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(54) Closure cap for containers

(57) A closure cap for bottles (F) and the like containing fluid substances, including an inner tubular body (2) to be secured to the mouth (C) of the bottle (F) and carrying an axial pin obturator (13), and an outer tubular body (3) connected to the inner tubular body (2) through a threaded coupling (10,18) and having a delivery nozzle (19) terminating with an outlet opening (22) which, in a screwed condition, is plugged by the pin obturator (13). Further to a sliding lateral sealing (15,23) and a front sealing (11,24), a second front sealing (16,25) is provided to more efficiently isolate the threaded coupling (10,18) in the screwed condition of the outer tubular body.

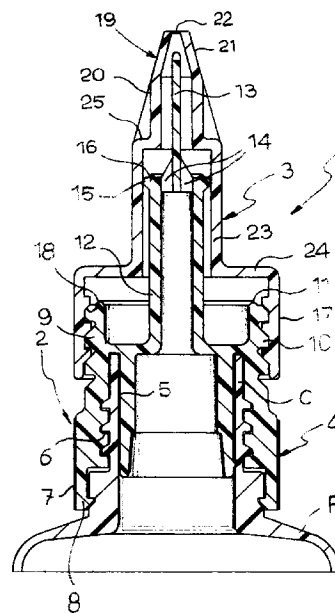


Fig. 1

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Description

The present invention is related to closure caps for bottles and the like containing fluid substances, particularly hardenable bonding agents.

More particularly, the invention is directed to a closure cap including an inner tubular body to be axially secured to the bottle mouth, in communication therewith, and having an outer thread and an end axial pin obturator, and an outer tubular body coaxial with the inner tubular body and having an inner thread engaged on said outer thread, and a terminal delivery nozzle with an outlet opening and along which said pin obturator is coaxially extending, and wherein the outer tubular body is rotatable relative to the inner tubular body between a screwed position, in which said outlet opening is plugged by the pin obturator, and an unscrewed position in which the outlet opening is unobstructed.

Closure caps of the above mentioned type are known, for instance, from US-A-3216630 and US-A-4690304, as well as from EP-B-0412285. With particular reference to the latter document, the closure cap further includes sliding lateral sealing means provided between the inner tubular body and the outer tubular body to isolate the delivery nozzle from the outer and inner threads. Moreover the inner tubular body is formed in proximity of the outer thread with an annular front sealing lip cooperating under closure contact with the outer tubular body, in proximity of said inner thread, in the screwed position of said outer tubular body.

The function of the lateral sealing means between the inner tubular body and the outer tubular body is to prevent both during as well as immediately after delivery, and in the rest condition (i.e. when the cap is closed) that the fluid substance contained within the bottle or the like may reach the threaded coupling between the inner tubular body and the outer tubular body. Actually in such event, and particularly in case of liquid bonding agents, the threaded coupling could be irreversibly locked thus preventing further opening of the cap. The annular lip of the front seal contributes to the same function, isolating in the closed condition of the cap the threaded coupling from the adjacent annular space comprised between the outer tubular body and the inner tubular body, within which a certain amount of the fluid substance contained within the bottle might stagnate.

In the closed condition of the cap, should the bottle be shaken, a leakage of the fluid substance through the lateral sealing may occur: in such event, when the outer tubular body is unscrewed relative to the inner tubular body for substance delivery, any leaked amount thereof may reach the threaded coupling upon opening of the front sealing lip and thus, following subsequent closure of the cap by screwing again the outer tubular body, cause locking thereof.

The object of the present invention is to further reduce any locking possibility of the threaded coupling

of the cap in use, particularly improving safety thereof against the risk of leakage of the fluid substance contained within the bottle into the interspace comprised between the inner tubular body and the outer tubular body.

According to the invention, this object is achieved essentially by virtue of the fact that, in a closure cap for bottles and the like of the type set forth at the beginning, the inner tubular body is further provided with a second front annular sealing lip adjacent to that pin obturator and cooperating under closure contact with the outer tubular body in proximity of said terminal delivery nozzle, in the screwed condition of said outer tubular body.

According to a preferred embodiment of the invention, the terminal delivery nozzle is provided with a radial annular base defining a bearing seat for said second front annular sealing lip. Moreover the second front annular sealing lip may be conveniently arranged in immediate proximity of said sliding lateral sealing means.

The invention will now be disclosed in detail with reference to the accompanying drawings, purely provided by way of non limiting example, in which:

- figure 1 is a diagrammatic axially sectioned view showing a closure cap for bottles and the like according to the invention, shown in the open condition, and
- figure 2 is a view same as figure 1 showing the cap in the closed condition.

Referring to the drawings, reference F designates a bottle or like container for fluid substances, particularly for hardenable bonding agents, whose mouth is formed by an outerly threaded neck C. A closure cap according to the invention, generally designated as 1, is applied on the neck C.

The cap 1 essentially comprises an inner tubular body 2 and an outer tubular body 3, both normally made of moulded plastic material.

