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(54) **Operating and dispensing cap connectable to an aerosol can**

(57) An operating and dispensing cap (1) connectable to an aerosol can containing pressurized fluid and provided with a valve (6) for dispensing the product contained therein, said cap (1) being provided with means for its snap-fixing (10A,10B) to the aerosol can body and an operating pushbutton (3), the pushbutton (3) comprising a seat (5) adapted to house a hollow stem for operating the valve (3), said seat (5) presenting a first lead-in region (5A), a second region (5B) for fixing the stem (3) by an interference fit, and a port (8) for dispensing the product in a direction substantially aligned with the stem axis, the pushbutton (3) being hinged (4) in a region substantially aligned with the stem base (11).

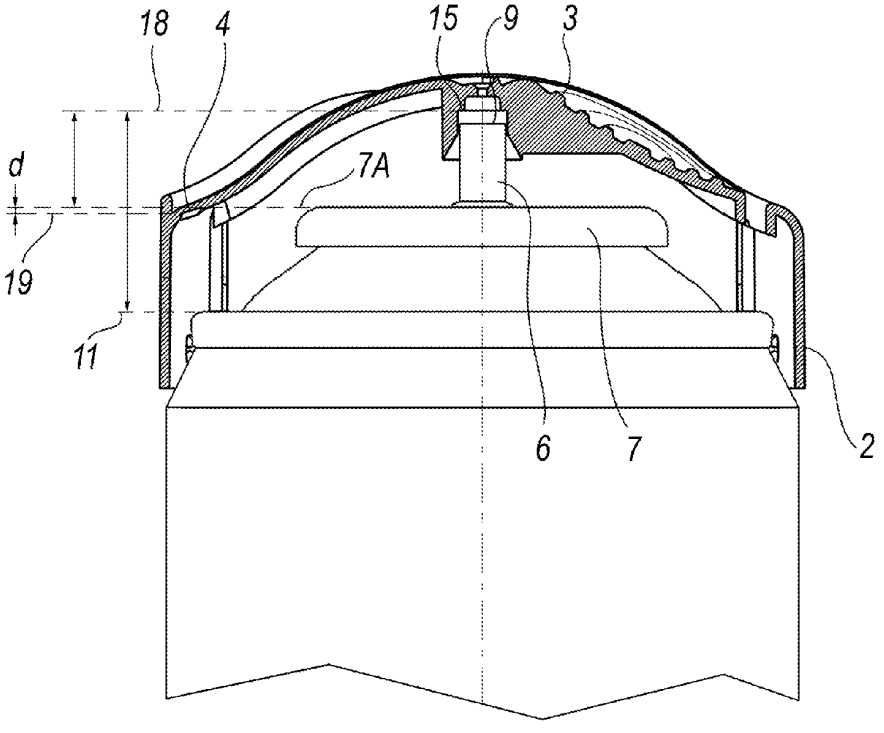


Fig. 6

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Description

[0001] The present invention relates to an operating and dispensing device connectable to an aerosol can containing pressurized fluid and provided with a valve for dispensing the product contained therein.

[0002] Common aerosol cans are known, for example for room deodorants, with a dispensing port opening in a vertical direction.

[0003] These aerosol cans present pushbutton caps provided with a cylindrical portion attachable to the can. The diameter of the cylindrical portion is the same as that of the can. The caps are provided with a dispensing pushbutton which engages the stem of the aerosol valve mounted on the aerosol can. Dispensing takes place vertically.

[0004] In the known art the hinge between the cap and the cylindrical portion is provided in a region of the cylindrical portion which projects towards the can. Essentially, the hinging region is positioned higher than the top of the stem, the hinging being preferably aligned with the product dispensing port provided in the pushbutton.

[0005] This gives the jet dispensed by the aerosol can a direction inclined towards the user.

[0006] The user is therefore compelled to incline the can in order to direct the jet away from the user during use.

[0007] This is an uncomfortable and hardly efficient operation.

[0008] Moreover the caps for current aerosol cans occupy a large volume above the valve and can, they are very voluminous, and a considerable amount of plastic material has to be used to produce them.

