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(54) Dispensing cap

(57) A dispensing cap (1) comprising a support element (2) provided with fixing means (3) for snap-fitting it to a pressurized container, and a pushbutton (5) hinged (4) to the support element (2), the pushbutton (5) comprising a dispenser (7) to be mounted on the hollow stem (8) of a valve of the pressurized container to dispense a product contained therein, said dispenser (7) comprising a dispensing conduit (6) freely open towards the outside and coaxial to said stem (8), and a lead-in region (10) for facilitating its coupling to said stem (8), the dispenser comprising at least one conical coupling region (11) for said stem (8) such as to be able to clamp stems (8) of different diameters/heights by means of a light interference fit.

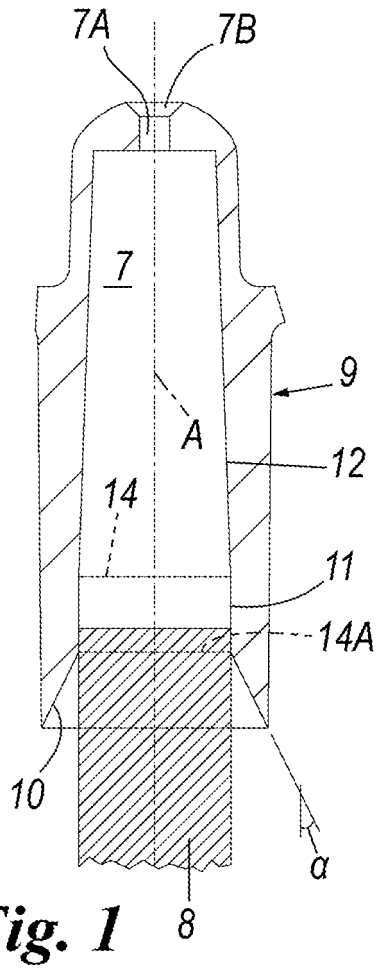

Fig. 1

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Description

[0001] The present invention relates to a dispensing cap for use on pressurized containers provided with a dispensing valve.

[0002] Known pressurized containers, for example for air deodorants, insecticides or the like, are of cylindrical shape. They are provided at their top with a closure piece crimped along a first edge to the container side wall. At its top, the closure piece comprises a valve enabling the product to be dispensed. A flange on the valve is crimped to the closure piece. A dispensing cap is positioned on the top of the container to enable the valve to be operated.

[0003] These caps are known to comprise a first element which is snap-fitted to the container along the edge between the closure piece and the container side wall. They also comprise, hinged to the first element, a dispensing pushbutton in which a dispensing conduit is provided. This comprises a coupling region which by means of an interference fit clamps a hollow stem projecting from the container dispensing valve.

[0004] Valves are currently available with a standard flange diameter of 32/33 mm and a stem outer diameter of 4.01 mm, 3.93 mm, 4.03 mm and 4.00 mm respectively, with different heights. Each dispensing cap is suitable for mounting only on one type of container (and hence valve), namely that for which it was designed.

[0005] This causes considerable drawbacks in the case of a change of series. This is because different cap types suitable for each container and valve have to be stocked, with consequent increase in storage management costs.

[0006] An object of the present invention is to provide a dispensing cap which is adaptable to each available valve type, hence without the need to provide a specific cap for each valve type.

[0007] This and other objects are attained by a dispensing cap formed in accordance with the teachings of the accompanying claims.

[0008] Advantageously the cap in question is also adaptable to containers of different dimensions, given that it is coupled to the container along the valve flange.

[0009] Further characteristics and advantages of the invention will be apparent from the description of a preferred but non-exclusive embodiment of the dispensing cap, illustrated by way of non-limiting example in the accompanying drawings, in which:

Figure 1 is a section through a detail of the cap of the present invention;

Figure 2 is a cross-section through the cap of the present invention; and

Figures 3, 4, 5 and 6 show the dispenser of Figure 1 coupled to stems of different dimensions.

[0010] With reference to said figures, these show a dispensing cap indicated overall by the reference numeral 1.

[0011] It comprises a support element 2 of bell configuration, presenting in its lower portion (Figure 2) a groove 3 within which an edge 3A is provided for snap-fitting the cap to a pressurized container (not shown).

[0012] In particular the groove 3, the edge and the radius of the support element are such as to enable it to be coupled to the edge of a valve flange mounted on the container for dispensing the product. The diameter of this flange is standard and is 32/33 mm for all types of valve; hence the support element can be connected to the edge of any commercially available valve, independently of the size of the container on which the valve is mounted.

[0013] Alternatively the support element can have a diameter such that it can be coupled to the edge present between the container wall and its closure piece to which the valve is crimped. In this case the diameter of the bottom of the cap must be adapted to the container diameter, with the cap hiding from view substantially the entire upper part of the container and valve. This is useful in some cases where it is important to obtain a pleasant appearance.