The inner tubular body 2 has an attachment base 4 formed with an annular recess 5 having a shape complementary to that of the neck C of the bottle F and having an inner thread 6 screwed onto the outer thread of the neck C. The base 4 is further provided at one end thereof with an annular appendage 7 formed with a circumferential tooth 8 for permanent anchoring thereof to the base of the neck C, and at the other end with a cylindrical projection 9 formed with an outer thread 10 and with a terminal front sealing lip 11.

The annular projection 9 is integrally and coaxially connected to a duct 12 projecting from the side opposite to the bottle F and whose free end carries an axial pin 13 constituting an obturator, the base of which is connected to the end of the duct 12 through a crown of radial ribs 14. The free end of the duct 12 is further formed with a lateral annular sealing lip 15 and, according to the primary feature of the invention, with a front

annular sealing lip 16, placed in immediate proximity to each other.

The outer tubular body 3 is provided at one end thereof with a base designed as a cylindrical bush 17 formed with an inner thread 18 screwed onto the outer thread 10 of the base 4 of the inner tubular body 2, and at the other end with a terminal delivery nozzle 19 formed by a cylindrical duct 20 followed by a frusto-conical duct 21. The free end of the frusto-conical duct 21 defines an outlet opening 22.

The pin obturator 13 of the inner tubular body 2 is axially extending along the terminal delivery nozzle 19.

The bush 17 and the terminal delivery nozzle 19 are connected to each other through an intermediate cylindrical section 23 coaxial with the duct 12 and connected at one side to the bush 17 through a larger radial wall 24, and at the other side to the base of the duct 20 of the terminal delivery nozzle 19 through a smaller radial wall 25. This radial wall 25 is facing towards the front sealing lip 16 of the duct 12, while the lateral sealing lip 15 of this duct 12 is placed in sliding contact with the inner wall of the intermediate cylindrical section 23.

Figure 1 shows the open condition of the cap 1 according to the invention: in this condition the outer tubular body 3 is unscrewed relative to the inner tubular body 2, so as to open the flow path between the interior of the bottle F and the outlet opening 22. This flow path is evidently defined by the cavity of the base 4 and the duct 12 of the inner tubular body 2, and then by the terminal delivery nozzle 19: since the outer tubular body 3 is axially advanced with respect to the inner tubular body 2, the pin obturator 13 is spaced apart from the outlet opening 22, which is accordingly unobstructed.

At the end of delivery of the substance, to perform closure of the cap 1 it is sufficient to fully screw the outer tubular body 3 relative to the inner tubular body 2. Owing to this action the outer tubular body 3 axially retracts, whereby the pin obturator 3 engages with its free end the outlet opening 22, so as to sealingly plug it. Simultaneously the first front sealing lip 11 closes against the larger radial wall 24, and the second front annular sealing lip 16 closes against the smaller radial wall 25. During displacement from the open condition to the closed condition of the cap, the lateral lip 15 sealingly slides against the wall of the intermediate cylindrical section 23. Thus the threaded coupling 10-18 between the two tubular bodies 2,3 is isolated and protected in an extremely efficient fashion against risks of infiltrations therein of the fluid substance contained within the bottle F, thus drastically reducing the possibility of locking of said threaded coupling in case the substance consists of a hardenable glue.

Naturally, the details of construction and the embodiment may be widely varied with respect to what has been disclosed and illustrated, without thereby departing from the scope of the present invention, such as defined in the appended claims.

Claims

1. Closure cap for bottles (F) and the like containing fluid substances, including an inner tubular body (2) to be axially secured to the mouth (C) of the bottle (F), in communication therewith, and having an outer thread (10) and an end axial pin obturator (13), and an outer tubular body (3) coaxial with the inner tubular body (2) and having an inner thread (18) engaged on said outer thread (10), and a terminal delivery nozzle (19) with an outlet opening (12) and along which said pin obturator (13) is coaxially extending, said outer tubular body (3) being rotatable relative to the inner tubular body (2) between a screwed position, in which said outlet opening (22) is plugged by said pin obturator (13), and an unscrewed position in which said outlet opening (22) is unobstructed, and wherein sliding lateral sealing means (15,23) are provided between the inner tubular body (2) and the outer tubular body (3) to isolate said delivery nozzle (19) from said outer and inner threads (10,18), and said inner tubular body (2) is formed in proximity of said outer thread (10) with an annular front sealing lip (11) cooperating under closure contact with said outer tubular body (3), in proximity of said inner thread (18), in the screwed position of said outer tubular body (3), characterised in that said inner tubular body (2) is further provided with a second front annular sealing lip (16) adjacent to said pin obturator (13) and cooperating under closure contact with said outer tubular body (3) in proximity of said terminal delivery nozzle (19), in the screwed condition of said outer tubular body (3).
2. Closure cap according to claim 1, characterised in that said delivery nozzle (19) has a radial annular base (25) defining a bearing seat for said second front annular sealing lip (16).
3. Closure cap according to claim 1 or claim 2, characterised in that said second front annular sealing lip (16) is arranged in close proximity of said sliding lateral sealing means (15,23).
4. Closure cap according to any of the preceding claims, characterised in that said inner tubular body (2) is formed with an innerly threaded annular base (4,6) to be anchored to the mouth (C) of the bottle (F) or the like.

