(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 161 205 A1**

(12) **EUROPEAN PATENT APPLICATION**

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

(51) Int Cl.:
B65D 8/04 *(2006.01)* ***B65D 8/20*** *(2006.01)*
B65D 1/02 *(2006.01)*

(21) Application number: **09161141.8**

(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

(30) Priority: **05.09.2008 IT MI20080281 U**

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(54) **Dome top for metal containers allowing closure with a twist-off cap**

(57) A dome-shaped member (1) is disclosed for use as an upper body in producing metal containers formed by two or more parts, said member (1) comprising a circular base (3), a tubular neck (2) that tapers outwards towards the base (3), a mouth (7) and a tubular area (4) above the neck (2) in a distal position with respect to the base (3), said area (4) comprising a series of raised connecting members (8) having a profile adapted to engage with twist-off caps.

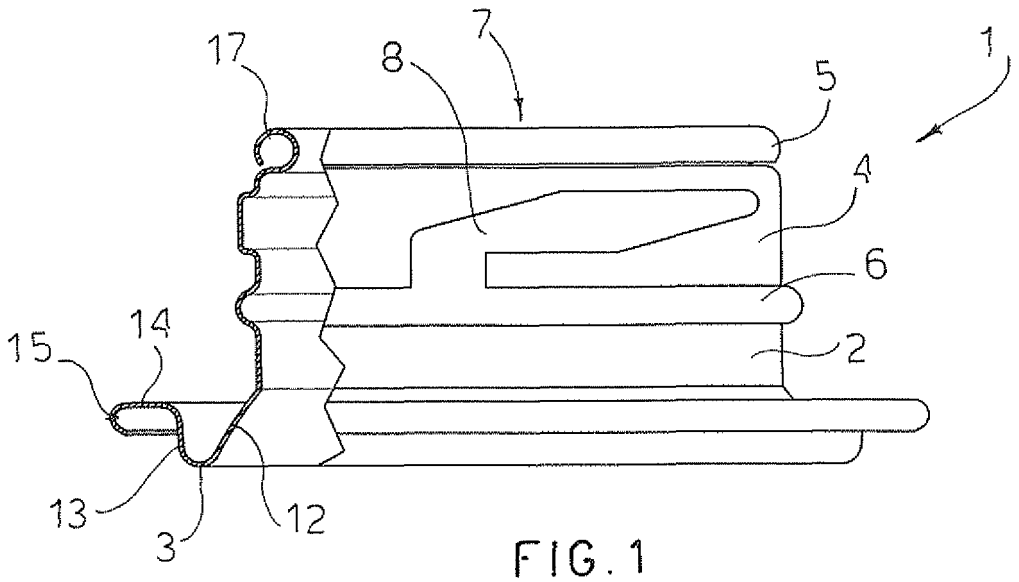


FIG. 1

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Description

[0001] The present invention relates to a member defined herein as "dome-shaped" for use as the upper body in producing metal containers formed by two or more parts provided with a twist-off cap.

[0002] Metal containers formed by two or more parts, useful for packaging liquid or semiliquid products, including foodstuffs, are increasingly common on the market. They represent 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 olive oil formed by a plurality of parts the upper body of which comprises a threaded area so as to receive screw-on closure caps are known to the art. These metal containers with screw-on closure caps must be provided with safety devices against tampering with the cap. It is therefore necessary to provide on said upper body a groove suitable to accommodate the safety anchoring. This requires the upper body to be constructed in a plurality of successive steps on a progressive series of dies and thus a long manufacturing operation.

[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 simple to produce and at the same time able to ensure a good closure, particularly after the first opening.

[0005] This object is achieved by the upper member according to the invention which presents the features listed in appended independent claim 1.

[0006] Advantageous embodiments of the invention are apparent from the dependent claims. The upper member or dome-shaped member for multiple-part metal containers according to the invention comprises a mouth, a circular base, a tapered and tubular neck enlarging towards said base, and an area situated above said neck which is provided with a plurality of raised, protruding connecting members.