[0009] An object of the present invention is to provide a cap enabling an aerosol jet to be obtained which is safer for the user, and occupying a very small space above the valve.

[0010] These and other objects are attained by providing a dispensing cap in accordance with the technical teachings of the accompanying claims. Further characteristics and advantages will be apparent from the description of a preferred but non-exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, in which:

Figure 1 is a perspective view of the device of the present invention;
Figure 2 is a view of the cap of Figure 1 seen from above;
Figure 3 is an enlarged view of part of Figure 4;
Figure 4 is a section taken on the line 4-4 of Figure 2;
Figure 5 is a section taken on the line 5-5 of Figure 2;
Figure 6 is a sectional view of the cap of the present invention while connected to an aerosol can, not shown in section.

[0011] With reference to said figures, these show a cap indicated overall by the reference numeral 1.

[0012] The operating cap 1 is provided for connection to a known aerosol can containing pressurized fluid and provided with a standard valve for dispensing the product contained in the can. The fluid is preferably room deodorant spray, insecticide or the like.

[0013] The cap 1 is formed of plastic material by moulding. The plastic material used is preferably polypropylene.

[0014] The cap presents a cylindrical part 2 provided with known means for its snap-fixing to the can body, specifically to a flange on the can formed in proximity to its body. The fixing means comprise mutually aligned lugs 10A defining a support plane, and teeth 10B which press the flange against the plane defined by the lugs. The teeth can be replaced by equivalent means, such as a projecting circular ring.

[0015] The cylindrical part 2 preferably has a diameter substantially equal to that of the aerosol can. In this respect, when the cap is mounted on the can it does not project from the lateral surface thereof.

[0016] An operating pushbutton 3 for a (conventional) aerosol can valve is hinged to the cylindrical part 2.

[0017] The pushbutton and the cylindrical part are formed in one piece, the hinging 4 between them being achieved by a thickness reduction of the plastic material (or by equivalent means) from which the cap and the cylindrical part are formed.

[0018] The pushbutton comprises, facing the can, a seat 5 adapted to house a hollow stem 6 for operating the valve 7. The seat 5 presents a first lead-in region 5A for the stem followed, in the product dispensing direction, by a region 5B for fixing the stem by an interference fit , and a port 8 for dispensing the product in a direction substantially axial to the stem axis, said port 8 preferably having a first section 8A of constant diameter, and a second section 8B which diverges outwards.

[0019] As can be readily seen from Figure 6, when the cap is mounted on the aerosol can the hinging region 4 lies between the top (exit section) 9 of the stem 6 and the means 10A, 10B for fixing the cap to the can. It should be noted that the term "hinging region or portion" means the entire portion of plastic material which has been reduced in thickness to enable flexure when the cap is operated.

[0020] This enables the can stem to be slightly inclined in the opposite direction to the pressing direction (and hence to the position of the user), to hence direct the jet away from the user.

[0021] Moreover such an expedient results in a considerable saving of material in producing the cap, which becomes much less bulky and closer to the can body.

[0022] Advantageously the hinging portion or region is substantially aligned with the base of the stem. The term "substantially aligned" in the context of the present invention means that the distance between the plane 19 containing the hinging region perpendicular to the stem axis and the plane 7A of the valve 7 flange is preferably less than 4 millimetres (d). The plane 19 can be above

or below the plane 7A.

[0023] As can be seen from Figure 6, the seat 5 presents an abutment step 15 for said stem 6. It should be noted that in Figure 6 there is a distance between the top of the stem and the step 15. On initially operating the cap this distance is nullified as the stem becomes inserted into the seat. The distance between the plane 18 perpendicular to the stem axis and containing said abutment step 15, and the plane perpendicular to the stem axis and containing the hinging portion 19, is between 0 and 15 mm, but preferably 7 $\pm$ 0.3 mm.

