

(19)



(11)

EP 3 393 925 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
12.02.2020 Bulletin 2020/07

(51) Int Cl.:
B65D 50/04^(2006.01) B65D 41/34^(2006.01)

(21) Application number: **16797996.2**

(86) International application number:
PCT/IB2016/056481

(22) Date of filing: **27.10.2016**

(87) International publication number:
WO 2017/109598 (29.06.2017 Gazette 2017/26)

(54) A CHILDPROOF CLOSURE CAPSULE FOR A CONTAINER

KINDERSICHERE VERSCHLUSSKAPSEL FÜR EINEN BEHÄLTER

CAPSULE DE FERMETURE À L'ÉPREUVE DES ENFANTS POUR UN RÉCIPIENT

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR

(30) Priority: **23.12.2015 IT UB20159474**

(43) Date of publication of application:
31.10.2018 Bulletin 2018/44

(73) Proprietor: **Bormioli Pharma S.p.A.**
20123 Milano (IT)

(72) Inventor: **PAGANUZZI, Valerio**
43126 Parma (IT)

(74) Representative: **Monelli, Alberto**
c/o BUGNION S.P.A
Largo Michele Novaro, 1/A
43121 PARMA ITALY (IT)

(56) References cited:
US-A- 3 912 101 US-A- 4 523 688
US-A- 5 197 616 US-A1- 2004 045 923
US-A1- 2005 161 425 US-A1- 2010 126 996

EP 3 393 925 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description**Technical field**

[0001] The present invention relates to a child proof closure capsule having the features of the preamble of claim 1 for closing a container.

[0002] The preamble features are known from US 3,912,101.

[0003] Another aspect of the invention is a method according to claim 6 for closing such a childproof closure.

State of the art

[0004] Child proof safety capsules are known comprising a closure cap for closing a container and a lid that surmounts said cap.

[0005] In order to allow the opening of the capsule a thrust must be exerted on the lid along an axial direction (so as to make said lid and said cap engage through suitable teeth) at the same time as a rotation of the lid in a first direction (in fact, it has been proven that the coordinated combination of these two movements is particularly difficult under the age of 6). This prevents a child being able to accidentally access the contents of the container. Similar applications are typically used in containers designed to contain pharmaceutical products. In safety capsules, the lid performs the function of preventing an external user being able to directly access the cap.

[0006] However, in this context it is important for the capsule to be correctly closed again after use. In fact, if the capsule is not closed again with sufficient locking force the safety system against accidental opening by a child could be ineffective.

[0007] To allow the capsule to be screwed back onto the container the lid comprises a protrusion which projects inwards and which can interact with a protuberance which from the cap projects outwards. The protrusion is shaped like a tab whereas a section of such protuberance, in an orthogonal plane to a cylindrical axis of symmetry of the container, is shaped like a right triangle.

[0008] When the lid turns in a closing direction of the cap, the tab intercepts a cathetus of the triangle of the protuberance allowing the transmission of the movement from the lid to the cap and therefore the closing onto the container. When the lid turns in an opposite direction (corresponding to the opening direction of the container) the tab intercepts the hypotenuse of the triangle of the protuberance which therefore, thanks to its own inclination, constitutes a ramp for the empty sliding of the lid with respect to the cap (as previously described, to allow the opening, as well as the rotation of the lid, an axial thrust of the lid towards the cap is also necessary in order to allow the cap-lid engagement).

[0009] Child proof safety capsules are also known by the following documents: US4523688, US5197616.

[0010] In this context, the technical task underlying the present invention is to propose a safety capsule which

obviates the drawbacks in the known art as described above.

Object of the invention

[0011] In particular, an object of the present invention is to provide a capsule that allows the safety to be improved with respect to undesired openings.

[0012] The stated technical task and specified objects are substantially achieved by a child proof capsule comprising the technical features disclosed in one or more of the appended claims.

Brief description of the drawings

[0013] Further characteristics and advantages of the present invention will become more apparent from the following indicative, and hence nonlimiting, description of a preferred, but not exclusive, embodiment of a capsule as illustrated in the appended drawings, in which:

- figure 1 is a front view of a child proof capsule according to the present invention;
- figure 2 is a sectional view taken along plane A-A of the capsule of figure 1;
- figure 2a and 2b show a detail of figure 2;
- figure 3 shows a longitudinal sectional view of the capsule of figure 1.

