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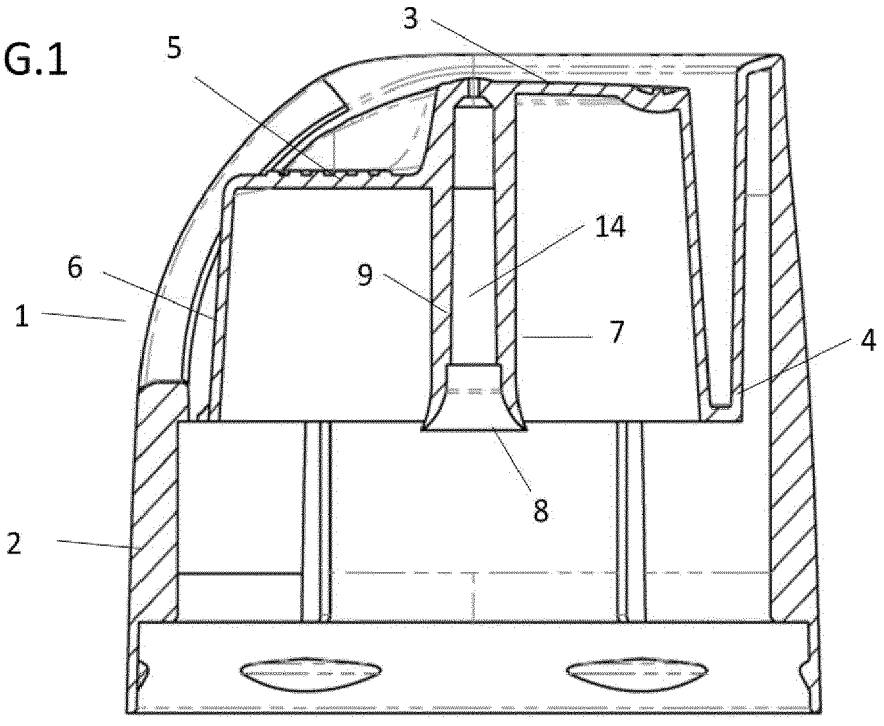
(54) **ACTUATING COVER WITH INNER DRUM**

(57) Actuator cap with double drum dome comprising two concentric drums, wherein the inner drum comprises perimeter skirts with side strategic cavities and a cannula with a specific geometry with a flared lower mouth whose diameter is greater than the outer diameter of the rest of the cannula and the outer drum is structural, supporting the interior and, at the same time, defensive. The strategic cavities of the inner drum are narrowed as they approach the upper base of the inner drum resulting in a widening of the physical skirt portion. In this way, the area closest to the upper base of that inner drum has a complete skirt that we will call the upper ring that provides stability to the button.

FIG.1



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Description

[0001] The invention relates to an actuator cap of those which have a cannula for the aerosol outlet and a double dome, with an inner and an outer drum, the outer perimeter of defence and protection and, the interior, a reinforcement and support of the elements that allow the handling of the aerosol stem.

[0002] In the case in point, it has been possible to reduce the amount of plastic used without reducing the robustness or altering the behaviour of the cap, which completely maintains its functionality but becomes more environmentally friendly.

[0003] For this purpose the inner drum has:

- A part of its skirt cut out but maintaining the strategic support points and maintaining a structure that prevents the cap from being able to weaken.
- An outlet cannula wherein the thickness of its walls has been reduced, generating a flared mouth that allows the demoulding without problems.

[0004] The technical field to which it belongs is that of actuating caps for aerosols, especially for air fresheners and insecticides.

BACKGROUND OF THE INVENTION

[0005] It is common to find actuator caps that have a double dome, with two concentric drums, especially, but not solely, in those caps that have a vertical spray.

[0006] The outer drum has perimeter walls and an open lower base and a closed upper base, at least partially, which it usually shares with the inner drum.

[0007] The inner drum usually supports the push-button, which is a moving element, usually pivoting, that can plunge when vertical pressure is applied, that element being the one that presses the stem and releases the spray.

[0008] This moving element, which is usually accessed from the upper base of the outer dome, typically has its support in the inner drum that sometimes not only serves as a support for the pivoting element but rests on the aerosol itself giving it greater resistance.

[0009] There is an abundance of patent literature in this regard, serving as an example, among others, the Spanish patent P302397 that relates to an actuator cap that allows the button to pivot and the descent thereof to be "plumb" preventing the stem from being bent. In this patent, up to three concentric domes can be observed with the consequent use of plastic. On the other hand, in this patent, the outlet cannula is in permanent contact with the stem so that any involuntary pressure exerted on the button is immediately transferred to the stem causing a spray.

