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(54) **Sealing device for bottles and containers**

(57) A sealing device for bottles and containers, which comprises a teat (1) coupled to the neck (2) of a bottle and a sealing cap (3) coupled to said teat (1) and/or neck (2) of the bottle, wherein said cap (3) comprises a fold-back lid (3b) and wherein an insert (4) is over-injected on the cap (3) to form a hinge area (5), the material of said insert (4) being more flexible than the material of the cap (3), thereby improving the flexibility and resistance of the hinge (5).

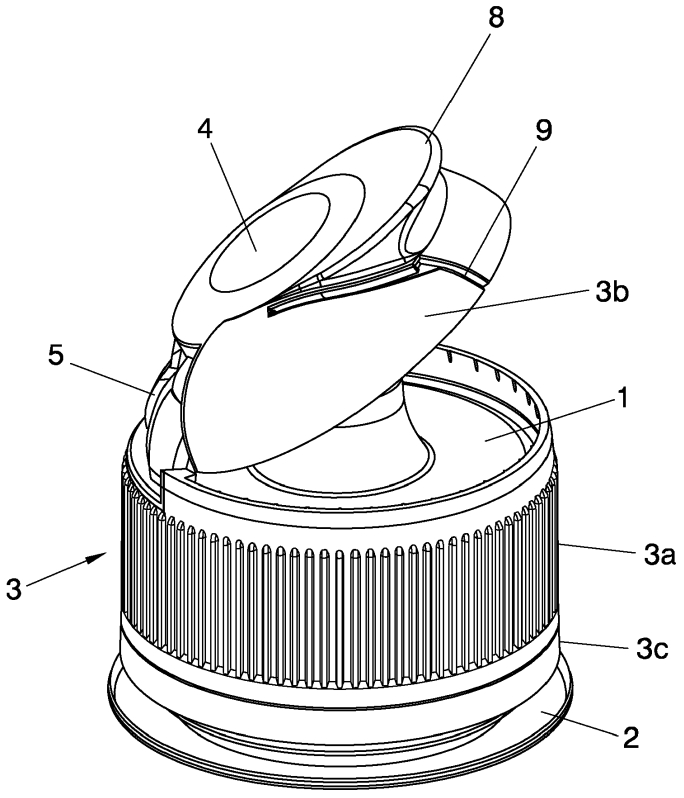

FIG. 1

EP 2 559 631 A1

Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a sealing device of the type normally used as caps for sealing bottles or containers, of the type containing fluids such as water, energy drinks or soft drinks in the interior thereof, which is applicable to the food and food preservation industry.

[0002] The main purpose of this sealing device for bottles or containers is to extend the useful life of the cap itself, due to the cyclicity of the aperture and closure actions of the lid of each cap, as well as guaranteeing the security of small children against used bottles, where breakage of the cap can give rise to accidental swallowing, entailing serious health risks; and which additionally allows definition of a cap having a different outer appearance to the other caps known in the state of the art; with a sealing device that is quickly formed, simple and inexpensive.

BACKGROUND OF THE INVENTION

[0003] The problems relating to the fragility of bottle and container cap lids, which are subject to a large number of apertures and closures, particularly when reused by users, is known in the state of the art; and, due to being formed from a plastic material, said lids end up passing from an elastic state to a plastic state, eventually giving rise to severing and detachment thereof. Additionally, the bottle could be used by small children, which are susceptible of introducing the bottle cap into their mouth and breaking it with their teeth or hands, leading to choking and possible suffocation of the child.

[0004] In relation to the sealing devices commonly used at present, the example of the sealing device disclosed in the utility model with publication number ES-1064802, wherein a cap for bottles, preferably containing oil, is disclosed, formed from a pouring element and a cap that comprises, on its upper part, a lid having a fold-back hinge; said hinge is formed from the plastic material cap itself, but wherein said cap has a section that is gradually weakened by the repeated number of times it is opened and closed and which, on being made of plastic material, implies that the cyclicity of such actions causes breakage or cracking of the lid, with the previously described risks.

[0005] Another drawback of the sealing devices currently used for bottles or containers is that these have a tear off seal or closure destined for aperture thereof, guaranteeing that the bottle has not been adulterated with other products since bottling at the factory; and where said seal, once torn, becomes waste material of the cap, which incurs a cost in terms of material as, once opened, it is useless and must be deposited at the corresponding plastic waste container.

[0006] Due to this, in view of the aforementioned earlier patent and the previously expounded problems relative to extending the useful life of the cap, simplifying the cap forming process and preventing the existence of waste products which incur a cost in terms of material and preventing the appearance of a new sealing device for bottles or containers that will avoid the aforementioned drawbacks, as well as granting an aesthetic appearance which differentiates it from the currently known state of the art, is required, in such a manner that the user is familiarised with and distinguishes the sealing device object of the invention from other sealing devices and appreciates the environmental efficiency achieved, among other things, in its form.

