



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.03.2010 Bulletin 2010/10

(51) Int Cl.:
B65D 8/20 (2006.01)

(21) Application number: **09161146.7**

(22) Date of filing: **26.05.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA RS

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(30) Priority: **05.09.2008 IT MI20080280 U**

(54) **Dome top for metal containers allowing closure with a crown cap**

(57) A member (1) is disclosed for use as the upper body in the production of metal containers formed by two or more parts, said element comprising a circular base

(3), an elongated tubular neck (2) which tapers outwards towards said circular base (3), and an area (4) away from the circular base (3), said area (4) having a profile adapted to couple with crown caps.

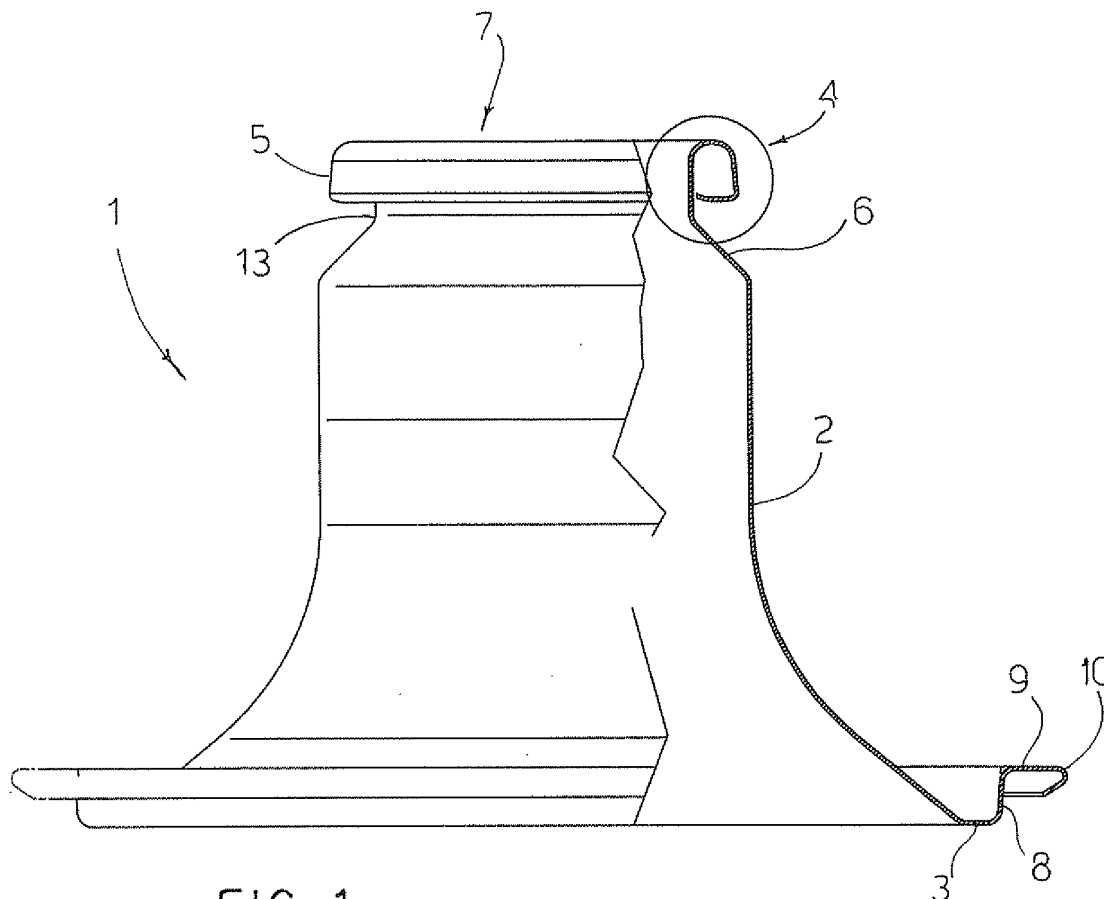


FIG. 1

Description

[0001] The present invention refers to an element defined herein as a 'dome-shaped' for use as the upper body in the production of metal containers with two or more parts provided with a crown cap.

[0002] Metal containers formed by two or more parts for packaging of liquids and semi-liquids, including food-stuffs, are increasingly widely available on the market. They are an improvement over glass containers in that they avoid damage due to the fragility of the material and allow considerable savings on transport and packaging thanks to their light weight.

