the actuation button (3) has the shape of a protective cap (32) externally and exhibits an essentially closed surface. As an actuation protection device (8.1-8.4), the channel (5) is connected to a first reinforcement rib (22) in the lower, lateral area (9) in the proximity of the valve (6); said reinforcement rib (22) is connected to a lever (26) on the bottom end (24), wherein the lever (26) is connected to a start (25) of a first rib (10) via a predetermined breaking zone (15). An end (27) of the first rib (10) is connected to a base part (14), which is supported on the valve disk (7), wherein, by overcoming a counterforce during first-time activation of the actuation button (3), the predetermined breaking zone (15) causes a predetermined break (16) due to manual force at the lever and thus enables activation of the valve (6).



PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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CAP WITH ACTUATION PROTECTION FOR A PRESSURIZED CONTAINER

The invention relates to a cap or a pressurized container with an actuation button arranged on top, which is provided for discharging a metered spray or foam quantity of a product from a nozzle or opening via a channel, wherein the channel communicates with a short-stroke valve of a valve disk in the pressurized container and the actuation button. The first time the actuation button is activated, it communicates with an actuation protection device.

Caps with an actuation protection device for first-time activation of an actuation button (first opening guarantee) for a pressurized container are known in the most varied of embodiments, for example from GB2108205A. This type of actuation protection is externally visible to the user due to the design. This results in additional limitations on the design of such types of caps.

Furthermore, caps with an actuation protection device for first-time activation of an actuation button (first opening guarantee) for a pressurized container are known from everyday use, with which the actuation button cannot be activated until a tab is torn off. This action, however, results in a separate or interfering part.

Correspondingly, the object of the invention is to obtain a generically equivalent cap that does not have the aforementioned disadvantages, or wherein the actuation protection device (first opening guarantee) is not externally visible to the user, and that is easy to handle. In addition, it should not present any limitations in the external design of such type of cap.

The object is achieved by the characterizing features of Claim 1 or Independent claim 8. Additional progressions of the invention as recited in Claim 1 result from the sub-claims.

Thus, it is now possible, despite an essentially closed surface of a cap, to arrange an actuation protection device as a first opening guarantee that is not externally visible to the user and is easy to handle.

5 The invention is described in detail below with reference to five exemplary embodiments.

 The following is shown:

 Figs. 1-4 show various views of a first exemplary embodiment;
 Figs. 5-8 show various views of a second exemplary embodiment;
10 Figs. 9-12 show various views of a third exemplary embodiment;
 Figs. 13-16 show various views of a fourth exemplary embodiment;
 Figs. 17-21 show various views of a fifth exemplary embodiment; and
 Fig. 22 shows a version according to Fig. 17.

15 Fig. 1 shows, in a first exemplary embodiment, a cap 1 for a pressurized container 2 with an actuation protection device 8.1, wherein the cap 1 has the shape of a protective cap 32 externally with an actuation button 3 arranged on top, which is not pressed, and an essentially closed surface. The actuation button 3 is provided for discharging a metered spray or foam quantity of a product from a nozzle 4 or opening 4A via a channel 5. The channel 5
20 communicates with a short-stroke valve 6 of a valve disk 7 in the pressurized container 2 and with the actuation button 3, wherein the actuation button 3 for first-time activation communicates with the actuation protection device 8.1 as a first opening guarantee.

 As an actuation protection device 8.1, the channel 5 is connected to a first
25 reinforcement rib 22 in the lower, lateral area 9 in the proximity of the valve 6; said reinforcement rib 22 is connected to a horizontally arranged lever 26, wherein the lever 26 is connected to a start 25 of a first rib 10 via a predetermined breaking zone 15. An end 27 of the first rib 10 is connected to a base part 14 at an angle to an axis of the valve 6; said base part 14 is supported on the valve disk 7. The actuation button 3 in this case is
30 protected by the actuation protection device 8.1. By overcoming a counterforce during first-time manual actuation of the actuation button 3, predetermined breaking zone 15

leads to a predetermined break 16 (Figs. 3 and 4) due to manual force at the lever 26 and thus enables activation of the valve 6. Preferably, the channel 5 is manufactured from plastic as a one-piece unit with the reinforcement rib 22, the lever 26, the first rib 10, and the base part 14.

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Fig. 2 shows a detailed enlargement (X1) according to Fig. 1, indicating in more detail the actuation protection device 8.1 and the base part 14, which is designed as a half-ring 19.

10

Fig. 3 shows the activated actuation button 3 pressed downwards axially, which has led to a predetermined break 16 in the predetermined breaking zone 15 and thus has enabled actuation of the valve 6. The actuation button 3 in this exemplary embodiment is connected to a housing 31 with a film hinge 30. Instead of the hinge 30, an elastic annular wall can be provided around the actuation button 3 according to Fig. 22; said wall is

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manufactured using a two-component injection molding process and enables a corresponding lift movement of the actuation button 3. In addition, this also tightly seals the actuation button 3 with the housing 31.

20

Fig. 4 shows a detailed enlargement (X2) according to Fig. 3 indicating particularly the rib 10 broken by the lever 26.

25

Figs. 5 to 8 show, in a second exemplary embodiment, a cap 1 with an actuation protection device 8.2, as shown in Figs. 1 to 4; however, in this case, the actuation protection device 8.2 also has an elastic band 17 that is connected to the lever 26 and the first rib 10. This ensures that, after a predetermined break 16, the first rib 10 remains connected to the base part 14 and with the lever 26 via the elastic band 17 (Figs. 7 and 8).

30

Fig. 6 shows a detailed enlargement (X3) according to Fig. 5 indicating particularly the elastic band 17.

Fig. 7 shows the cap 1 according to Fig. 5, but with the activated actuation button 3 pressed downwards axially.

Fig. 8 shows a detailed enlargement (X4) according to Fig. 7, indicating particularly the elastic connection function of the elastic band 17, whereby the first rib 10 along with the base part 14 cannot move uncontrollably as a single part.

Figs. 9 to 12 show, in a third exemplary embodiment, a cap 1 with an actuation protection device 8.3 as shown in Figs. 1 to 4; however, the device is additionally and diametrically connected to a second reinforcement rib 23 with a lever 26 and a second rib 11, wherein the base part 14 is designed as a complete ring 20. This diametrical arrangement results in an optimally centric application of force onto the actuation protection device 8.3.

Fig. 10 shows a detailed enlargement (X5) according to Fig. 9.

Fig. 11 shows the cap 1 according to Fig. 9, but with the activated actuation button 3 pressed downwards axially.

Fig. 12 shows a detailed enlargement (X6) according to Fig. 11 indicating the doubled predetermined break 16 in more detail.

Figs. 13 to 16 show, in a fourth exemplary embodiment, a cap 1 with an actuation protection device 8.4, as shown in Figs. 9 to 12, but with each additionally having an elastic band 17, each of which is connected to the lever 26 and the first rib 10 or the second rib 11. This ensures that, after a predetermined break 16, the first and second rib 10, 11 remain connected to the base part 14 (complete ring 20) and with the lever 26 via the elastic band 17 (Figs. 15 and 16).

Fig. 14 shows a detailed enlargement (X7) according to Fig. 13 indicating particularly the elastic bands 17, 17.

Fig. 15 shows the cap 1 according to Fig. 13, but with the activated actuation button 3 pressed downwards axially.