DESCRIPTION OF THE INVENTION

[0007] The present invention relates to a sealing device for bottles or containers, which improves the resistance of the cap lid while in turn shortening forming time and simplifying the mould wherein the cap object of the invention is manufactured, as well as giving the unit a personalisable and distinctive design by means of a simple sealing device which allows adaptation to any bottle or container currently available on the market.

[0008] The sealing device for bottles or containers proposed by the invention comprises:

- a teat which can be coupled to the neck of the bottle, which comprises an outflow orifice wherethrough the liquid inside the bottle flows outwards, and
- a sealing cap which comprises:
  - lid which can be folded back to allow access to the teat;
  - an anchor seal which is anchored to the neck of the bottle by means of a skirt for preventing extraction of the cap in relation to the neck of the bottle; and
  - a body which is disposed between the lid and the anchor seal and which can be coupled to the teat by means of a first inner projection and to the neck of the bottle by means of a second inner projection.

[0009] In order to provide the sealing device with the necessary resistance to endure the multiple apertures of the lid, preventing the lid from breaking in relation to the body, an insert made from a more flexible material than that of the cap is over-injected on the cap. This insert joins the body to the lid and forms a hinge area.

[0010] This hinge area has greater resistance and flexibility to endure the flexions, torsions and tractions to which it will be subjected during the useful life thereof.

[0011] Over-injection is also aimed at obtaining an outer design different to that currently known in the state of the art, as the combination of materials allows combination of different visual aspects (different colour combinations in the exterior) and even superficial aspects (varying roughness or outer finish) between the more flexible and

less flexible material.

[0012] In relation to aperture of the lid, the possibility of the cap comprising the following is envisaged:

- a first cut which encompasses the entire perimeter of the cap with the exception of the hinge area and where said cut defines a line for folding back and opening the lid in relation to the body; and
- a plurality of first connection points disposed in said first cut, consisting of small projections disposed on the inner wall of the cap and which keep the lid and said body joined together until aperture thereof by folding back of said lid.

[0013] This solution avoids the use of a tear off and disposable seal, due to the fact that the lid, as of the first cut made in the perimeter of the cap and, logically, without being disposed in the hinge area, can be opened and folded back with relative ease; additionally, the plurality of first connection points are disposed in the area where said first cut is made, in such a manner that they are in charge of keeping the lid joined to the body of the cap and, as mentioned earlier, are disposed in the interior of the cap without being visible from the exterior by the user. These first connection points are formed during the cap moulding phase in a simple and efficient manner and, after partial peripheral severing of the cap, said connection points are not severed, but must rather be broken by the user in order to open the cap.

[0014] Additionally, the possibility of the cap comprising a second peripheral cut defining the aperture area of the cap in relation to the neck of the bottle and which separates the body from the anchor seal is also envisaged.

[0015] Once again and in a manner similar to that of the first cut, the existence of a plurality of second connection points in the area of this second cut, disposed on the inner wall of the cap and on the second peripheral cut, is envisaged, in such a manner that they are in charge of keeping the cap body joined to the anchor seal.

[0016] In relation to the execution of the first and second cut, the possibility of disposing the hinge at a distance from the centre of the lower cap at the distance from the perimeter thereof for the first cut is envisaged, in such a manner that the machine tool in charge of making that first cut does so in a previously defined cutting radius which does not come into contact with the hinge, due to which it is the only area where said first cut is not made and prevents the hinge, on tearing the lid, from also being torn, improving subsequent closure thereof. Complementarily, for the second cut, the machine tool is in charge of cutting the entire perimeter on not existing any hinge in that lower part of the cap object of the invention.

[0017] Additionally, such cuts are technically imperceptible to the human eye, giving rise to a clean outer appearance of the cap suitable for introducing advertising or informative messages for the user along the perimeter of said cap; and where additionally there is no physical separation of the cut material prior to being torn by the user.

[0018] It can be observed that, in order for the lid to be broken by the user, aperture force increases with respect to the possibility disclosed in earlier patents relative to the tear off and disposable seal, due to which the possibility of the lid comprising a ridge suitable for facilitating the aperture operation thereof is envisaged, in such a manner that the user places one of his/her fingers under said ridge and pushes the lid, severing it along the previously described first cut.

[0019] In order to reinforce the hinge area, in addition to modifying the type of material, the possibility of said area comprising a thickness greater than the thickness of the cap is envisaged, thereby increasing its resistance to traction, torsion and flexion stresses in said area.