Detailed description of preferred embodiments of the invention

[0014] In the appended figures reference number 1 indicates a child proof closure capsule for closing a container (also known in the technical sector as a safety capsule). It is mainly used, but not necessarily, to allow the opening and closing of containers of pharmaceutical products.

[0015] Such capsule 1 comprises a cap 2 that can be associated with a container. The cap 2 is applicable to a mouth of the container.

[0016] The capsule 1 further comprises a cover 3 of the cap 2 designed to be turned by a user for closure of the cap 2. The cover 3 protects the cap 2 preventing a user being able to open it by-passing the cover 3. Appropriately the cover 3 comprises a base 30 and a lateral wall 32 which extends from said base 30. Appropriately the cover 3 is a single body. The base 30 and the lateral wall 32 are superimposed on the cap 2. The base 30 is at the opposite end with respect to a zone 80 of the cap designed to be coupled to the container. Appropriately the capsule 1 comprises an intactness band 8 (such intactness band 8 makes the capsule 1 tamper evident).

[0017] The intactness band 8 is connected to the remaining parts of the cap 2 by means of flexible bridges. Before breaking, the flexible bridges connect the band 8 to remaining parts of the cap 2.

[0018] Preferably the cap 2 is made of plastic, e.g. poly-

propylene or HDPE. Preferably the cover 3 is made of plastic, e.g. polypropylene or HDPE.

[0019] In order to allow the closure of the cap 2, the cover 3 must be turned in a first direction of rotation. When the capsule 1 is connected to the container, should the cover 3 be turned according to a first direction of rotation there is further tightening. Alternatively, should the cover 3 be simply turned with a second direction of rotation it would turn idly with respect to the cap 2. In order to allow the opening of the cap 2 as well as performing a rotation along the second direction of rotation, it is, in fact, necessary also to apply pressure on the lid to push it towards the container.

[0020] The capsule 1 comprises a press-fit engagement means 5 that sets said cap 2 and said cover 3 into operative communication, enabling the transmission of movement from the cover 3 to the cap 2 for the purpose of making it possible to unscrew said cap 2. If the press-fit engagement means 5 is not activated and a user attempts to unscrew the capsule 1 from the container the cover 3 turns empty and without engaging with the cap 2. The press-fit engagement means 5 is at least partly integrated in said cap 2 and in said cover 3. In particular, the press-fit engagement means 5 may comprise teeth afforded in a single piece with the remaining parts of the cover 3 which are engaged in relevant seats afforded in the cap 2. In particular the teeth are afforded in the base 30 of the lid and advantageously they are arranged radially.

[0021] The capsule 1 comprises transmission means 4 for transmitting a closure torque from the cover 3 to the cap 2 for closing the cap 2. The transmission means 4 is preferably partly integrated in the cover 3 and partly in the cap 2.

[0022] The transmission means 4 is disengaged when the closure torque transmitted is greater than a pre-established threshold.

[0023] Such pre-established threshold is calibrated to a value sufficient to ensure the correct tightening of the cap 2. Consequently, when the user perceives that the transmission means 4 is disengaged, he/she understands that the cap 2 has been sufficiently tightened (and therefore the capsule will be able to fully exercise its safety function aimed at preventing opening by children). Normally the user perceives the disengagement of the transmission means 4 either due to a characteristic noise or because he/she notices the lack of resistance offered by the capsule 1 during tightening.

[0024] The transmission means 4 comprises:

- at least one flexible tab 41;
- at least one abutment 42 designed to interact with the tab 41 for transmission of the closure torque. The tab 41 and abutment 42 interact during the closure of the cap. During the opening of the cap they slide on one another according to the specific geometry.

[0025] The tab 41 and the abutment 42 are afforded

one on the cover 3 and one on the cap 2.

[0026] The abutment 42 comprises a first surface 421 inclined with respect to a radial direction and designed to interact with a projecting tip of the flexible tab 41; the projecting tip defines a tip of the tab 41.