5 Fig. 16 shows a detailed enlargement (X8) according to Fig. 15, indicating particularly the elastic connection function of the elastic bands 17, 17, whereby the first and the second rib 10, 11 along with the base part 14 (complete ring 20) cannot move uncontrollably as a single part.

10 Figs. 17 to 21 show, in a fifth exemplary embodiment, a cap 1 for a pressurized container 2 with an actuation protection device 8.5, wherein the cap 1 has the external shape of a protective cap 32 with an actuation button 3 arranged on top and an essentially closed surface. The actuation button 3 is provided for discharging a metered spray or foam quantity of a product from a nozzle 4 or opening 4A via a channel 5. The channel 5
15 communicates with a short-stroke valve 6 of a valve disk 7 in the pressurized container 2 and with the actuation button 3, wherein the actuation button 3 for first-time activation communicates with the actuation protection device 8.5 as a first opening guarantee.

As an actuation protection device 8.5, the channel 5 is connected to at least a third
20 rib 12 in the lower, lateral area 9 in the proximity of the valve 6; said rib 12 is connected on an external end 28 to a hollow cylinder section 21 via a second predetermined breaking zone 29; the hollow cylinder section 21 is coaxially supported on the valve disk 7 as a base part 14. By overcoming a counterforce during first-time manual actuation of the actuation button 3, the second predetermined breaking zone 29 leads to a
25 predetermined break 16 due to manual force at the third rib 12 and thus enables activation of the valve 6. In addition to the third rib 12, this exemplary embodiment also contains a fourth rib 13, which can optionally be arranged diametrically as well.

Fig. 18 shows a detailed enlargement (X9) according to Fig. 17 indicating the
30 third and fourth rib 12, 13 in more detail.

Fig. 19 shows a cross-section of the detailed enlargement according to Fig. 18.

Fig. 20 shows the cap 1 with an activated actuation button 3 pressed downwards axially and with a predetermined break 16 for both ribs 12, 13.

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Fig. 21 shows a detailed enlargement (X10) according to Fig. 20 in a corresponding cross-section.

Fig. 22 shows a version according to Fig. 17 wherein the actuation button 3 is connected to the housing 31 by an elastic annular wall 33. This means that the cap 1 exhibits a closed surface and can still be pressed downwards axially to activate the valve 6. The dotted line 34 schematically shows the activated actuation button 3 pressed downwards axially, wherein the elastic annular wall 33 simultaneously forms a type of hinge.

15 **Reference list:**

	1	Cap
	2	Pressurized container
	3	Actuation button
	4	Nozzle
20	4A	Opening
	5	Channel
	6	Valve
	7	Valve disk
	8.1 - 8.5	Actuation protection device
25	9	Bottom, lateral area
	10	First rib
	11	Second rib
	12	Third rib
	13	Fourth rib
30	14	Base part
	15	First predetermined breaking zone

	16	Predetermined break
	17	Elastic band
	18	Break part protection device
	19	Half-ring
5	20	Complete ring
	21	Hollow cylinder section
	22	First reinforcement rib
	23	Second reinforcement rib
	24	End/first reinforcement rib 22
10	25	Start/first rib 10
	26	Lever
	27	End/first rib 10
	28	External end/third and fourth rib 12, 13
	29	Second predetermined breaking zone
15	30	Film hinge
	31	Housing
	32	Protective cap
	33	Elastic annular wall
	34	Dotted line

20

The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as “40 mm” is intended

25 to mean “about 40 mm”.

CLAIMS

What is claimed is:

1. A cap (1) for a pressurized container (2) with an actuation button (3) arranged at the top, which is provided for discharging a metered spray or foam quantity of a product from a nozzle (4) or opening (4A) via a channel (5), wherein the channel (5) communicates with a short-stroke valve (6) of a valve disk (7) for the pressurized container (2) and the actuation button (3), and wherein the actuation button (3) communicates with an actuation protection device (8.1-8.4) for first-time activation, **characterized in that** the cap (1) has the shape of a protective cap (32) externally with the actuation button (3) and essentially exhibits a closed surface, and that, as an actuation protection device (8.1-8.4), the channel (5) is connected to at least one first reinforcement rib (22) in the lower, lateral area (9) in the vicinity of the valve (6), which is connected with a lever (26) on a lower end (24), and wherein the lever (26) is connected to a start (25) of a first rib (10) via a predetermined breaking zone (15), and wherein an end (27) of the first rib (10) is connected to a base part (14), which is supported on the valve disk (7), wherein, by overcoming a counterforce during first-time activation of the actuation button (3), the predetermined breaking zone (15) leads to a predetermined break (16) due to manual force at the lever (26) and thus enables activation of the valve (6).
2. The cap according to Claim 1, wherein the channel (5) with the reinforcement rib (22), the lever (26), the first rib (10), and the base part (14) is manufactured from plastic as a single unit.
3. The cap according to Claim 1, wherein a first and a second rib (10, 11) are provided.
4. The cap according to Claim 1, wherein a first and a second rib (10, 11) are arranged opposite one another.

5. The cap according to Claim 1, wherein both the first and the second rib (10, 11) are connected with an elastic band (17) at the channel (5) and which is used as a break part protection device (18).
6. The cap according to Claim 1, wherein the base part (14) consists of a half-ring (19) and is arranged coaxially with respect to the valve (6).
7. The cap according to Claim 1, wherein the base part (14) consists of a complete ring (20) and is arranged coaxially with respect to the valve (6).
8. A cap (1) for a pressurized container (2) with an actuation button (3) arranged at the top, which is provided for discharging a metered spray or foam quantity of a product from a nozzle (4) or opening (4A) via a channel (5), wherein the channel (5) communicates with a short-stroke valve (6) of a valve disk (7) for the pressurized container (2) and the actuation button (3), and wherein the actuation button (3) communicates with an actuation protection device (8.5) for first-time activation, **characterized in that** the cap (1) has the shape of a protective cap (32) externally with the actuation button (3) and essentially exhibits a closed surface, and that, as an actuation protection device (8.5), the channel (5) is connected to at least one third reinforcement rib (12) in the lower, lateral area (9) in the vicinity of the valve (6), and the rib (12) is connected to a hollow cylinder section (21) on an external end (28) via a second preterminded breaking zone (29), and the hollow cylinder section (21) is supported coaxially on the valve disk (7) as a base part (14), wherein, by overcoming a counterforce during first-time activation of the actuation button (3), the second predetermined breaking zone (15) leads to a predetermined break (16) at the third rib (12) due to manual force and thus enables activation of the valve (6).

9. The cap according to Claim 8, wherein the channel (5) with the third rib (12) and/or the fourth rib (13) and the hollow cylinder section (21) is manufactured from plastic as a single part.
10. The cap according to Claim 1 or 8, wherein the actuation button (3) is connected to the housing (31) by an elastic annular wall (33).