[0014] The support element is hinged at 4 to a dispensing pushbutton 5. The support element 2 and the dispensing pushbutton 5 are made in one piece by plastic moulding, the hinge at 4 being substantially a yieldable connection portion of suitable thickness.

[0015] The pushbutton 5 comprises a dispenser formed from an internally hollow cylindrical piece 6 (the cavity is not shown in the drawings for simplicity), the lower portion of which is to house the valve stem 8. A dispensing conduit 7 is formed such as to present an axis A coinciding with that of the stem 8 when the dispenser is mounted on this latter.

[0016] The lower portion of the dispenser presents a lead-in region 10 in the form of a frusto-conical surface with a very accentuated angle to the axis. This angle α is between 35º and 45º but is preferably 41º. The term "angle to the axis A" means herein the angle formed between a generator and the axis A. The diameter at the entry to this lead-in region is 6 mm.

[0017] The lead-in region 10 is followed, in the direction in which the stem is inserted into the dispenser, by a first stem coupling region 11 having a slight inclination to the axis A. This angle is not shown in the drawing, but is between 0.05º and 0.20º but preferably 0.10º to the axis A.

[0018] The first coupling region is followed, again in the direction in which the stem is inserted into the dispenser, by a second stem coupling region 11 presenting a greater inclination to the axis A. This angle is also not shown in the drawing, but is between 1.5º and 2.5º, but preferably 2º. The join between the first and second coupling region gives rise to a slope change represented in the drawing by the line 14, where the dispenser has a diameter of 4.01 mm, this being only slightly less than the diameter at the slope change 14A between the first

coupling region and the lead-in.

[0019] In the described embodiment, the second coupling region forms part of the dispensing conduit 7, which at its top presents a conventional dispensing hole preferably flared at 7B.

[0020] The operation of the invention is evident to an expert of the art and will therefore not be described. It should however be noted that the particular configuration of the dispensing element enables it to be coupled to the stems of all currently available valves. Specifically, valves with stems of different dimensions and heights become locked by the particular configuration of the first and second coupling region, at the moment of the initial operation of the pushbutton by the user. In this respect, the different valve stems penetrate into the dispenser to a greater or lesser extent depending on the stem radius. Various stem arrangements for different diameters are shown in Figures from 3 to 6.

[0021] In Figure 3 the stem has an outer diameter S1 of 3.93 mm and penetrates into the dispenser by a length D1 of 5.05 mm to reach its dispensing position.

[0022] In Figure 4 the stem has an outer diameter S3 of 4.01 mm and penetrates into the dispenser by a length D3 of 4 mm.

[0023] In Figure 5 the stem has an outer diameter S2 of 4 mm and penetrates into the dispenser by a length D2 of 3.46 mm. It should be noted that in this embodiment the stem edge is substantially superposed on the line 14 of slope change between the first and second coupling region.

[0024] In Figure 6 the stem has an outer diameter S4 of 4.03 mm and penetrates into the dispenser by a length D4 of 3.46 mm.

[0025] The length to which the stem penetrates into the dispenser is measured at the dispensing position and is also a function of the stem height.

[0026] The particular diameter of the lower portion of the support element 2 enables it to be directly snap-fitted onto the valve flange where this is crimped to the container.

[0027] As already stated, the outer diameter of the valve flange is standard, hence a cap 1 designed in this manner can be applied to the most varied containers, even of considerably different dimensions.

[0028] Moreover the construction of a dispensing cap which covers only the end part of the valve enables a considerable saving of plastic material to be achieved compared with traditional caps which, in addition to completely hiding the valve, also hide from view that portion lying between the container and its side wall.

Claims

1. A dispensing cap comprising a support element provided with fixing means for snap-fitting it to a pressurized container, and a pushbutton hinged to the support element, the pushbutton comprising a dispenser to be mounted on the hollow stem of a valve of the pressurized container to dispense a product contained therein, said dispenser comprising a dispensing conduit freely open towards the outside and coaxial to said stem, and a lead-in region for facilitating its coupling to said stem, **characterised in that** the dispenser comprises at least one conical coupling region for said stem such as to be able to clamp stems of different diameters/heights by means of a light interference fit.

2. A cap as claimed in claim 1, **characterised in that** the lead-in region is followed by a first and a second coupling region which have mutually different conicities.

3. A cap as claimed in the preceding claim, **characterised in that** the fixing means are configured such as to fix said cap to said container at the flange of said valve.

4. A cap as claimed in claim 1, **characterised in that** said lead-in region has a surface forming an angle of between 35º and 45º to said axis A, and preferably 41º.

5. A cap as claimed in claim 2, **characterised in that** said first coupling region has a surface forming an angle of between 0.05º and 0.20º to said axis A, and preferably 0.1º.

6. A cap as claimed in claim 2, **characterised in that** said second coupling region has a surface forming an angle of between 1.5º and 2.5º to said axis A, and preferably 2º.