[0027] When the pre-established threshold (of the tightening torque) is exceeded the tab 41 bends, enabling the tip 410 to slide along the first inclined surface 421. Appropriately the first inclined surface 421 forms, with the surface of the cover 3 or of the cap 2 from which it extends, an angle 6 comprised between 100 ° and 150 °.

[0028] The tab 41 surmounts a first part 310 of a lateral surface 31 of the cap 2 or of the cover 3 from which it projects. When the transmission means 4 is disengaged, the tab 41 closes towards such first part 310 of the lateral surface 31.

[0029] A concavity 411 is wedged between the tab 41 and said first part 310. The concavity 411 is a recess that, thanks to the empty space created, gives flexibility to the tab 41.

[0030] The tab 41 forms, with the surface of the cover 3 or of the cap 2 from which it extends, an angle 60 less than 30 °. Appropriately the thickness of the tab 41 is less than 1.5 millimetres. Preferably, the tab 41 is tapered and its thickness reduces as it approaches the projecting tip.

[0031] The pre-established threshold of the tightening torque beyond which the transmission means 4 are disengaged may be a function of the inclination of the tab 41 and of the first abutment surface 421. Beyond such pre-established threshold, the tab 41 bends generating a relative rotation between the cap 2 and cover 3.

[0032] The abutment 42 comprises a second inclined surface 422 which, in combination at least with the first inclined surface 421, shapes said abutment 42 like a convex relief.

[0033] The first and the second surface 421, 422 or their extensions converge. The first surface 421 is steeper than the second surface 422.

[0034] A closure and an opening of the cap 2 are associated with a first and a second direction of rotation of the cover 3, respectively.

[0035] The first and the second direction of rotation are opposite. The second direction of rotation of the cover 3 brings about the sliding of an upper part 412 of the tab along a second surface 422 of the abutment 42. The second direction of rotation then brings about the sliding of the tab 41 along a second surface 422 of the abutment 42. The upper part of the tab 41 is the side of the tab opposite the one that delimits the concavity 411.

[0036] In the solution exemplified in the appended figures, the tab 41 is integrated in the cover 3 and the abutment 42 is integrated in the cap 2.

[0037] The tab 41 projects towards a lateral surface of a cap 2 starting from a lateral surface of the cover 3 (the lateral surface of the cap 2 and the lateral surface of the cover 3 to which reference was previously made are mutually opposite each other).

[0038] Appropriately a plurality of tabs 41 are associ-

ated with the cover 3, which project towards the cap 2.

[0039] Such tabs 41 are advantageously all the same. One or more characteristics described with reference to a tab 34 may be repeated for a plurality of tabs. The tabs 41 extend perimetally along the lateral surface of the cover 3. Advantageously the tabs 41 are equidistant. Appropriately there is a number of them comprised between 6 and 18, preferably 12. The tabs 41 extend for over half the height of the cap 2.

[0040] Likewise a plurality of abutments 42 are associated with the cap 2 which project towards the cover 3.

[0041] The abutments 42 extend perimetally along the lateral surface of the cover 3. Advantageously the abutments 42 are equidistant. Appropriately there are at least 2, preferably 3, of them. The abutments 42 extend for over half the height of the cover 3. One or more characteristics described with reference to an abutment 42 may be repeated for a plurality of abutments 42.

[0042] Advantageously a plurality of abutments 42 interacts with corresponding tabs 41. Advantageously the disengagement of the abutments 42 from the corresponding tabs 34 is substantially simultaneous.

[0043] Subject matter of the present invention is also a method for closing a child proof capsule for a container. The capsule 1 appropriately comprises one or more of the characteristics described above.

[0044] The capsule 1 comprises a cap 2 which can be associated with the container and a cover 3 of the cap 2.

[0045] The method comprises the step of turning the cover 3 of the closure cap 2 in a first direction of rotation, which brings about the tightening of the cap 2; the step of turning the cover 3 of the cap 2 in said first direction of rotation brings about interaction of a tab 41 and an abutment 42, which transmit the rotation movement of the cover 3 to the cap 2. The interaction of the tab 41 and of the abutment 42 causes contact between a projecting tip 410 of the tab 41 and a first inclined surface 421 of the abutment 42.

[0046] The tab 41 and the abutment 42 are associated one with the cap 2 and one with the abutment 42. When a pre-established threshold is exceeded, said tab 41 bends such as to bring about the disengagement of the abutment 42.