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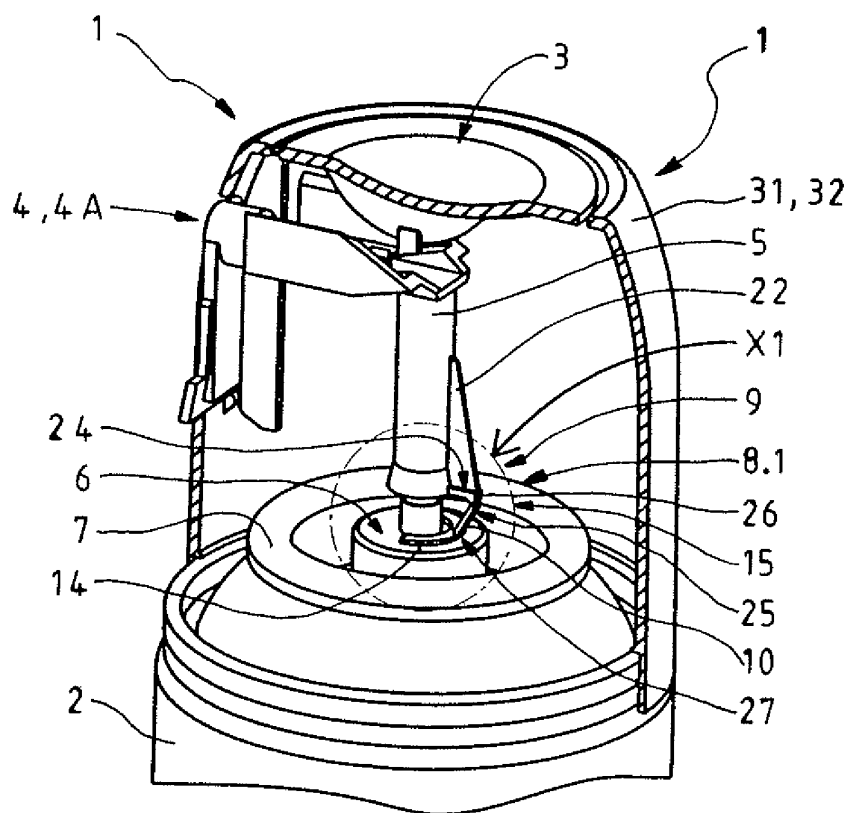


FIG. 1

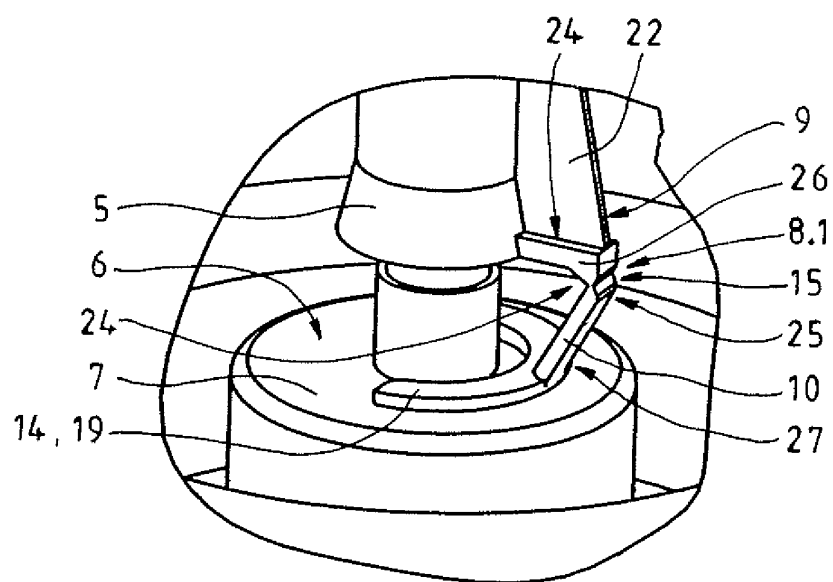


FIG. 2

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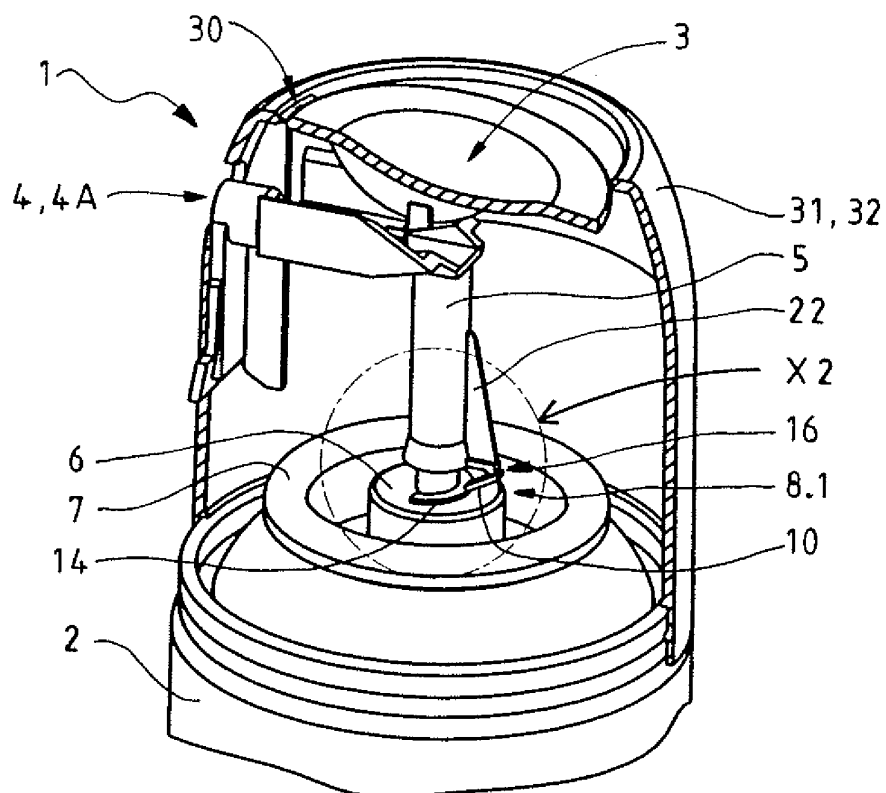