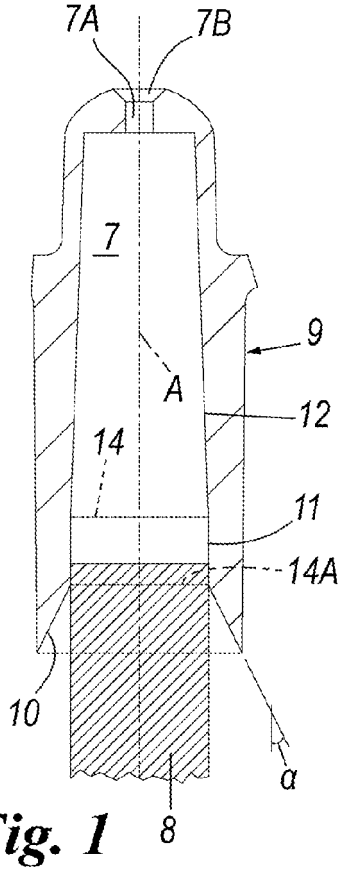

Fig. 1

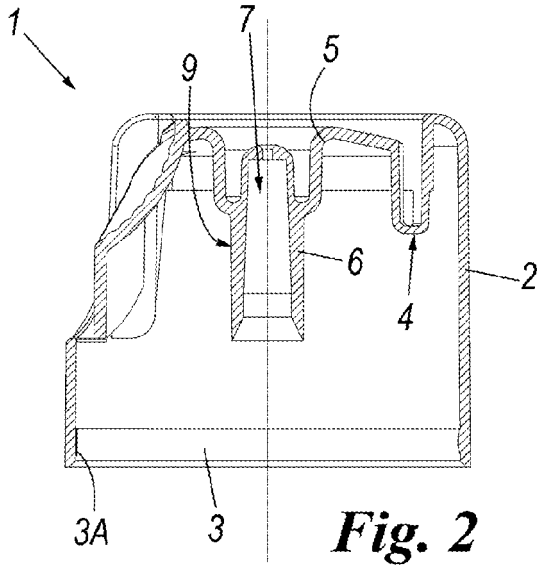

Fig. 2

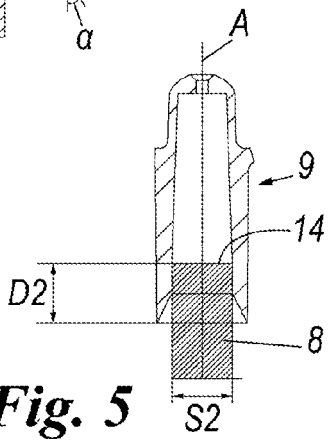

Fig. 5

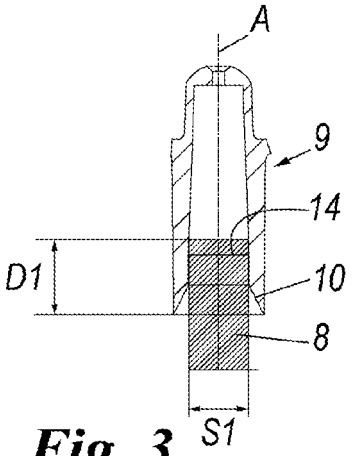

Fig. 3

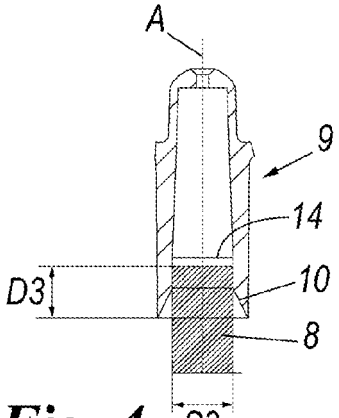

Fig. 4

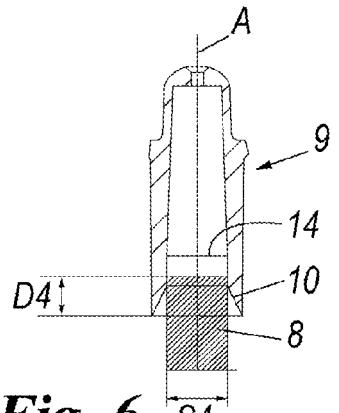

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 09 16 3642

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	WO 2005/120716 A (TEN CATE PLASTICUM UK LTD [GB]; GIDLOW MARK ANTHONY IAN [GB]) 22 December 2005 (2005-12-22) * page 9, lines 5-23; figures 7-9 *	1-4	INV. B65D83/16
Y	US 6 415 989 B1 (LASSERRE PIERRE-ANDRE [FR] ET AL) 9 July 2002 (2002-07-09) * column 1, lines 34-44 * * column 2, lines 1-7,42-51 * * column 4, line 64 - column 5, line 42 * * figures *	1-4	
A	AU 654 526 B2 (PRAEZISIONS VENTIL GMBH) 10 November 1994 (1994-11-10) * page 3, line 24 - page 4, line 4; figures 1-3 *	1	

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	12 October 2009	Endrizzi, Silvio

CATEGORY OF CITED DOCUMENTS

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