[0020] In order to guarantee the inviolability of the cap object of the invention and avoid possible adulterations of the product (water, energy drinks, soft drinks or similar) contained in the interior of the bottle or container, the possibility of the cap comprising at least one vertical groove disposed on the lid next to the ridge is envisaged; where said, at least one, vertical groove may break at the time of aperture of said lid by way of a weakened area of the cap; i.e. the thickness or contact area between the vertical groove and the cap is small, sufficient for the vertical groove to crack and for the user to visually verify, upon opening the cap, that the lid has not been opened beforehand; i.e. it acts by way of a warning mechanism, alerting of aperture prior to the purchase of the bottle or container by the user.

[0021] Additionally, the possibility of the lid comprising a ring-shaped portion by way of an obturator, disposed towards the neck of the bottle and inside the lid, is envisaged; wherein said ring-shaped portion is introduced into the outflow orifice of the teat when the lid is shut, ensuring tightness of the unit, and wherein the outflow orifice may be introduced into the ring-shaped portion of the lid at high pressure, in accordance with the preferred design chosen by the manufacturer.

[0022] On the other hand, the teat that forms part of this invention comprises a circumferential housing which allows introduction of the neck of the bottle at high pressure and a circumferential outer projection which interlocks with the first inner projection of the cap body.

[0023] Finally, the possibility of the hinge comprising at least one tensioning element suitable for keeping the lid in an aperture position in relation to the body is envisaged, in such a manner that the hinge has its own tension and the lid is retained in the aperture position, facilitating the action of drinking for the user. Said retention can be achieved through a combination of thicknesses in different areas of the hinge.

[0024] Thus, according to the described invention, the sealing device for bottles and containers proposed by the invention constitutes an advance in the sealing devices used to date and solves the previously expounded problems in an entirely satisfactory manner, improving

the flexibility and resistance of the cap hinge and simplifying design and forming thereof, as well as giving it a unique and differentiating outer design with respect to the other caps of the state of the art.

DESCRIPTION OF THE DRAWINGS

[0025] In order to complement the description being made and with the object of helping to better understand the characteristics of the invention, according to a preferred example of practical embodiment thereof, a set of drawings has been included as an integral part of said description, wherein the following has been represented in an illustrative and non-limiting manner:

Fig. 1 shows a perspective view of the sealing device object of the invention;
Fig. 2 shows a cross-sectional view of the sealing device object of the invention, open;
Fig. 3 shows a cross-sectional view of the sealing device object of the invention closed, wherein the neck of the bottle is coupled to the teat and cap body.
Fig. 4 shows a cross-sectional view of the sealing device object of the invention closed, without coupling to the neck of the bottle; and
Fig. 5 shows a perspective view of the sealing device object of the invention, from the hinge area.

PREFERRED EMBODIMENT OF THE INVENTION

[0026] In light of the aforementioned figures it can be observed that, in one of the possible embodiments of the sealing device for bottles or containers proposed by the invention, it comprises:

- a teat (1) which can be coupled to the neck (2) of a bottle having an outflow orifice (1 a) wherethrough the fluid inside the bottle is expelled; and
- a cap (3), which in turn comprises:
  - a lid (3b) which can be folded back to allow access to the teat (1);
  - an anchor seal (3c) which is anchored to the neck (2) of the bottle by means of a skirt (3c') in order to prevent extraction of the cap (3) in relation to the neck (2) of the bottle;
  - a body (3a), which is disposed between the lid (3b) and the anchor seal (3c), which can be coupled to the teat (1) by means of a first inner projection (3a') and to the neck of the bottle (2) by means of a second inner projection (3a").

[0027] The device of the invention presents an insert (4) which is over-injected on the cap (3) for forming a hinge area (5) that keeps the body (3a) and lid (3b) joined together once the cap (3) has been opened. This insert (4) is made from a more flexible material than that of the cap (3).

[0028] This hinge area (5) has greater resistance and flexibility for enduring the flexions, torsions and tractions to which it will be subjected during its useful life.

[0029] The insert (4) may comprise a special polypropylene based-material which will give the hinge area (5) resistance and flexibility. For its part, the cap (3) may basically contain polypropylene or polyethylene, materials which are frequently found in caps.

[0030] It can be observed, in figures 3 and 4, that the cap (3) comprises a first cut (6) which defines the fold-back and aperture area of the lid (3b) in relation to the body (3a) and which encompasses the entire perimeter of the cap (3), with the exception of the hinge area (5).

[0031] Disposed on the area of this first cut (6) are a plurality of first connection points (10) formed in the inner wall of the cap (3), which keep the lid (3b) and body (3a) joined together until aperture thereof by folding back of said lid (3b).

[0032] As can be observed in figures 2 and 4, the cap (3) may comprise a second peripheral cut (7) which defines the aperture area (3) in relation to the neck (2) of the bottle and which separates the body (3a) from the anchor seal (3c).

[0033] A plurality of second connection points (11) disposed on the inner wall of the cap (3) and on the second peripheral cut (7) can be observed in the area of this second cut (7). These second connection points (11) are in charge of keeping the cap (3) body (3a) joined to the anchor seal (3c).