[0010] Spanish patent ES2039744 (European patent validation 89108258.8) relates to an actuator cap that allows a slightly inclined spray with respect to the vertical. In this patent, there are also two concentric domes and a thick-walled outlet cannula. This outlet cannula is in permanent contact with the stem.

[0011] Patent WO93/12992 relates to a cap without cannula, wherein the descent of the pushbutton causes the inclination of a specific stem until it faces an outlet orifice that presses on it generating the output of the product. The embodiment of this patent requires a stem with bending capacity.

[0012] Patent WO2004/020313 relates to a cap having an outer and an inner dome with a depressible area and with a cannula suitable for housing a stem. The cannula has thick partitions to assume the flaring of its lower end.

[0013] None of the previous patents includes an actuator cap wherein the use of a conventional stem is allowed that is not in permanent contact with the outlet cannula, with the cannula having a flared end and, at the same time, walls of reduced thickness, all of which are linked to a lightened inner dome but without loss in terms of robustness or performance.

[0014] Since plastic reduction is an objective to resolve, the present invention surpasses the existing caps as described below.

DESCRIPTION OF THE INVENTION

[0015] To overcome the problems stated, the proposed actuator cap, in addition to a reduction in the thickness of its perimeter walls, has a double-drum dome comprising two concentric drums, wherein the inner drum comprises perimeter skirts that have strategic side cavities and a cannula with a specific geometry with a flared lower mouth whose diameter is greater than the outer diameter of the rest of the cannula since the thickness of the walls thereof has been reduced.

[0016] As mentioned, the skirt of the inner drum has strategic cavities on its sides that do not affect either the point on which the button pivots or the stop that prevents the button from sinking more than expected. These cavities narrow as they approach the upper base of the inner drum, resulting in a widening of the physical skirt portion. In this way, the area closest to the upper base of that inner drum has a complete skirt that we will call the upper ring that provides stability to the button.

[0017] On the other hand, the cannula, located inside the inner drum, has a reduction in the thickness of its walls, keeping the flare of its lower mouth to such an extent that the diameter of its lower mouth is greater than the outer diameter of its main body.

[0018] In order to avoid problems in the demoulding, due to the undercut that the flared area would entail, it has a geometry that allows its folding at the time of the demoulding, which is carried out hot. Once demoulded, the flared area, when cooled, regains its shape.

[0019] This allows obtaining the desired form of flaring without having to resort to the thickening of the cannula walls to avoid the undercut.

[0020] For a better understanding of the invention, the

following figures are attached.

BRIEF DESCRIPTION OF THE FIGURES

[0021]

FIGURE 1 shows in section the cap (1) with the perimeter drum (2), the inner drum (3) whose skirt has cavities in its sides (which in this view are not seen) between the cavities downward vertical extensions that reach the pivot point (4) of the push-button (5) and the stop (6). The outlet cannula (7) is also seen with a flared area (8) in its lower mouth, and its outlet pipe (14). The diameter of the section of the flared lower mouth is greater than that of the body (9) of the cannula.

FIGURE 2 shows in section the cap (1) assembled to the aerosol can (10) with the stem (13) arranged in the flared area (8) but without the stem (13) being in contact with the outlet pipe.

FIGURE 3 shows a bottom view of the cap (1), showing the inner drum (3) whose skirt is kept extended at the pivot point (4) and at the stop (6) and has cavities (11) in its side perimeter and a perimeter ring under its upper base.

DESCRIPTION OF AN EMBODIMENT

[0022] A description of an embodiment is given below that is not unique or limiting, but merely as an example.
[0023] The invention relates to an actuator cap with inner drum wherein said inner drum has a significant reduction in plastic without impairing its performance. To do this, part of the perimeter skirt of the drum has been strategically removed and the thickness of the walls of the outlet cannula has been reduced, but with a geometry that allows the lower base of the cannula to be flared and facilitates demoulding.
[0024] To do this, the inner drum (3) of the actuator cap comprises:

- Side cavities (11).
- Extensions that extend one to the pivot point (4) of the push-button (5) and the other to the stop (6).
- A perimeter ring (12) under the upper base of the inner drum.
- A cannula (7) with a pipe (14), a flared area (8) ending in its lower mouth whose section diameter in the lower mouth is greater than the outer section diameter of the body (9) of the cannula.

[0025] The side cavities (11) help to lighten the inner drum and reduce plastic consumption. These cavities are strategically arranged and take a specific form so that the actuator cap maintains its performance both in functionality and robustness.