FIG. 3

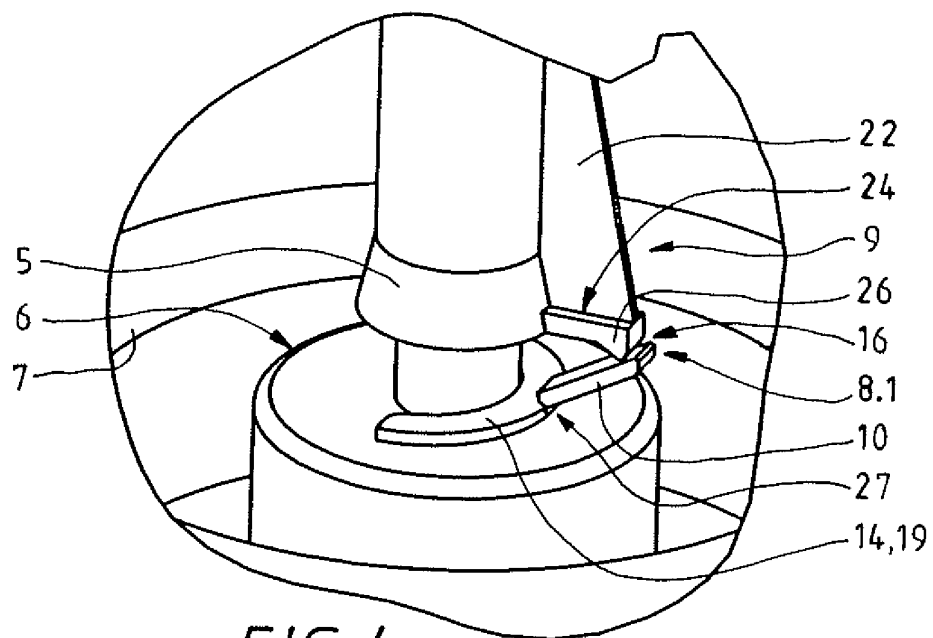


FIG. 4

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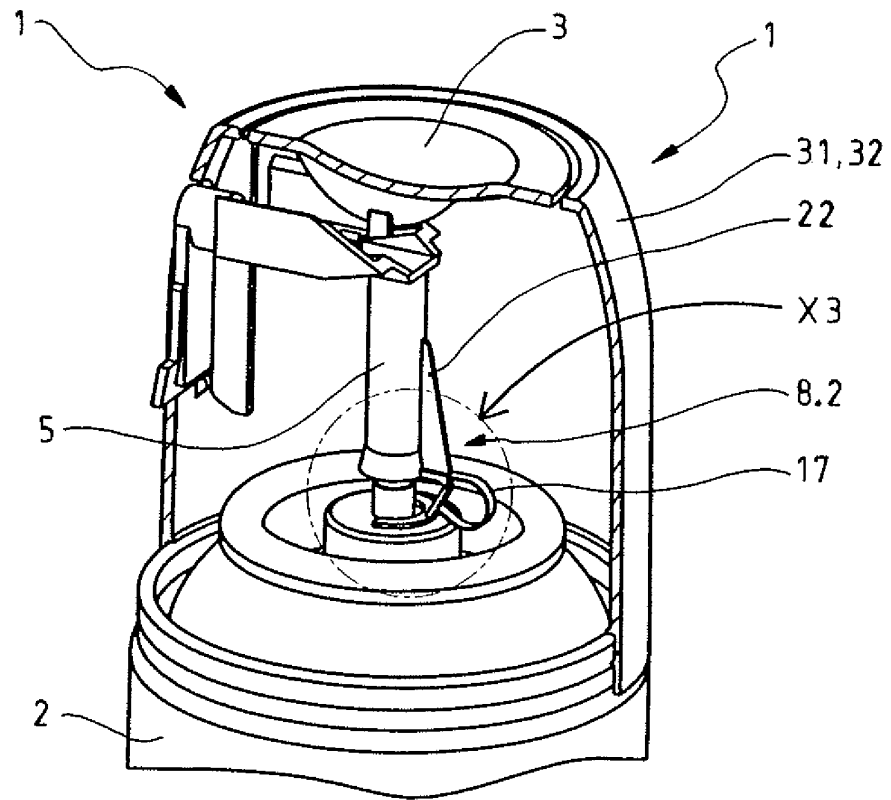


FIG. 5

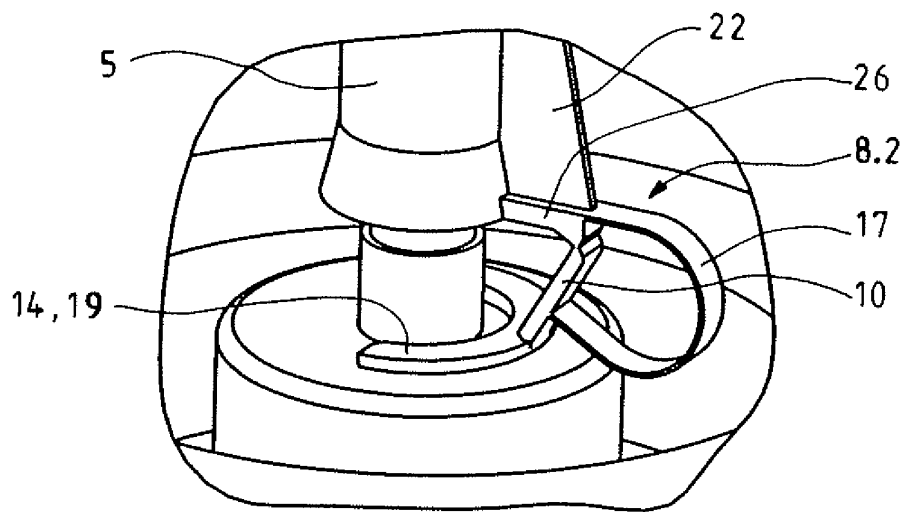
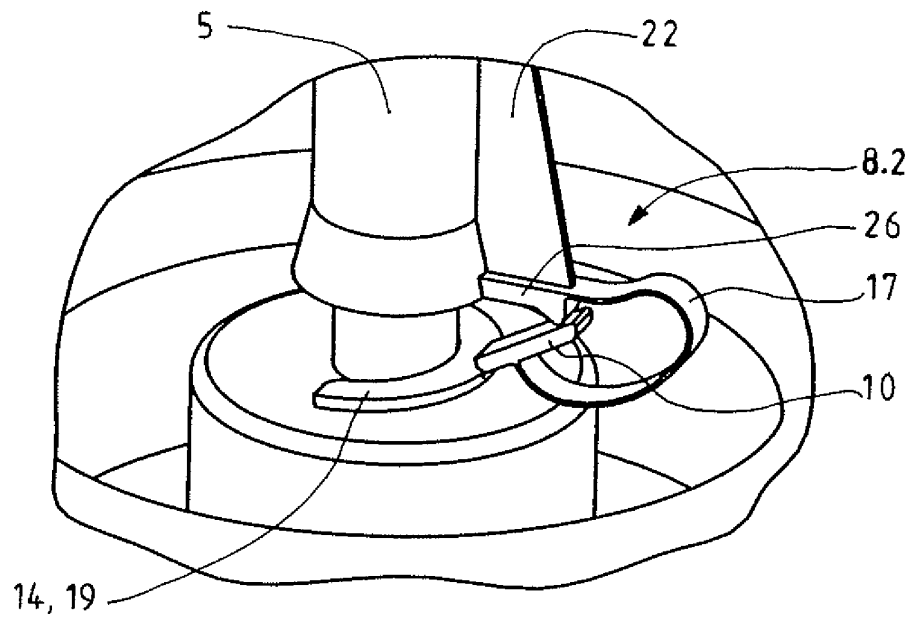
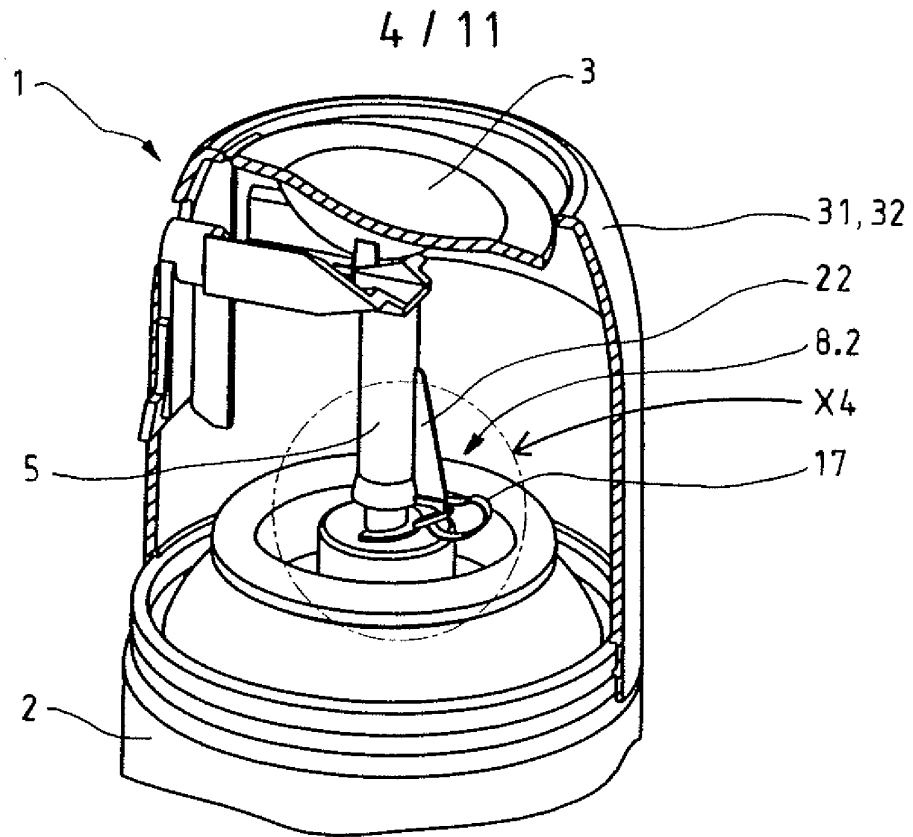