[0003] Metal containers for packaging of olive oil formed by a plurality of parts the upper body of which comprises a threaded area so as to accept screw-on closure caps are known to the art. These metal containers with screw-on caps must be provided with safety devices against tampering with the cap. It is therefore necessary to provide on the upper body a groove suitable to accommodate the safety anchoring. This requires the upper body to be constructed in successive steps on a progressive series of dies and thus a long manufacturing operation. Furthermore, production of the upper parts comprising threaded areas requires a manufacturing process in a plurality of steps resulting in a greater amount of time taken.

[0004] Object of the present invention is to overcome the drawbacks of the prior art relating to metal containers formed by multiple parts by providing a practical versatile and cheap upper body that is able at the same time to ensure a good closure.

[0005] These objects are achieved according to the invention with the characteristics listed in appended independent claim 1.

Advantageous embodiments of the present invention are apparent from the dependent claims.

[0006] The upper member (or dome-shaped member) for multiple-part metal containers according to the invention comprises a circular base, a tapered and tubular neck enlarging towards said base, a mouth and an area situated above the neck in a distal position with respect to the circular base, which comprises a ring-shaped end suitable to couple with a crown cap closure and to retain said cap after pressure has been exerted, said ring being positioned beneath the mouth.

[0007] Further characteristics of the invention will be made clearer by the detailed description that follows referring to a purely exemplifying and therefore non limiting embodiment thereof, illustrated in the appended drawings, wherein:

Figure 1 is a side elevational view of an upper member (dome top) according to the invention in which one part has been partially sectioned;

Figure 1a is an enlargement of the detail circled in Figure 1;

Figure 2 is an exploded view of a multiple part con-

tainer in which a crown cap, the dome-shaped upper member of Figure 1, and a central body can be identified before assembly.

Figure 3 is an assembled view of the container of Figure 2.

[0008] With reference to Figure 1, the dome-shaped member according to the invention, denoted by reference numeral 1, comprises a tubular neck 2 which tapers outwards towards the circular base 3, away from the mouth 7.

[0009] The circular base 3 consists of a ring 8 which integrates a flange 9 the outer rim 10 of which is curved outwardly downwards and partially bent towards the inside of the dome top 1.

[0010] Above the neck 2 there is an area 4 which comprises a peripheral annular ridge 5 (ring) situated beneath the mouth 7. Beneath the ring 5 is a throat or recess 13. The ring 5 protrudes outwards with respect to the throat 13 in a radial direction with respect to the axis of the member 1 giving rise to an area 11 adapted for anchoring of the teeth of crown caps once closing pressure is exerted. In this manner anchoring of the teeth of the crown cap to said ring 5, and thus to the dome-shaped member 1, is ensured.

[0011] The upper rim 12 of the ring 5 is curved outwardly downwards and bent towards the inside of the dome 1.

[0012] The throat 13 is joined to the neck 2 by means of a truncated conical area 6.

[0013] A flange 9 of the circular base 3 is used for subsequent coupling of the dome top 1 to the other parts generally used to form metal containers as shown in Figure 2 and as will be better described hereunder.

[0014] The circular base 3 can be of various diameters according to the dimensions of the other parts of the metal container. A preferred diameter is, for example, about 65 mm measured as the outside diameter of the ring 8 of said base.

[0015] The upper member 1 may be made of electrolytic tinplate, plain or lithographed. What is meant by tinplate is a steel plate coated with a film of tin by means of an electrolytic process.

[0016] Alternatively, the upper element can be made of another metal such as aluminium, tin free steel, plain or possibly coated with paints or polymer films, such as, for example, polyethylene films, polypropylene films, etc. These materials can also be lithographed.

[0017] The upper member is preferably made of tinplate or tin free steel coated with polymer films.

[0018] The upper member 1 is obtained by means of process which comprises the stage of forming the neck by drawing a metal disc cut from a sheet of tinplate material, subsequent pressing and rolling.

With reference to figure 2, the member 1, once formed, is then coupled with the central body 14 and a bottom (not illustrated in the figure), and a crown cap 16 giving rise to a multiple-part metal container as illustrated in

Figure 3. The central body 14 may be a single piece integral with the bottom.