[0026] The cavities gradually narrow as they approach the upper base of the inner drum in such a way that in the part adjacent to said upper base a ring (12) is generated that gives stability to said upper base.
[0027] The walls of the drum are reduced in practice to two extensions, one that extends to the pivot point (4) of the push-button (5) and another that extends as a stop (6) of the path of the push-button.
[0028] In this way, the drum structure is lightened.
[0029] On the other hand, the outlet cannula (7), which leads the product from the outlet of the stem to the outside of the cap, has a flared area (8) that ends in a lower mouth suitable to guide the pipe (14) and the body of the cannula towards the stem in each press. In this way, the stem and pipe can be at a certain distance from one other and only come into contact at the time of spraying once the cannula, by pushing the button, advances and bridges the distance that separates the stem and the pipe. This distance, in addition to facilitating the assembly operations of the actuator cap and the aerosol in the assembly chain, prevents any pressure on the button from directly moving the stem and generating a spray.
[0030] In order to reduce the amount of plastic in the cannula walls and since the section of the pipe is given by the stem, it is necessary to reduce its outer section with the problem that it poses for the demoulding when a larger section area, in this case the flared area, generates an undercut with respect to the body of the smaller section cannula.
[0031] To solve the problem, the flared area has an open geometry towards the outside to generate the flaring but with a wall thickness in the flaring that is gradually reduced towards the end, which allows its folding at the time of the demoulding, which is carried out hot, so that when it cools, it resumes its shape.
[0032] With the device at rest, the upper end of the stem (13) is in the flared area (8) but without being in contact with the pipe (14).

Claims

1. ACTUATOR CAP WITH INNER DRUM suitable for fastening to an aerosol container (10) and through a cannula (7) associated with a push-button (5) to be able to press the outlet stem (13) facilitating the spraying of product when the push-button (5) is pressed, **characterised in that** the inner drum comprises cavities (11) in its skirt and downward vertical extensions that reach the pivoting point (4) of the push-button (5) and the stop (6) and **in that** it further comprises a cannula (7) with a pipe (14) with a flared area (8) that ends in a mouth whose section diameter is greater than the outer section diameter of the body (9) of the cannula.

2. ACTUATOR CAP WITH INNER DRUM according to claim 1, **characterised in that** it comprises a perim-

eter ring (12) under the upper base of the inner drum.

3. ACTUATOR CAP WITH INNER DRUM according to claim 1, **characterised in that**, at rest, the stem (13) of the aerosol container is not in contact with the pipe (14).

4. ACTUATOR CAP WITH INNER DRUM according to claim 1, **characterised in that**, at rest, the upper end of the stem is in the flared area (8).