[0007] Said connecting members are positioned slantwise and have a profile adapted to interlock with the grooves of a twist-off closure cap and to retain said cap tightly when the cap is subjected to torsion with respect to the vertical (longitudinal) axis of the dome-shaped member in the closed position, at the same time allowing the twist-off cap to be released when subjected to torsion in the opposite direction to the closing torsion with respect to the vertical axis of the dome-shaped member.

[0008] The profile of the connecting members can be of various shapes, preferably rounded.

[0009] The number of connecting members may vary according to the size of the circular base and the diameter of the mouth. One embodiment provides for at least two connecting members. Another embodiment provides for at least three connecting members. Yet another embodiment provides for at least four or more connecting members.

[0010] The mouth, the neck and the area situated above the neck have substantially the same diameter.

[0011] The circular base comprises a flange the outer rim of which is curved outwardly downwards and partially bent towards the inside of the dome-shaped member. This allows the dome-shaped member to be coupled to other members of metal containers by means of simple clamping.

[0012] The dome-shaped member according to the invention can be constructed in various sizes and diameters in accordance with the dimensions of the central body of the container and of the cap to which it is to be coupled. For example, dome-shaped members according to the invention can have a circular base diameter of about 65 mm and about 45 mm.

[0013] The upper member may be made of electrolytic tinplate, plain or lithographed. What is meant by tinplate is sheet-steel coated with a thin layer of tin by means of an electrolytic process.

[0014] Alternatively, the upper member may be made of another metal such as aluminium or tin-free steel (coated chromium steel), plain or possibly coated with paints or polymer films, such as, for example, polyethylene film, polypropylene film, etc. These materials may also be lithographed.

[0015] The upper member is preferably made of tinplate or tin-free steel coated with polymer films.

[0016] The upper member is furthermore obtained by using a process that comprises formation of the neck by drawing of a metal disk cut from a sheet of material, subsequent pressing and rolling to define the profile of the connecting members.

[0017] Further characteristics of the invention will be made clearer by the detailed description that follows, referring to purely exemplifying and therefore non limiting embodiments thereof, illustrated in the appended figures, wherein:

Figure 1 is partially sectional, side elevational view of a first embodiment of an upper member comprising three raised connecting members;

Figure 2 is a general exploded view of a multiple-part container in which a twist-off cap, the dome-shaped upper member of Figure 1 and a central body can be identified before assembly;

Figure 2a is an assembled view of the container of Figure 2;

Figure 3 is a partially sectional, side elevational view of a second embodiment of an upper member comprising four raised connecting members and a circular base with a larger diameter than that of the first embodiment of Figure 1.

[0018] With reference to Figure 1, a first embodiment of the invention is illustrated.

[0019] The dome-shaped member according to the invention, denoted by reference numeral 1, comprises a

tubular neck 2 which tapers outwards towards a circular base 3, away from a mouth 7.

[0020] Above the neck 2 there is a ring 6 which acts as an abutment for the twist-off cap. In fact the ring 6 protrudes outwards with respect to the neck 2 in a radial direction with respect to the vertical axis of the member 1, giving rise to an area adapted to act as an abutment for the twist-off cap once closing torsion is exerted. In this manner tight closure of the twist-off cap is ensured.

[0021] Above the ring 6 is situated an area 4 provided with three raised, protruding connecting members, herein also called notches, 8 (only one visible in the figure) adapted to engage with a twist-off cap.

[0022] The notches depart from the ring 6 towards the mouth 7, are spaced apart from each other and are positioned slantwise on the surface of said area 4.

[0023] The three notches 8 are joined to the ring 6 and have a profile adapted to interlock with the grooves of twist-off caps.

[0024] Above said area 4 there is a ring 5 situated beneath the mouth 7. The upper rim 17 of ring 5 is rounded and bent completely outwards.

[0025] The neck 2 is joined to the circular base 3 by means of a truncated conical member 12.

[0026] The circular base 3 consists of a ring 13 which integrates a flange 14. The outer rim 15 of said flange 14 is curved outwardly downwards and partially bent towards the inside of the dome-shaped member 1.

[0027] The flange 14 of the circular base 3 is used for subsequent coupling of the dome top 1 with the other members generally used to form metal containers.