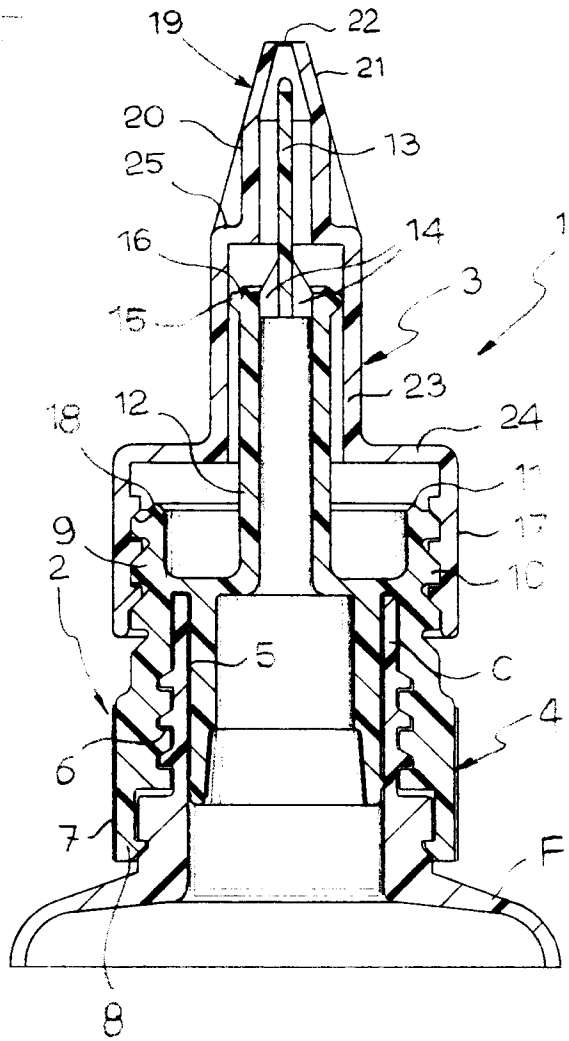


Fig. 1

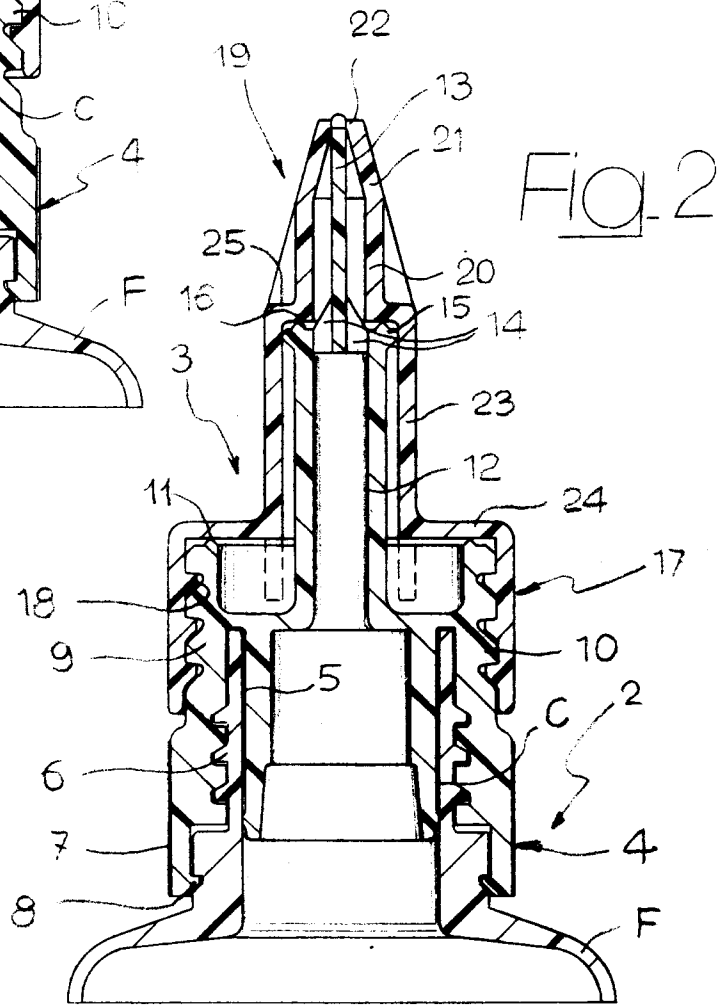


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 98 83 0303

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y,D	EP 0 412 285 A (S. KISLING & CIE) 13 February 1991 * figure 9 *	1-4	B65D47/24
Y	FR 814 320 A (WOLTER) 21 June 1937 * page 1, line 57 - page 2, line 37; figures *	1-4	
Y,D	US 3 216 630 A (STULL) 9 November 1965 * column 2, line 72 - column 3, line 4; figure 1 *	4	
A	FR 1 370 761 A (SOCIETE BORDELAISE DE MATIERES PLASTIQUES) * figure 1 *	1-3	
A	DE 43 28 582 A (HUBER VERPACKUNGEN) 2 March 1995 * figure 1 *	1-3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 August 1998	Examiner Bridault, A
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