[0034] As mentioned earlier, the first (6) and second cuts (7) are practically imperceptible to the human eye, giving rise to a clean outer appearance of the cap and where, additionally, there is no physical separation of the cut material prior to being torn by the user.

[0035] As can be observed in figures 1 and 5, the device object of the invention may comprise a ridge (8) for facilitating the lid (3b) aperture operation. The user places one of his/her fingers underneath said ridge (8) and the first connection points (10) are broken, causing separation of the lid (3b) from the body (3a). The caps currently available on the market open by tearing, pulling, peeling or breaking of a part which may be a puller, tab, flange or similar with very small dimensions, which hampers cap aperture.

[0036] In order to reinforce the hinge area (5) and modify the type of material, the possibility of this area (5) having a greater thickness than the thickness of the cap (3) is envisaged, thereby increasing its resistance to traction, torsion and flexion stresses in said area.

[0037] As can be observed in figure 1, the device object of the invention may comprise, at either side of the ridge (8), tearable vertical grooves (9) which have been weakened, in such a manner that when the slightest pressure is applied to the ridge (8), in addition to tearing the first connection points (10), these two vertical grooves will also be torn. Therefore, the inviolability of the cap (3) is guaranteed and possible adulterations of the product contained inside the bottle or container are prevented,

as the user can verify at first glance whether the cap (3) has been manipulated prior to purchase.

[0038] When the user applies upward pressure to the ridge (8) it causes backward pivoting thereof, facilitating tearing of the vertical grooves (9). Said pivoting is aided by the elasticity of the insert (4) which, as can be observed in figures 1 and 5, extends from the hinge area (5) to the ridge (8).

[0039] In figures 3 and 4, the existence of a ring-shaped portion by way of an obturator (3b') can be observed in the interior of the lid (3b), which is introduced into the outflow orifice (1a) of the teat (1) when the lid (3b) is shut, ensuring tightness of the unit.

[0040] It can also be observed in figure 3 that the teat (1) comprises a circumferential housing (1b) which allows introduction of the neck (2) of the bottle at high pressure and a circumferential outer projection (1c) which interlocks with the first inner projection (3a') of the cap (3) body (3a).

[0041] In figure 5, it can be observed that the hinge area (5) comprises two tensioning elements (12) suitable for keeping the lid (3b) in the aperture position in relation to the body (3a). The lid (3b) will be retained in the aperture position by the tension provided by these tensioners (12), which are disposed on both ends of the hinge (5).

[0042] In light of this description and set of figures, a person skilled in the art will understand that the described embodiments of the invention can be combined in multiple manners within the object of the invention. The invention has been described in accordance with some preferred embodiments thereof, but to a person skilled in the art it will be evident that multiple variations may be introduced into said preferred embodiments without exceeding the object of the claimed invention.

Claims

1. Sealing device for bottles and containers, comprising a teat (1) which can be coupled to the neck (2) of a bottle and a closing cap (3) comprising a body (3a), a lid (3b) which can be folded back to allow access to the teat (1) and an anchor seal (3c), wherein the device is **characterised in that** an insert (4) is over-injected on the lid (3), made from a more flexible material than that of the cap (3), said insert (4) joining the body (3a) to the lid (3b) and forming a hinge area (5).

2. Sealing device for bottles and containers, according to claim 1, **characterised in that** the cap (3) comprises
   a first cut (6) which encompasses the entire perimeter of the cap (3), with the exception of the hinge area (5), where said first cut (6) defines a line for folding back and opening the lid (3b) in relation to the body (3a); and
   a plurality of first connection points (10) disposed within the area of the first cut (6) consisting of small projections formed in the inner wall of the cap (3) which keep the lid (3b) and body (3a) joined together until aperture by folding back of said lid (3b).

3. Sealing device for bottles and containers, according to any of the preceding claims, **characterised in that** the cap (3) comprises
   a second peripheral cut (7) that separates the body (3a) from the anchor seal (3c); and
   a plurality of second connection points (11) disposed on the inner wall of the cap (3) and on said second peripheral cut (7), the connection points (11) of which keep the body (3a) joined to the anchor seal (3c).

4. Sealing device for bottles and containers, according to any of the preceding claims, **characterised in that** the lid (3b) comprises a ridge (8) for facilitating the cap (3) aperture operation.

5. Sealing device for bottles and containers, according to any of the preceding claims, **characterised in that** the cap (3) comprises at least one vertical groove (9) disposed on the lid (3b) next to the ridge (8), and **in that** said, at least, one vertical groove (9) breaks on performing any fraudulent operation on the cap (3).