[0028] The circular base 3, and thus the ring 13, can be of various diameters depending upon the dimensions of the other parts of the metal container. The ring 13 in Figure 1 has an outside diameter of about 45 mm.

[0029] With reference to Figures 2 and 2a, there is illustrated assembly of the dome-shaped member 1 of Figure 1 to a central body 18 having a bottom (not shown in the figures) and a twist-off cap 20, giving rise to a multiple part metal container. The central body 18 can be a single piece integral with the bottom.

[0030] Coupling of the parts is carried out so as to form a metal container using known methods, for example, by mechanically clamping the edge 15 of the flange 14 of the dome-shaped member 1 to the upper rim 21 of the central body 18 and/or by welding, etc.

[0031] The central body 18 and the bottom thereof may be either cylindrical or of different shapes. For example, the central body 18 may 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 of the dome-shaped member 1 and the central body 18.

[0032] Figure 3 shows a second embodiment of the dome-shaped member of the present invention, identified by reference numeral 1.

[0033] The dome-shaped member 1 consists essentially of the same components as the member 1 of Figure 1 with the exception of the number of connecting members 8, which in this embodiment is four (one shown on view and one in section in Figure 3) and of the diameter of the circular base, which in this embodiment is greater than that of Figure 1, for example about 65 mm. Furthermore, in this embodiment the notches are detached from the ring 6.

[0034] As stated, the member 1 described in Figures 1 and 3 is obtained by a process that includes the stage of forming the neck 2 by drawing a metal disk cut from a sheet of material, subsequent pressing and rolling to define the profile of the notches.

[0035] Numerous changes and modifications of detail within the reach of a person skilled in the art can be made to the present embodiment 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) comprising a circular base (3), a cylindrical neck (2) tapering outwards towards said base, a mouth (7) and a tubular area (4) situated above the neck (2), **characterised in that** the area (4) comprises a plurality of raised connecting members (8) adapted to interconnect with a twist-off cap and a protruding abutment ring (6) for said cap.

2. A dome-shaped member according to claim 1 **characterised in that** the connecting members (8) are spaced apart from each other and positioned slantwise on the surface of the area (4), raised with respect to said surface.

3. A dome-shaped member according to claim 2 **characterised in that** said connecting members (8) are two, three, four or more in number and are joined to said protruding ring (6).

4. A dome-shaped member according to any one of claims 1-3, **characterised in that** said circular base (3) consists of a ring (13) that integrates a flange (14), said flange (14) having an outer rim (15) curved outwardly downwards and partially bent inwards.

5. A dome-shaped member according to any one of claims 1-4 **characterised in that** said ring (13) of said circular base (3) has a diameter of about 65 mm.

6. A dome-shaped member according to any one of claims 1-5 **characterised in that** said ring (13) of said circular base (3) has a diameter of about 45 mm.

7. A dome-shaped member according to any one of claims 1-6 **characterised in that** said neck (2) is joined to said circular base (3) by means of a trun-

cated conical area (12).

8. A dome-shaped member according to any one of claims 1-7 **characterised in that** it is made of electrolytic tinplate, plain or lithographed; or else 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.

9. A dome-shaped member according to any one of claims 1-8, **characterised in that** said rim (15) of said flange (14) of said circular base (3) is adapted to couple to the upper rim of a central body of metal containers.

10. A multiple part metal container comprising a twist-off cap, a central body with a bottom and an upper body **characterised in that** the upper body is dome-shaped member (1) as defined in any one of claims 1-9.