FIG. 6



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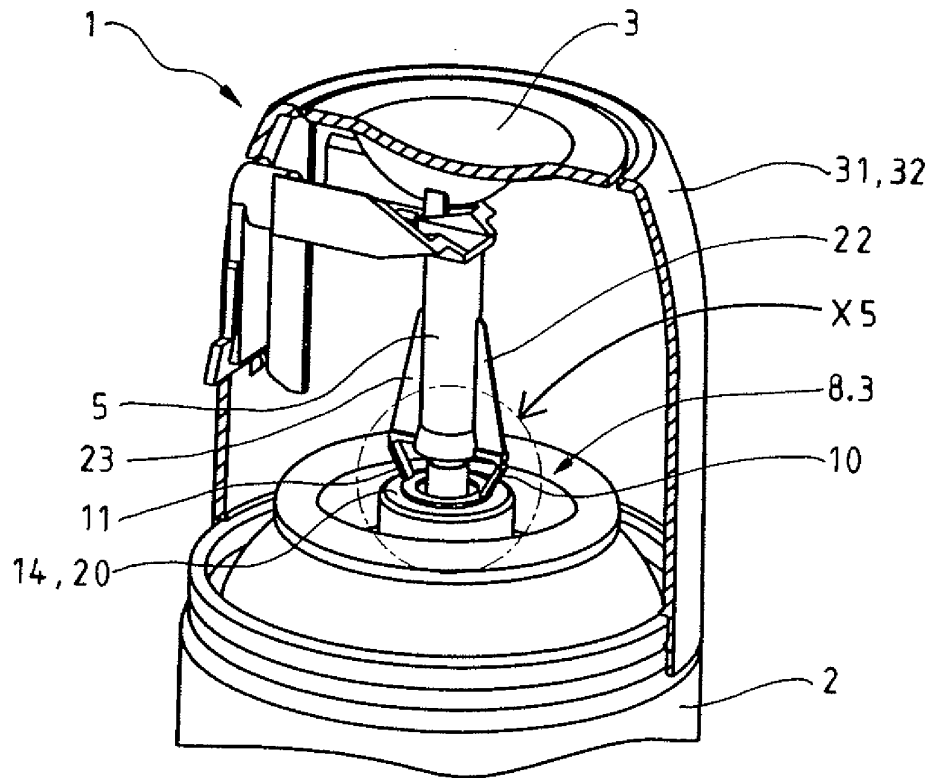