[0024] Moreover the distance between the plane 18 perpendicular to the stem axis and containing the abutment step, and said coupling means 10A, 10B (plane 11), is between 16 and 19.5 mm, but preferably 18 $\pm$ 0.2 mm. Advantageously the form of the pushbutton 2 when viewed in longitudinal section through said hinging portion (Figures 3, 4) assumes a convex shape with a first portion 2A ascending from the hinging to the dispensing port 8, a crest portion 2B at said dispensing port 8, and a portion 2C descending towards a knurled resting region 20 for a user's finger.

[0025] In the aforegoing text, reference is made to an abutment step 15 for the stem. Seats can be provided which instead of an abutment step present a conical surface which can house stems of different diameters. In this case the "plane containing the abutment step" means that plane in which the end of the stem lies when this is fixed in its seat.

Claims

1. An operating and dispensing cap connectable to an aerosol can containing pressurized fluid and provided with a valve for dispensing the product contained therein, said cap being formed of plastic material by moulding and comprising a cylindrical part substantially of the same diameter as the aerosol can body and provided with means for its snap-fixing to this latter, and an operating pushbutton formed integrally with the cylindrical part and hinged to it along a hinging portion, the pushbutton comprising a seat adapted to house a hollow stem for operating the valve, said seat presenting a converging lead-in region, a region for fixing the stem by an interference fit, and a port for dispensing the product in a direction substantially aligned with the stem axis, **characterised in that** when the cap is mounted on the aerosol can the hinging region lies between the top of the stem and said snap-fixing means.

2. A cap as claimed in the preceding claim, wherein said hinging portion is substantially aligned with the stem base.

3. A cap as claimed in one or more of the preceding claims, wherein the seat presents an abutment step for said stem, the distance between the plane perpendicular to the stem axis and containing said abutment step, and the plane perpendicular to the stem axis and containing the hinging portion, is between 0 and 15 mm, but preferably 7 $\pm$ 0.3 mm.

4. A cap as claimed in one or more of the preceding claims, wherein the distance between the plane perpendicular to the stem axis and containing the abutment step, and said coupling means, is between 16 and 19.5 mm, but preferably 18 $\pm$ 0.2 mm.

5. A cap as claimed in one or more of the preceding claims, wherein said pushbutton assumes, in longitudinal section, a convex shape with a first portion ascending from the hinging to the dispensing port, a crest portion at said dispensing port, and a portion descending towards a knurled resting region for a user's finger.

6. A cap as claimed in one or more of the preceding claims, wherein the hinging portion is achieved by a thickness reduction of the material from which the cap and the cylindrical part are formed.

7. A cap as claimed in one or more of the preceding claims, wherein said port presents a first section of constant diameter, and a second section which diverges outwards.