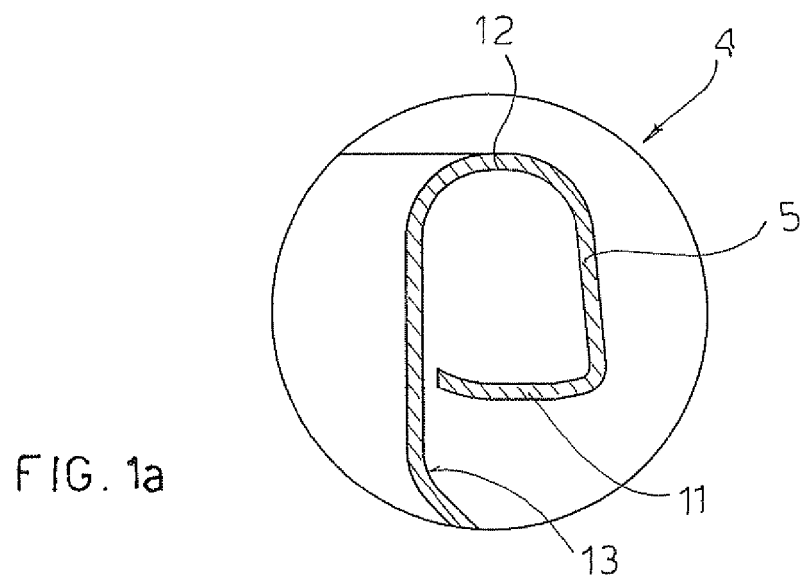
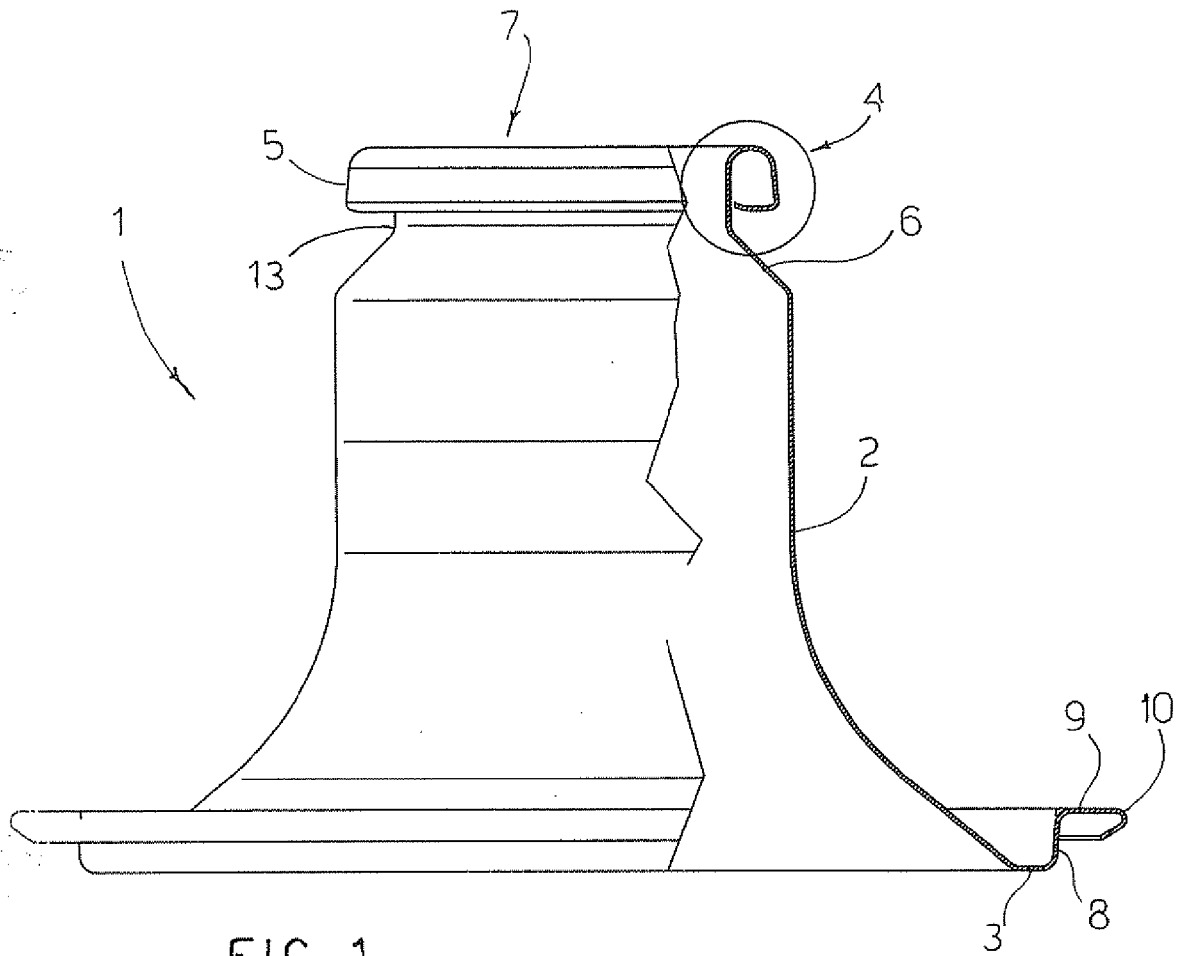
[0019] Coupling of the parts is carried out so as to form a container using methods known to the art, for example, by mechanically clamping the rim 10 of the flange 9 of the dome-shaped member 1 to the upper edge 15 of the central body 14 and/or by means of welding etc.