FIG. 9

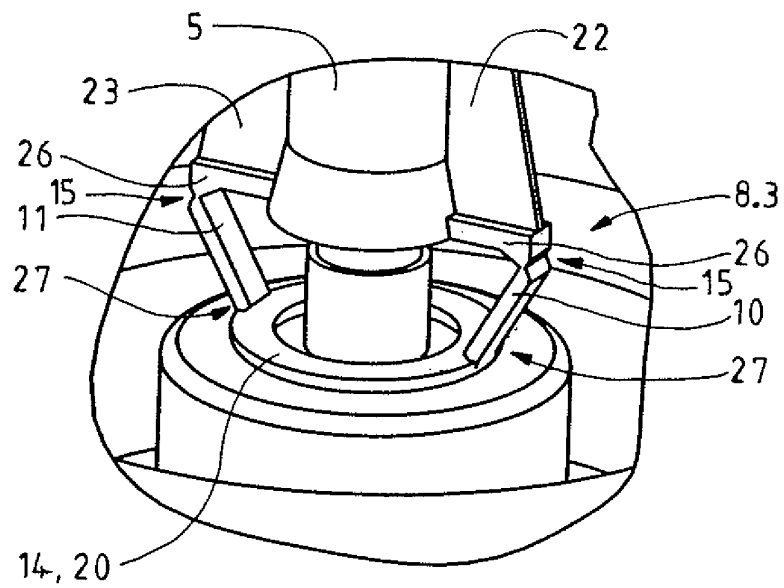


FIG. 10

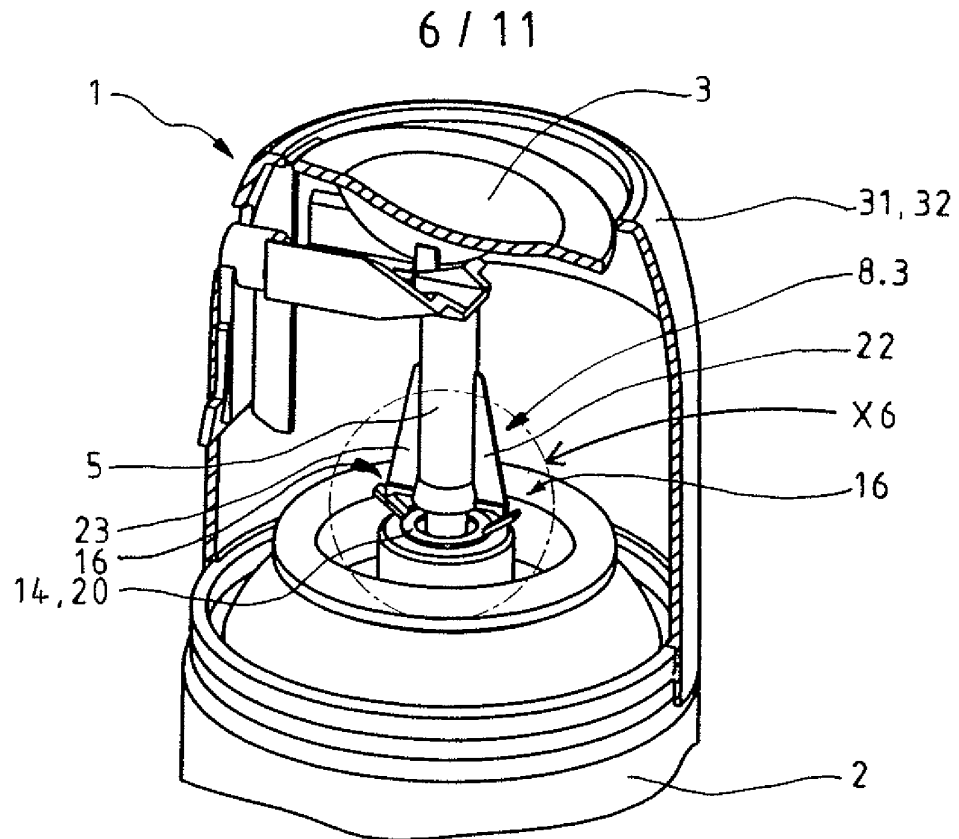


FIG. 11

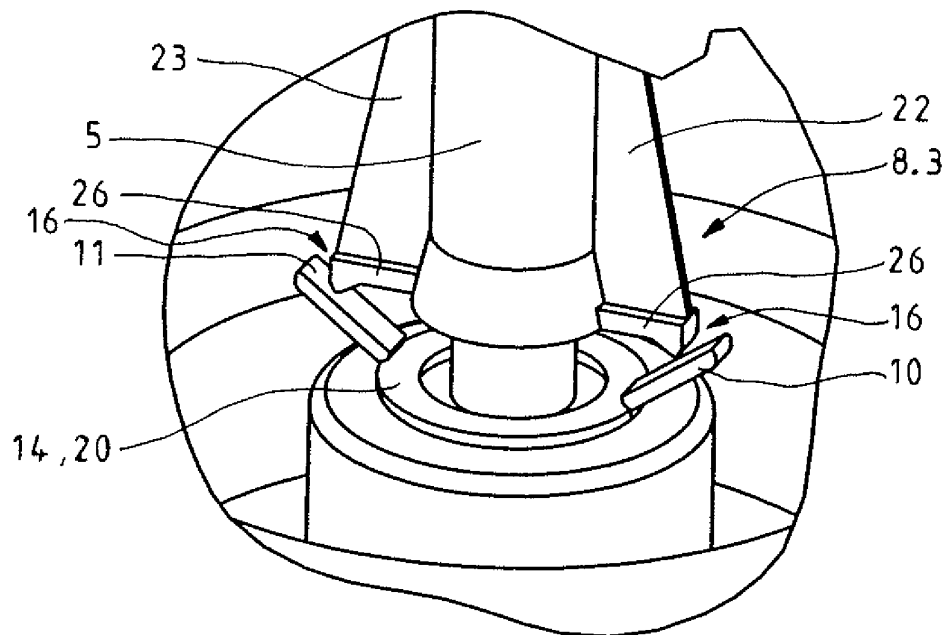


FIG. 12

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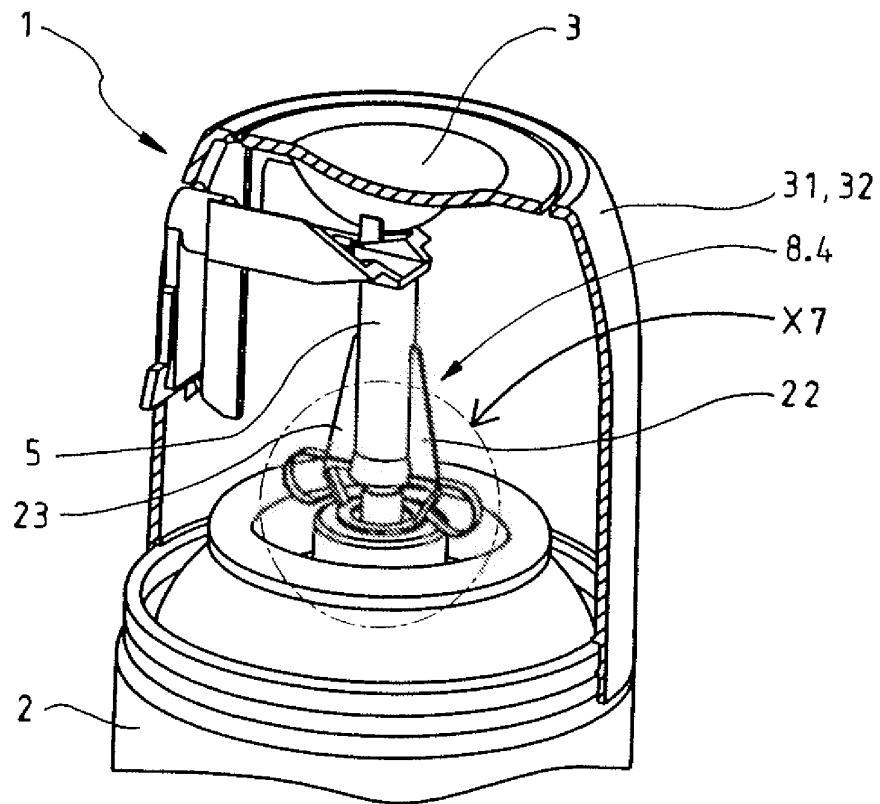