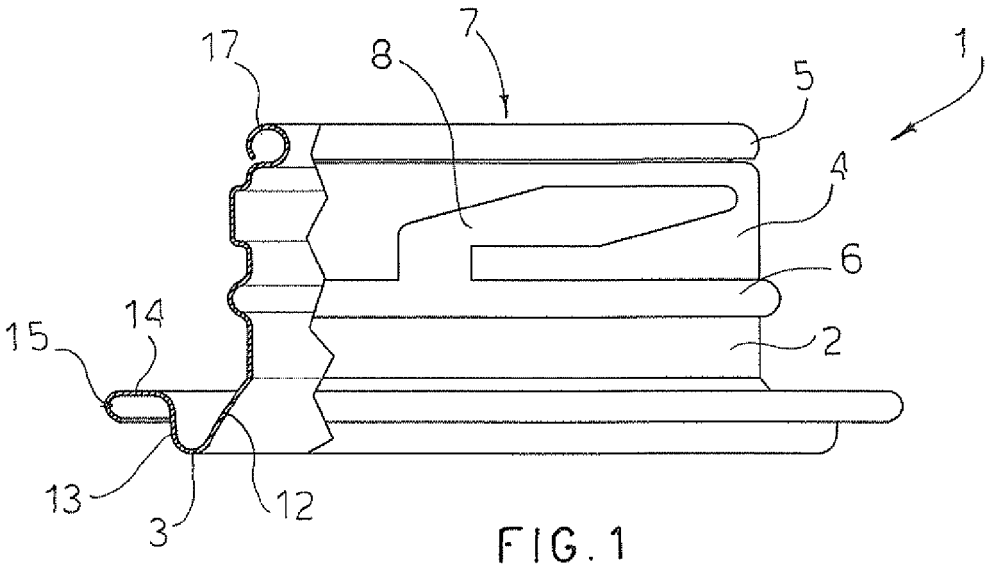


FIG. 1

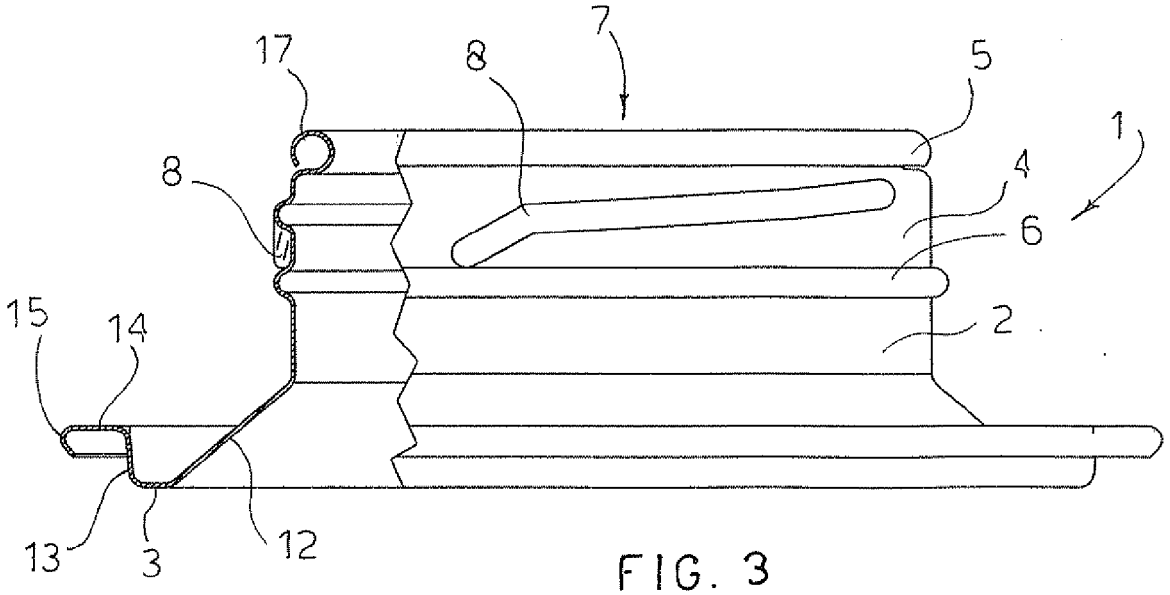
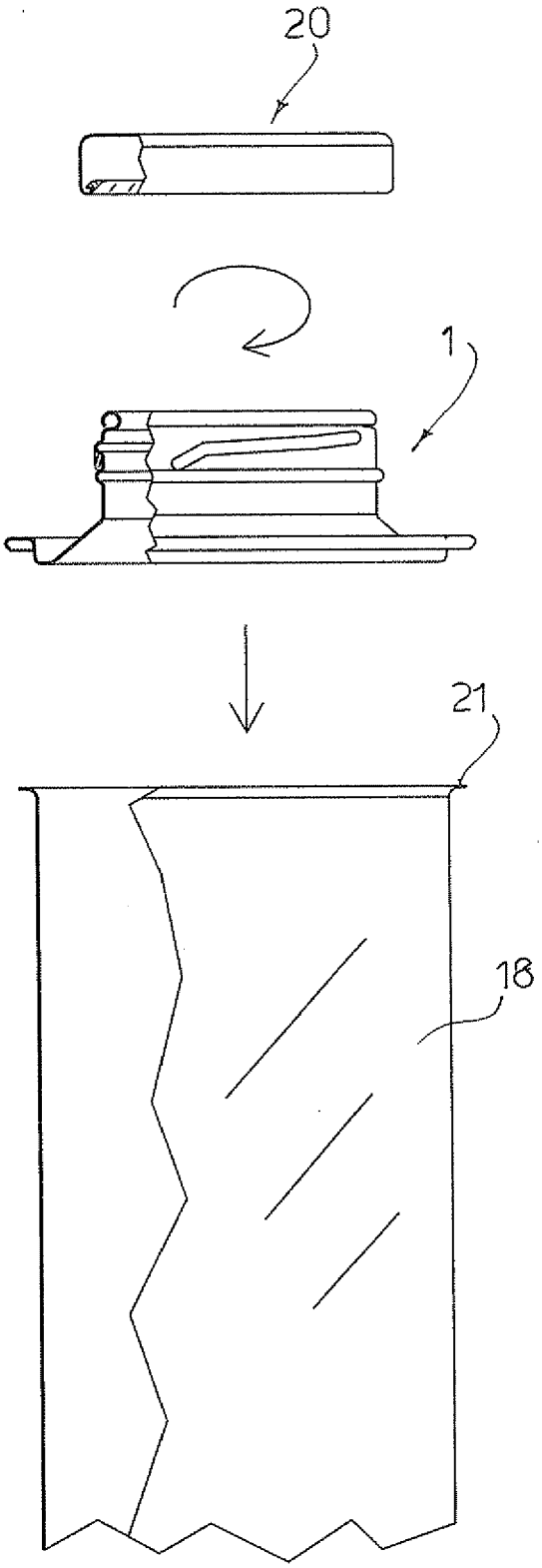