[0020] The central body 14 and thus the relative bottom may be either cylindrical or of different shapes. For example, the central body 14 can be parallelepiped in shape with a quadrilateral outline preferably with equal sides. In this case a connection will have to be provided between the circular base 3 and the central body 14.

[0021] Numerous changes and modifications of detail can be made to the present embodiments of the invention without thereby departing from the scope of the invention as set forth in the appended claims.

Claims

1. A dome-shaped member (1) for metal containers comprising a circular base (3), a tubular neck (2) tapering outwards toward said base, a mouth (7) and an area (4) situated above the neck (2), **characterised in that** the area (4) comprises a peripheral annular ridge (5) situated beneath the mouth (7) adapted to interconnect with a crown cap (16).
2. A dome-shaped member (1) according to claim 1, **characterised in that** beneath the annular ridge (5) there is provided a throat (13) and that the ring (5) protrudes outwards with respect to said throat (13) in a radial direction with respect to the axis of the member (1) giving rise to an area (11) adapted for anchoring of the teeth of a crown cap.
3. A dome-shaped member according to claim 1 or 2, **characterised in that** said circular base (3) consists of a ring (8) which integrates a flange (9) the outer rim (10) of which is curved outwardly downwards and partially bent towards the inside of the dome-shaped member (1).
4. A dome-shaped member according to anyone of claims 1 to 3, **characterised in that** said ring (5) has its upper rim (12) curved outwardly downwards and bent towards the inside of the dome-shaped member (1).
5. A dome-shaped member according to any one claims 2 to 4, **characterised in that** said throat (13) is joined to the neck (2) by means of a truncated conical area (6).
6. A dome-shaped member according to any one of claims 1 to 5, **characterised in that** said circular base (3) as a diameter of about 65 mm measured as the outside diameter of the ring (8) of said base.
7. A dome-shaped member (1) according to any one of claims 1 to 6, **characterised in that** it is made of electrolytic tinplate, plain or lithographed; or it is made of another metal such as aluminium, tin-free steel, plain or coated with paints or polymer films, preferably polyethylene films or polypropylene films, optionally lithographed; the upper member is preferably made of tinplate or tin-free steel, coated with polymer films.
8. A dome-shaped member (1) according to any one of claims 1 to 7, **characterised in that** said rim (10) of the flange (9) of the circular base (3) is adapted to couple to the upper rim (15) of the central body (14) of metal containers.
9. A multiple part metal container comprising a central body (14) with a bottom and an upper body (1) closed by a crown cap (16), **characterised in that** said upper body is the dome-shaped member (1) as defined in any one of claims 1 to 8.