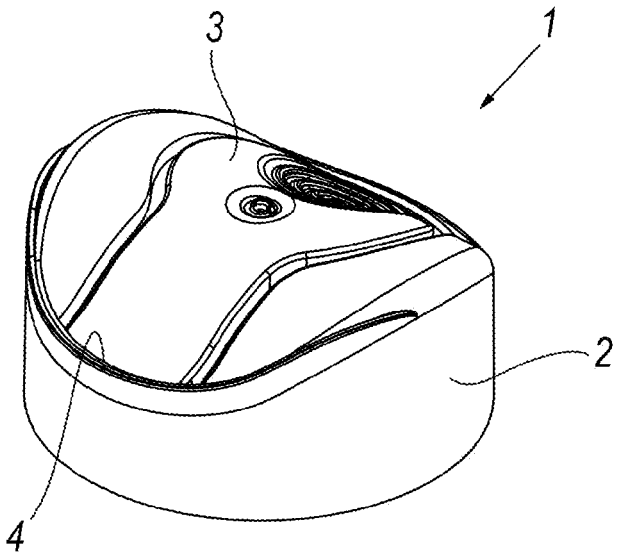


Fig. 1

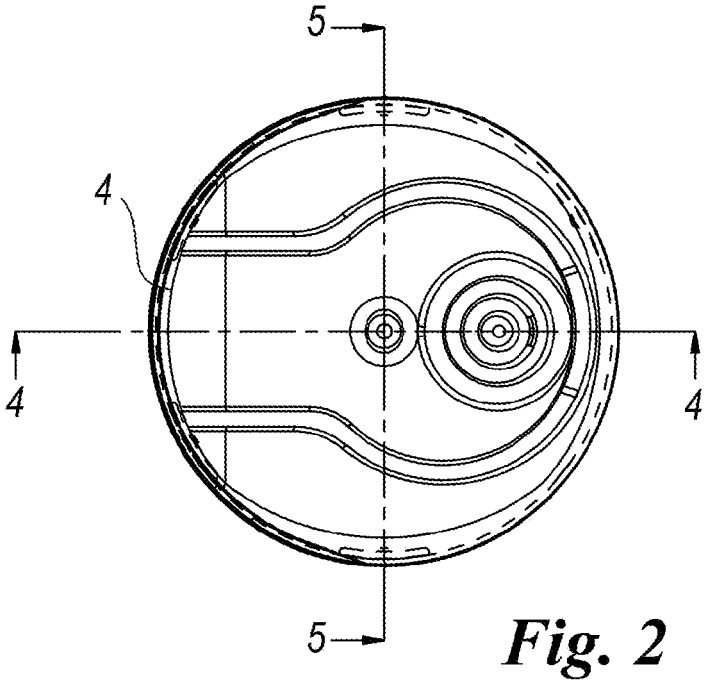


Fig. 2

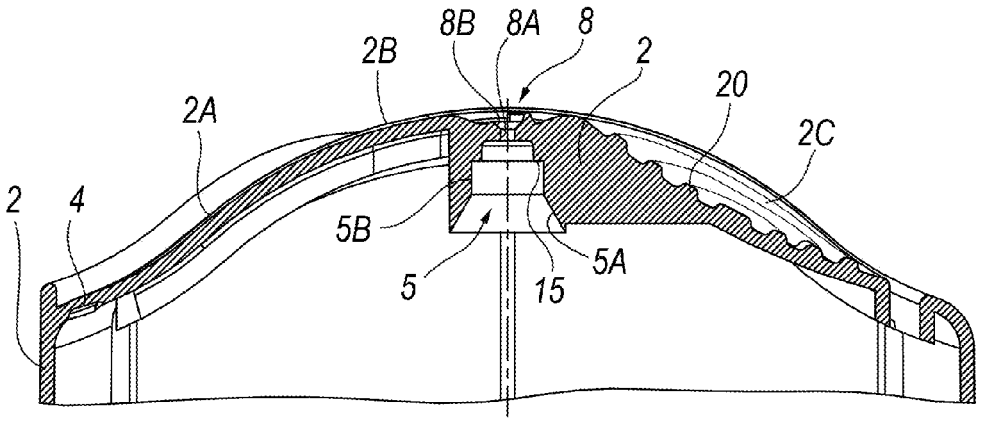


Fig. 3

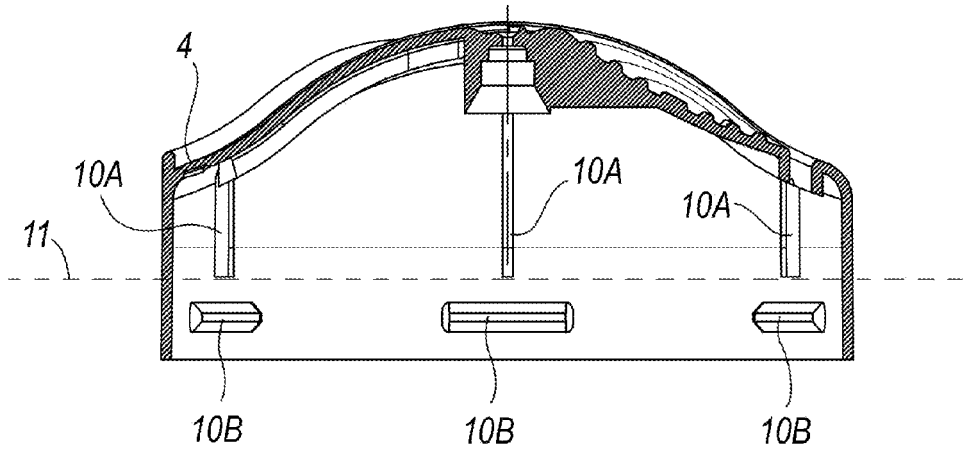


Fig. 4

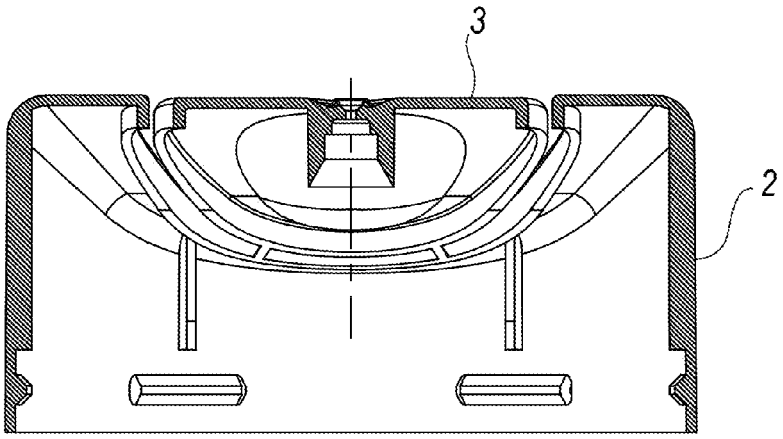


Fig. 5

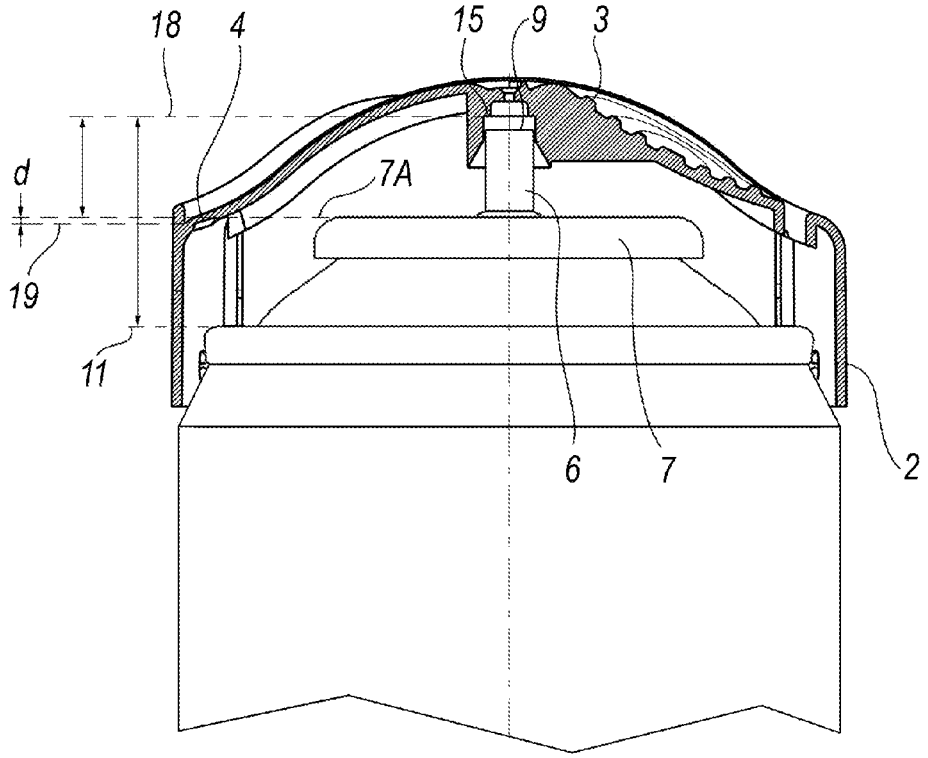


Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 11 17 1973

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 October 2011	Endrizzi, Silvio

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Application Number
EP 11 17 1973

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