FIG. 13

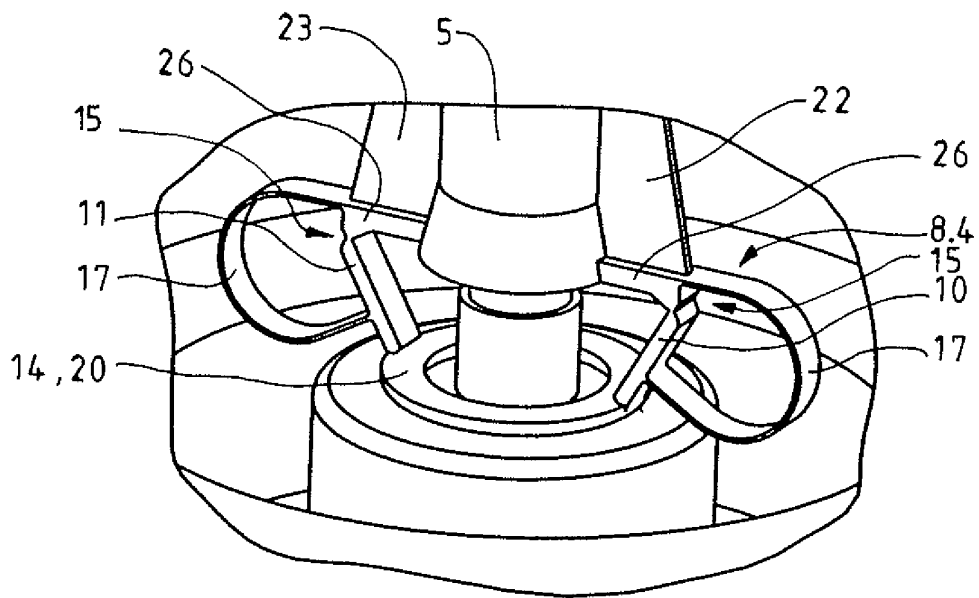


FIG. 14

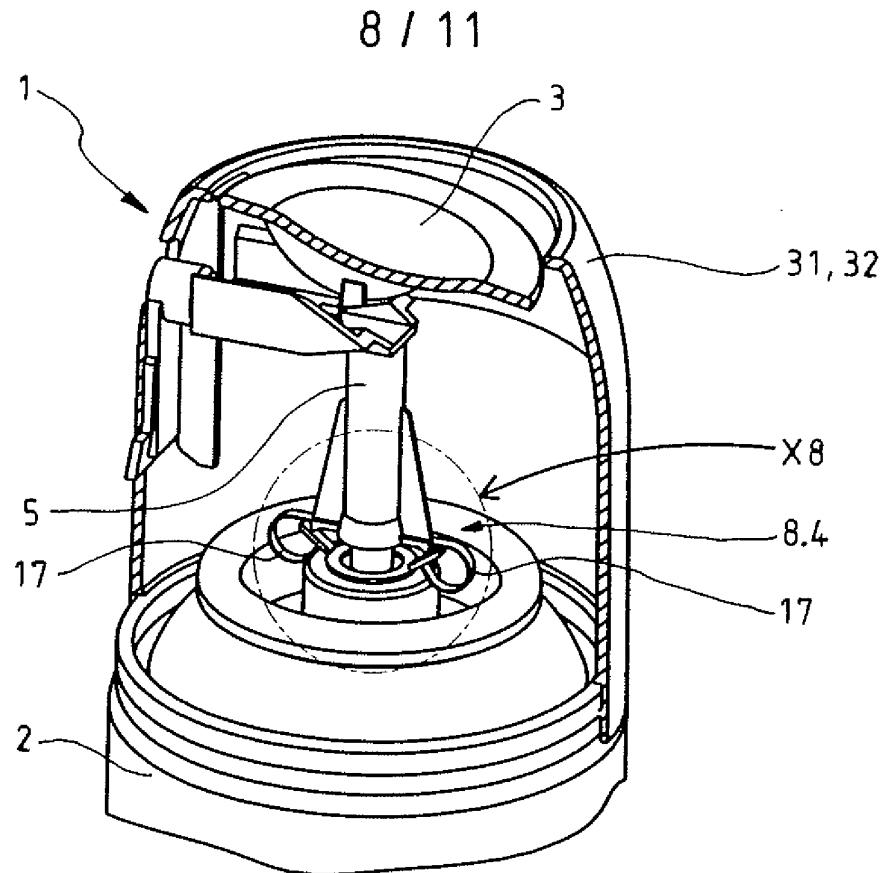


FIG. 15

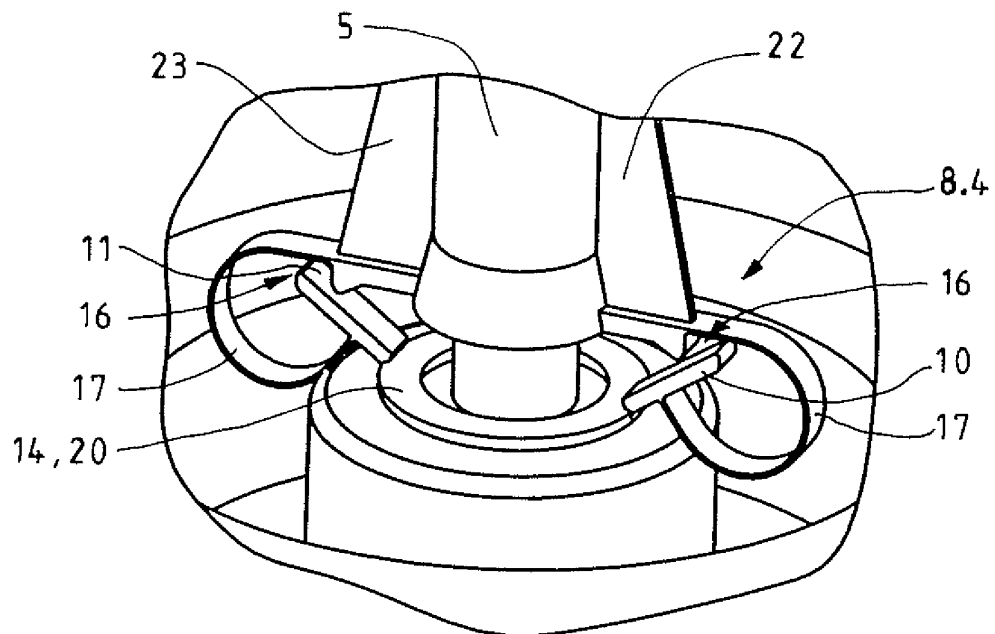


FIG. 16

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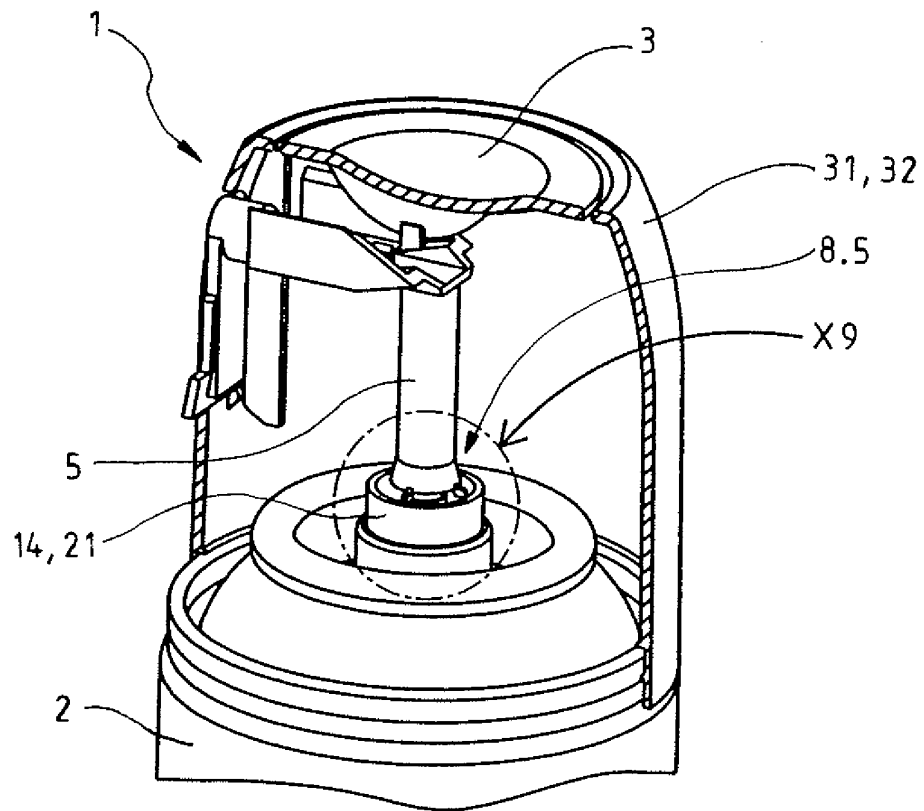