FIG. 3



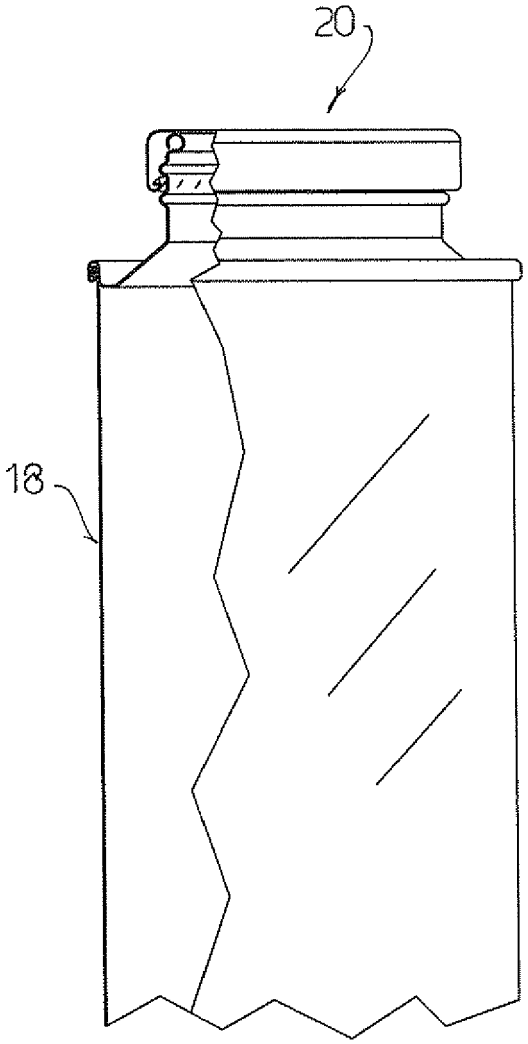


FIG. 2A

FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 09 16 1141

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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
The Hague	5 November 2009	Leijten, René

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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