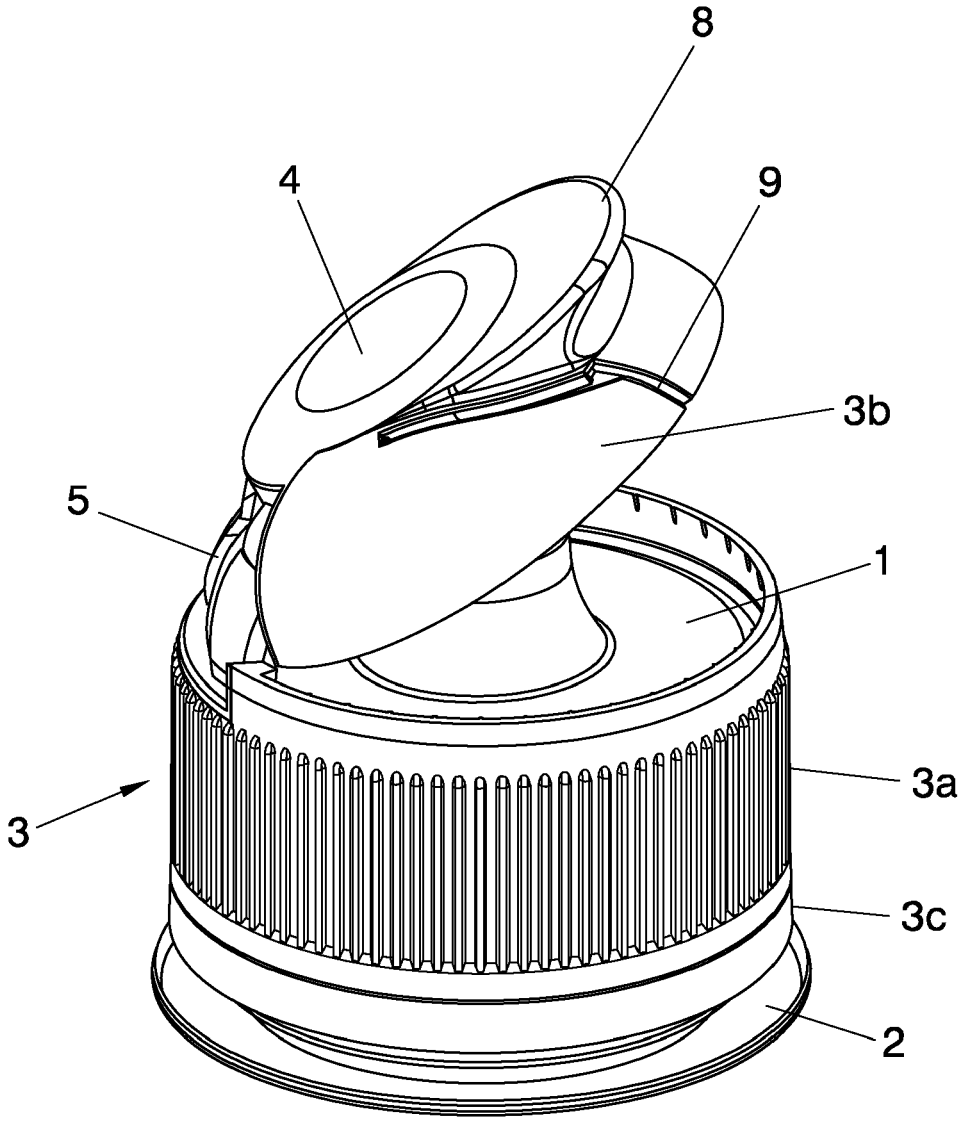

FIG. 1

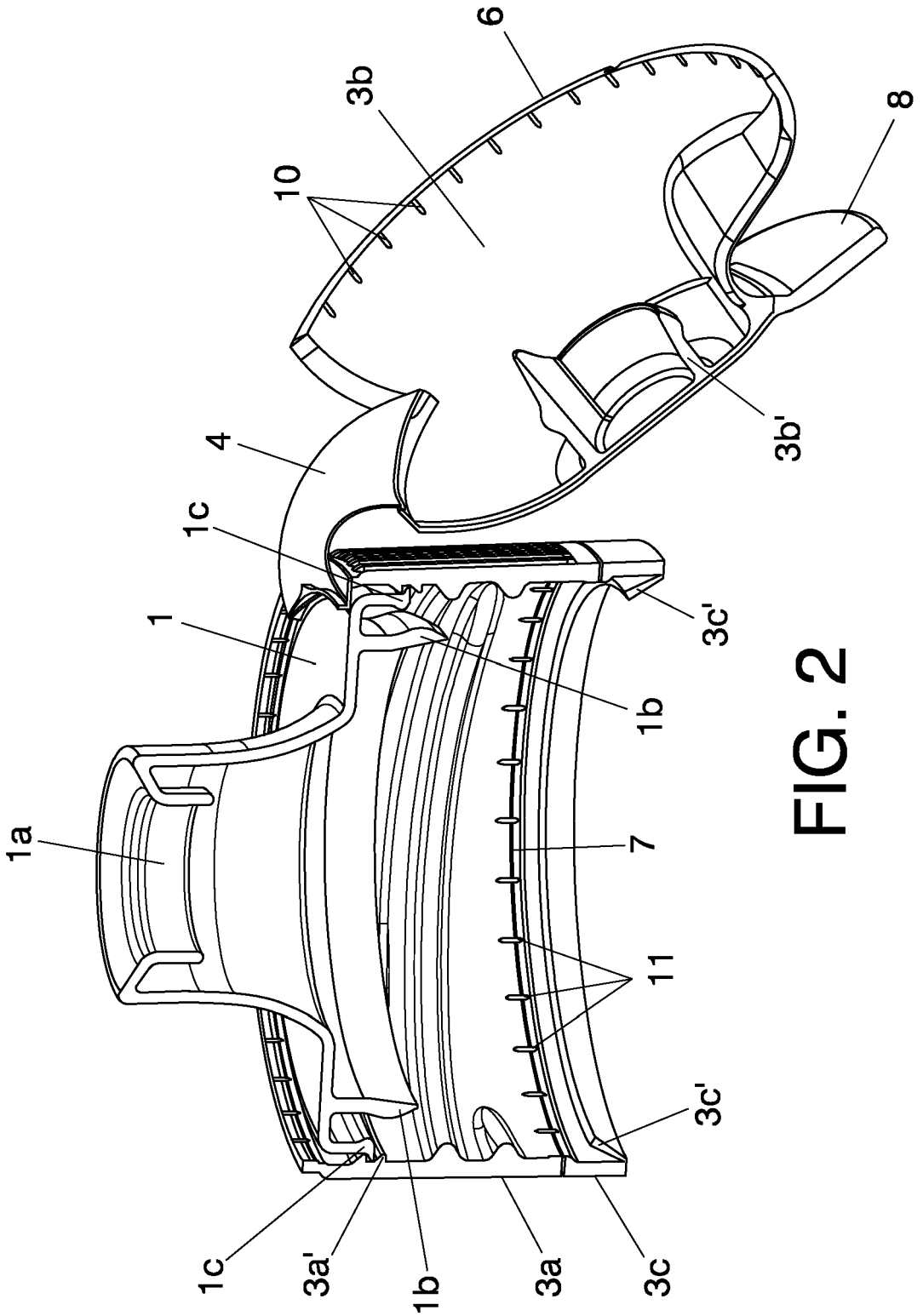

FIG. 2

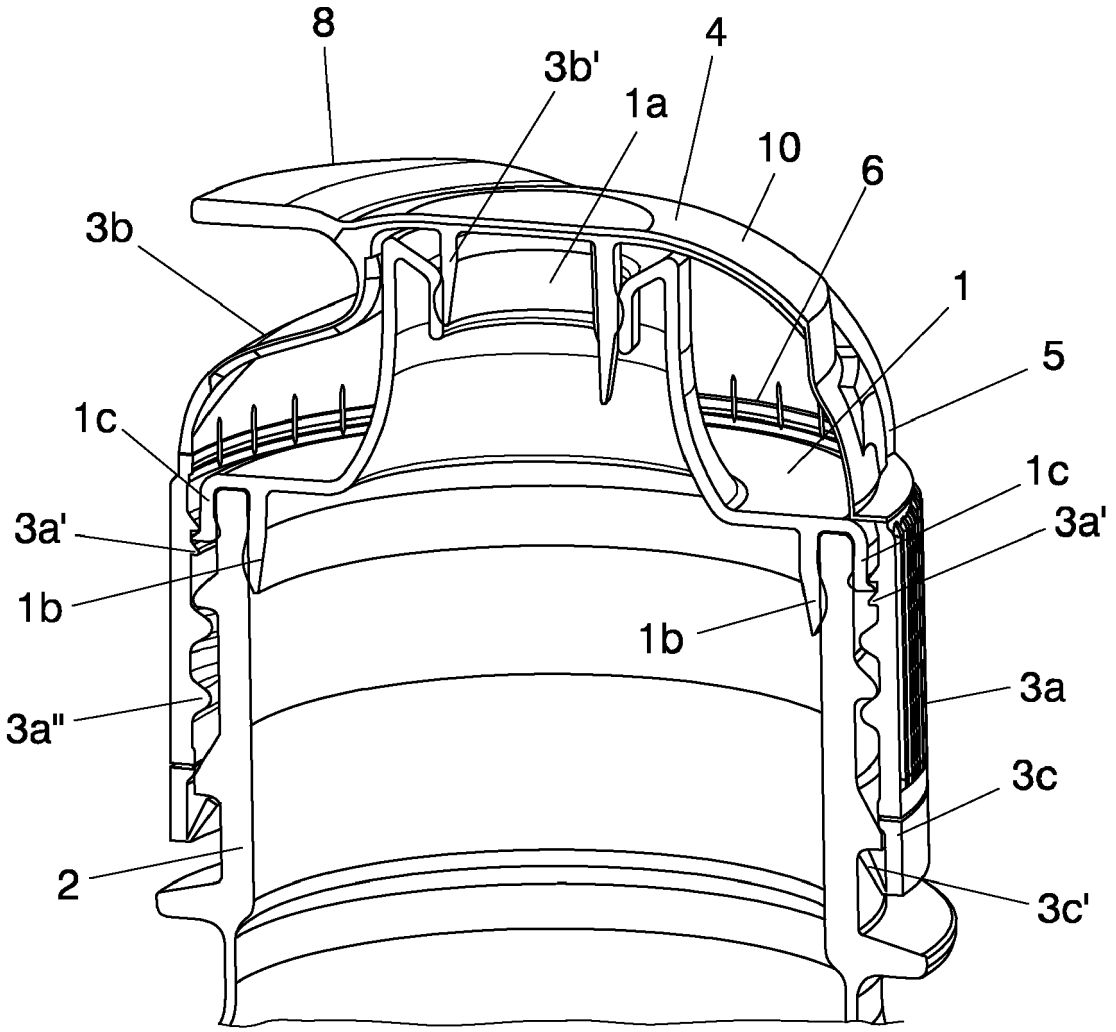

FIG. 3

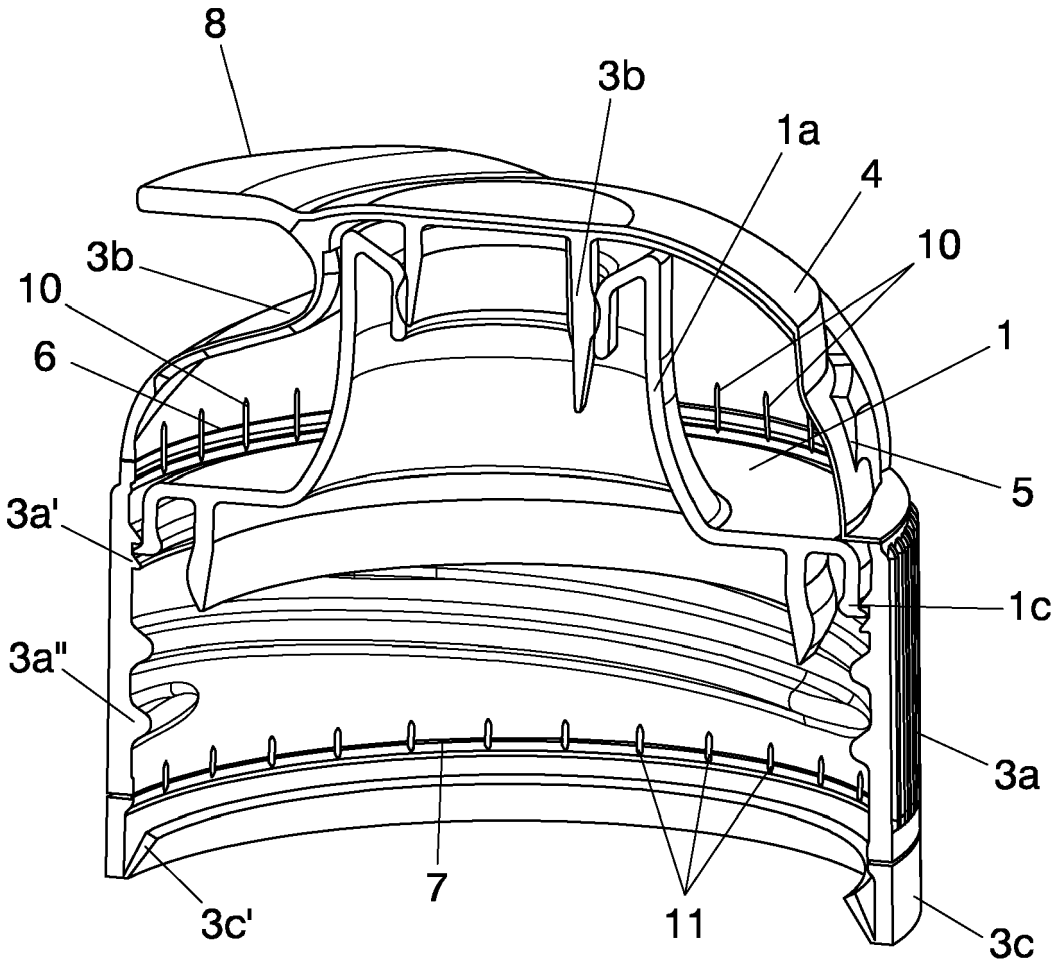

FIG. 4

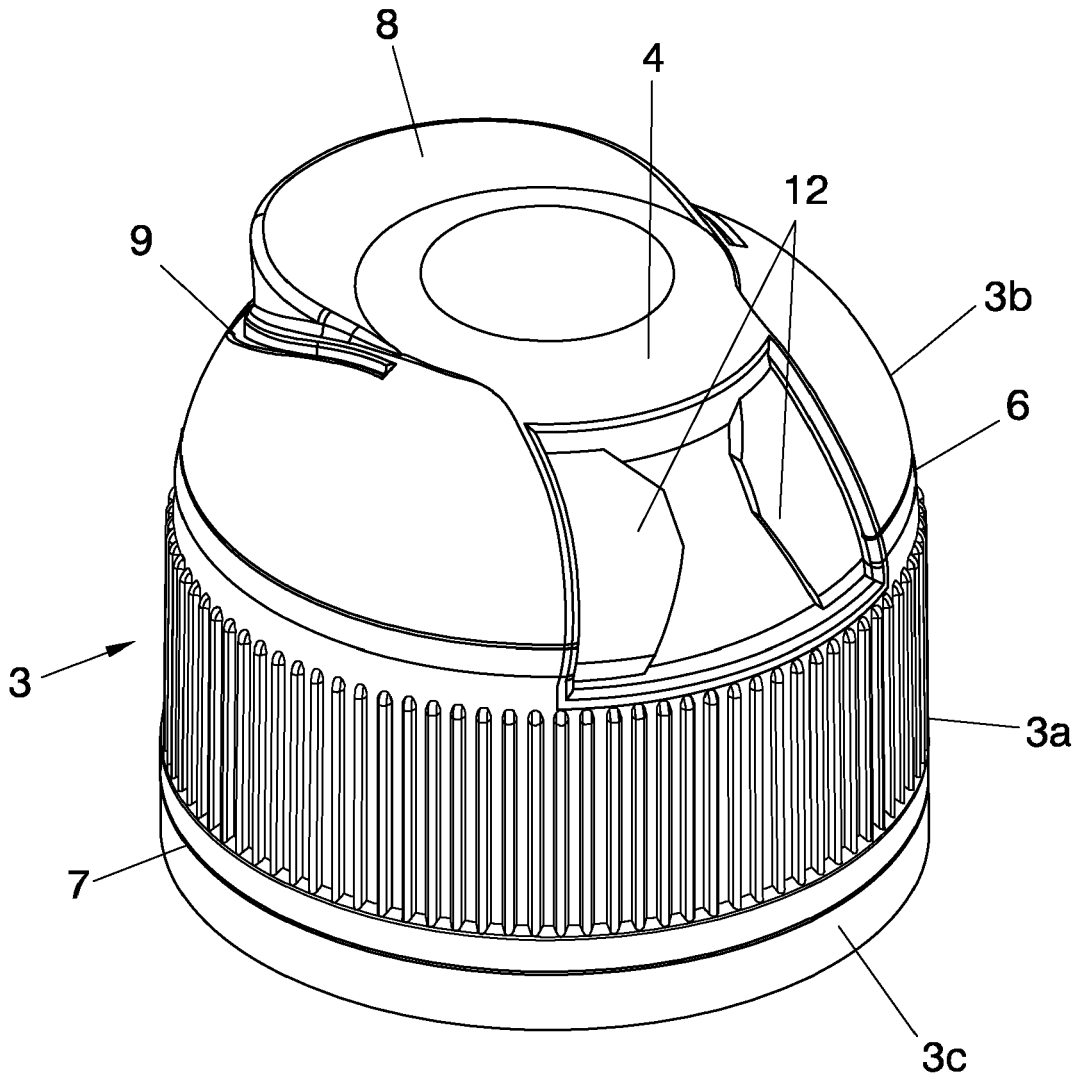

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 11 38 2278

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	FR 2 752 820 A1 (OREAL [FR]) 6 March 1998 (1998-03-06) * page 3, line 29 - line 36 * * page 4, line 15 - line 36; figures * -----	1	INV. B65D47/08
X	FR 2 752 818 A1 (OREAL [FR]) 6 March 1998 (1998-03-06) * the whole document * -----	1	
A	FR 1 099 224 A (MATIERE PLASTIQUE) 31 August 1955 (1955-08-31) * page 2, last paragraph - page 3, paragraph 1; figures * -----	1-5	
A	US 2005/173367 A1 (NUSBAUM PHILIPPE [FR] ET AL) 11 August 2005 (2005-08-11) * the whole document * -----	1-5	

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
The Hague	13 December 2011	Gino, Christophe

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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