FIG. 17

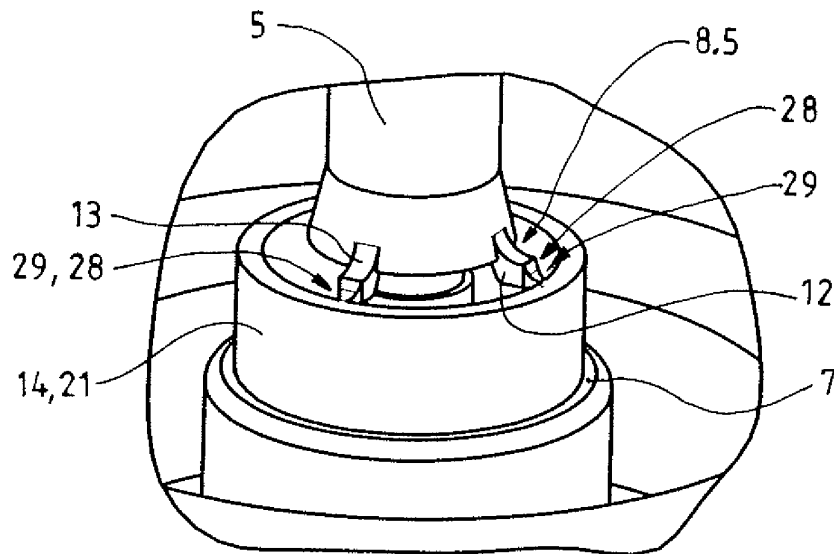


FIG. 18

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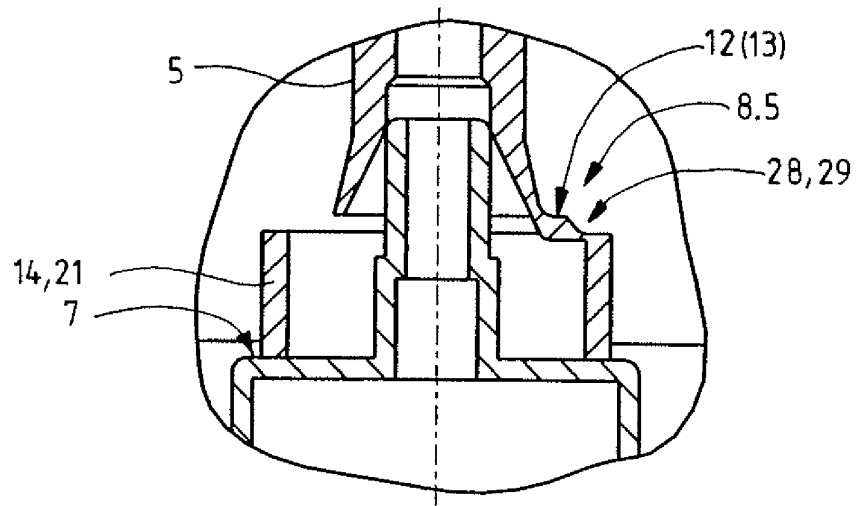


FIG. 19

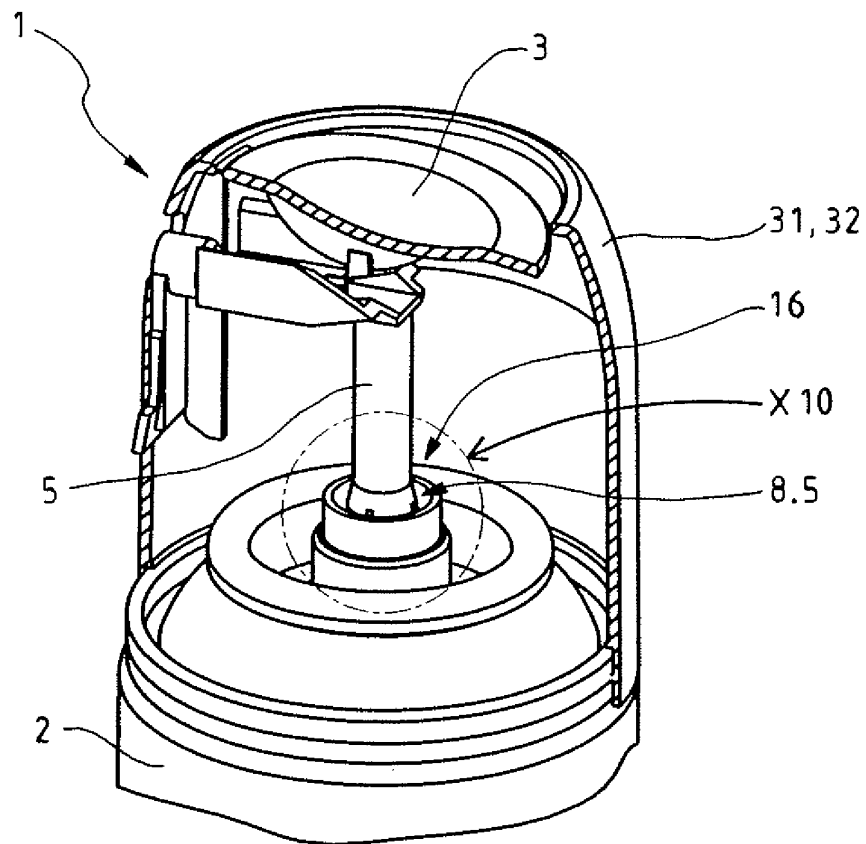


FIG. 20

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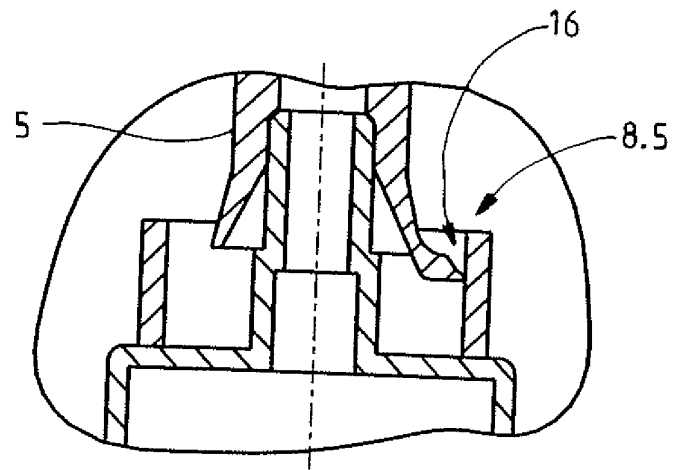


FIG. 21

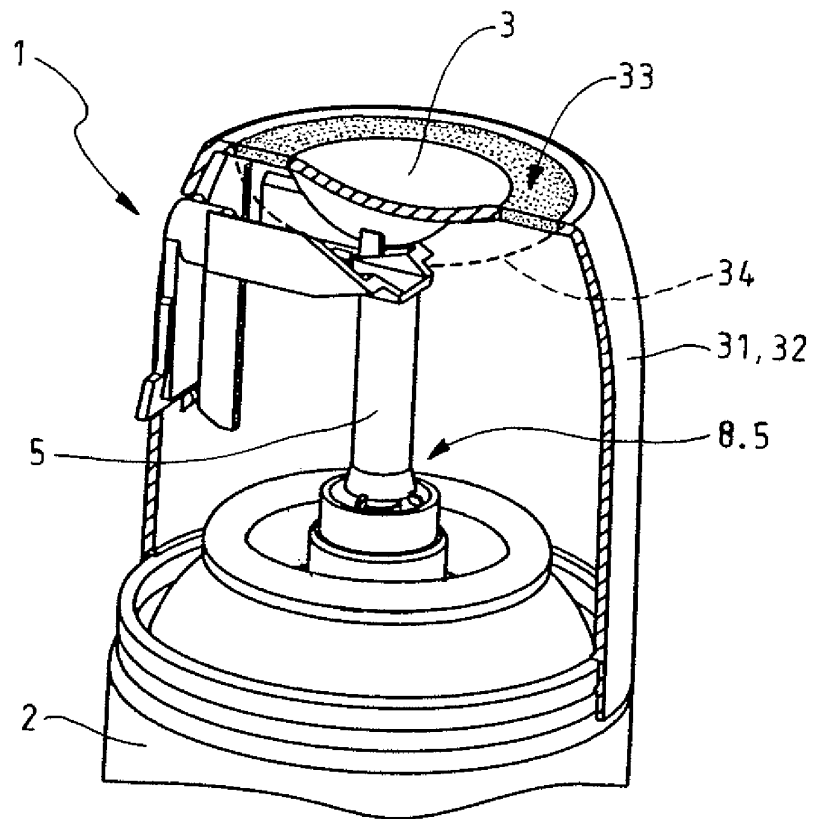


FIG. 22