FIG.1

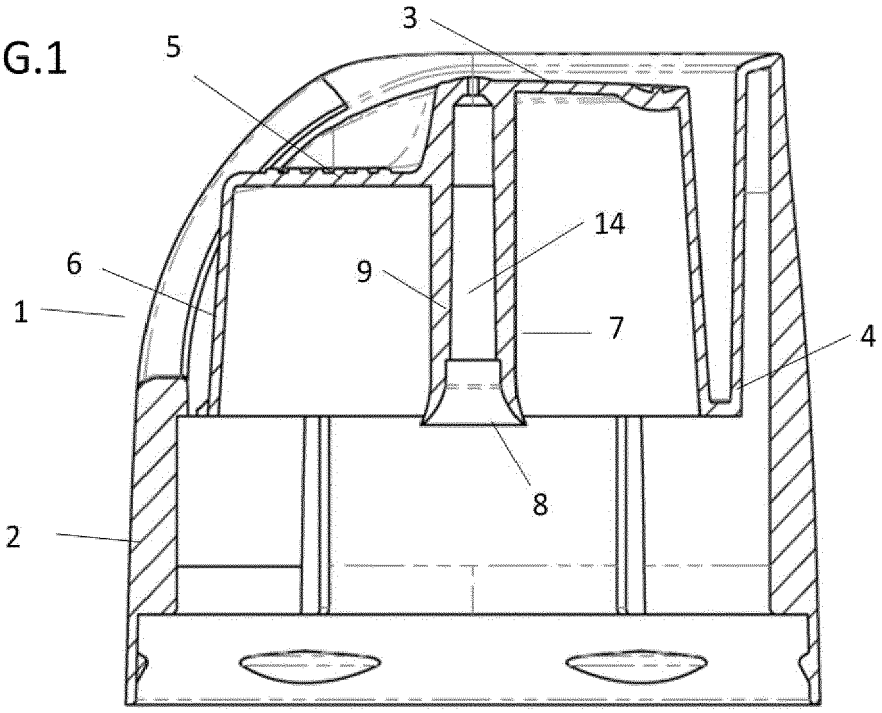


FIG.2

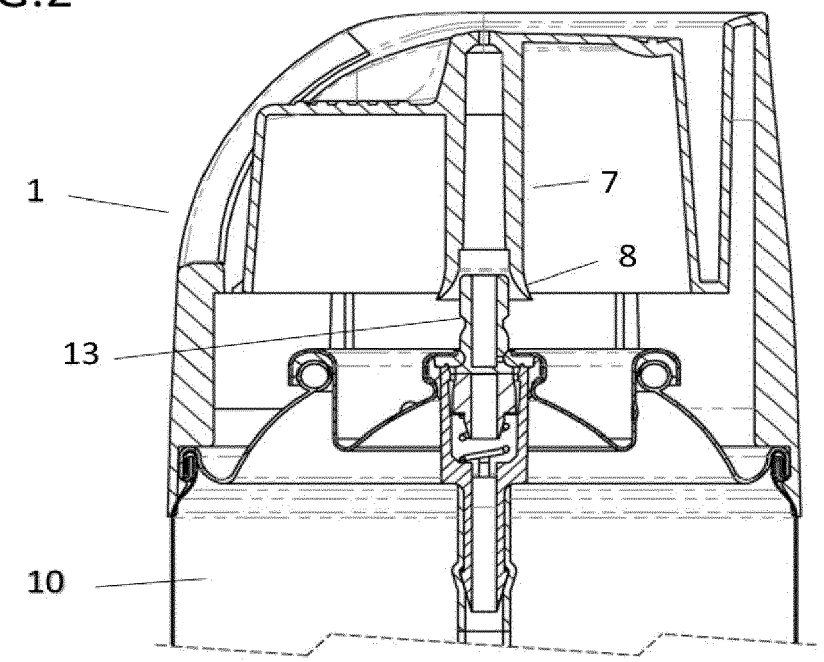
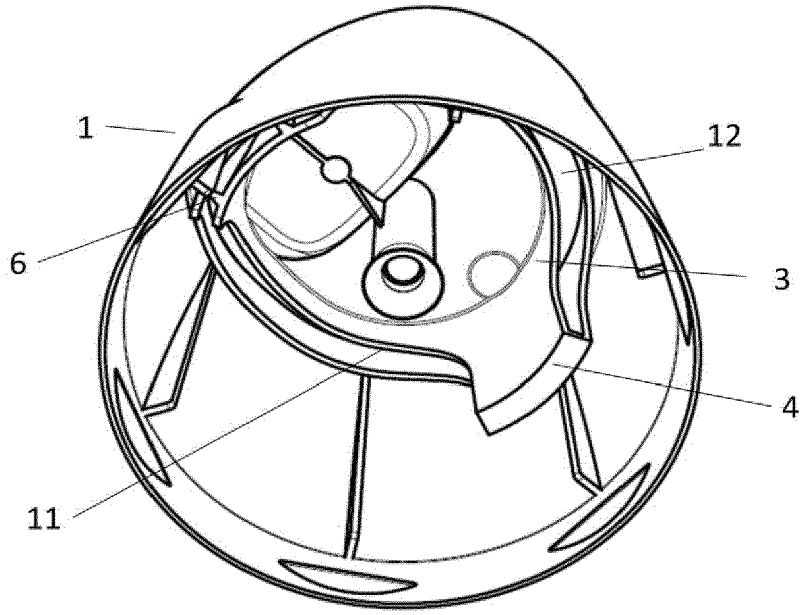


FIG.3



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EUROPEAN SEARCH REPORT

Application Number
EP 22 20 5289

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Y	WO 2020/152125 A1 (LINDAL FRANCE SAS [FR]) 30 July 2020 (2020-07-30) * abstract; figures 2A, 4 * * page 12, line 5 - line 7 * * page 13, line 23 - line 25 *	1-4	
A	CN 102 481 589 B (JOHNSON & SON INC S C) 1 October 2014 (2014-10-01) * abstract; figure 17 * * paragraph [0052] - paragraph [0053] *	3	
A	US 2013/228593 A1 (ADAMS MARY BETH [US] ET AL) 5 September 2013 (2013-09-05) * abstract; figures 10, 11 * * paragraph [0044] *	3	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	16 March 2023	Frego, Maria Chiara

CATEGORY OF CITED DOCUMENTS

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