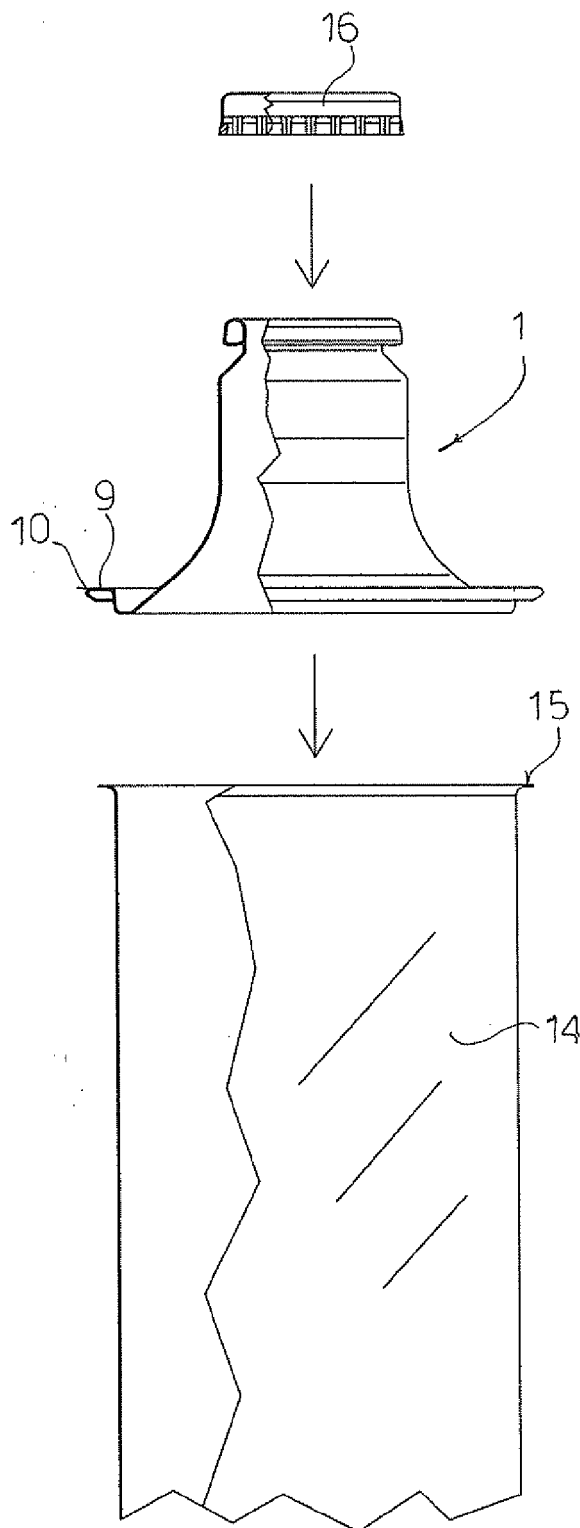


FIG. 2

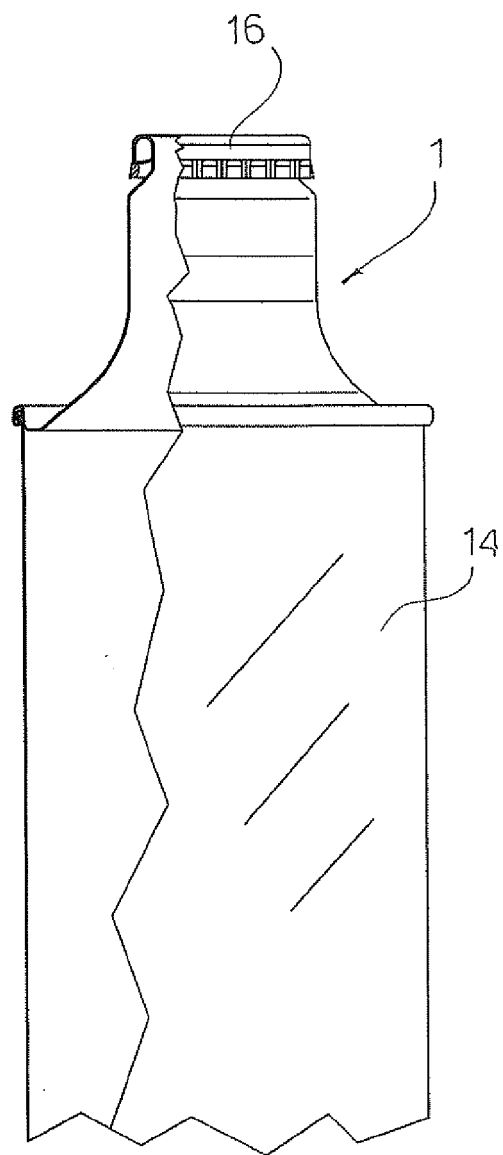


FIG. 3



EUROPEAN SEARCH REPORT

Application Number
EP 09 16 1146

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 488 427 A (CROWN CORK & SEAL CO) 6 July 1938 (1938-07-06) * page 4, lines 19-26; claim 19; figure 13 *	1-9	INV. B65D8/20
X	----- US 4 313 545 A (MAEDA KENICHI) 2 February 1982 (1982-02-02) * column 4, line 49 - column 5, line 35; figures 1,3 *	1-9	
X	----- GB 463 950 A (CONTINENTAL CAN CO) 5 April 1937 (1937-04-05) * column 4, lines 103-129; figure 2 * -----	1-3,5-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 October 2009	Examiner Grentzius, Wim
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 16 1146

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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29-10-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 488427	A	06-07-1938	NONE	

US 4313545	A	02-02-1982	NONE	

GB 463950	A	05-04-1937	NONE	