[0047] The disengagement of the abutment is perceived by a user due to the reduction in resistance torque as the retaining action exerted by the tab 41 is absent.

[0048] In addition or alternatively, the disengagement of the abutment 42 brings about a predefined noise which lets the user know that he/she has tightened the capsule 1 sufficiently.

[0049] The present invention provides important advantages.

[0050] Above all, it allows the safety of a capsule designed to prevent children from accessing the contents of a container to be improved (a typical case is bottles containing pharmaceutical products).

[0051] In fact, the user will perceive having reached a sufficient tightening torque (in the absence of a similar

tightening torque it has been verified that the child proof system may not offer the required guarantees).

[0052] The invention as it is conceived is susceptible to numerous modifications, as far they are falling within the scope of the claims defining it. Further, all the details can be replaced with other technically-equivalent elements. In practice, all the materials used, as well as the dimensions, can be any according to requirements.

Claims

1. A childproof closure capsule for closing a container, comprising:

- i) a cap (2) that can be associated with a container;
- ii) a cover (3) of the cap (2), said cover (3) being designed to be turned by a user for closure of the cap (2);
- iii) transmission means (4) for transmitting a closure torque from the cover (3) to the cap (2) for closing the cap;

the transmission means (4) disengaging upon transmission of a closure torque exceeding a pre-established threshold, such pre-established threshold being calibrated to a value sufficient to ensure the correct tightening of the cap (2), the transmission means (4) comprising:

- at least one tab (41);
- at least one abutment (42) designed to interact with the tab (41) for transmission of the closure torque;

the tab (41) and the abutment (42) being afforded one on the cover (3) and one on the cap (2); wherein the tab (41) is flexible; the tab (41) surmounting a first part (310) of a lateral surface (31) of the cap (2) or of the cover (3) from which it projects; **characterised in that**, when the transmission means (4) is disengaged, the tab (41) closes towards such first part (310) of the lateral surface (31); said abutment (42) comprises a first surface (421) that is inclined with respect to a radial direction and designed to interact with a projecting tip of the flexible tab (41); when said pre-established threshold is exceeded, said tab (41) bends, enabling the tip (410) to slide along the first inclined surface (421).

2. The capsule according to claim 1, **characterized in that** said abutment (42) comprises a second inclined surface (422), which, in combination with at least the first inclined surface (421), shapes said abutment in the form of a convex ridge, the first and the second surfaces (421, 422), or extensions thereof, being convergent.

3. The capsule according to claim 2, **characterized in that** closing and opening of the cap (2) are associated with a first and a second direction of rotation of the cover (3), respectively, the first and the second direction of rotation being opposite each other, and the second direction of rotation of the cover (3) bringing about the sliding of an upper part (412) of the tab along the second surface (422) of the abutment (42).
4. The capsule according to any one of claims 1 to 3, **characterized in that** a concavity (411) is wedged between the tab (41) and said first part (310), said concavity (411) being a recess that gives flexibility to the tab (41), and the tab (41) forming an angle of less than 30° with the surface of the cap (2) or of the cover (3) from which it extends.
5. The capsule according to any one of claims 1 to 4, **characterized in that** the tab (41) is integrated in said cover (3) and said abutment (42) is integrated in said cap (2).
6. A method for closing a childproof capsule of a container, said capsule (1) comprising a cap (2), which can be associated with the container, and a cover (3) of the cap (2), said method comprising the step of turning the cover (3) of the closure cap (2) in a first direction of rotation, which tightens the cap (2); the step of turning the cover (3) of the cap (2) in the first direction of rotation bringing about interaction of a tab (41) and an abutment (42), which transmit the rotation movement of the cover (3) to the cap (2), said tab (41) and said abutment (42) being associated one to the cap (2) and the other to the abutment (42), and when a predefined tightening torque transmitted from the cover (3) to the cap (2) is exceeded, said tab (41) undergoing a bending process that is such as to bring about disengagement of the abutment (42); the tab (41) surmounting a first part (310) of a lateral surface (31) of the cap (2) or of the cover (3) from which it projects; said abutment (42) comprising a first surface (421) that is inclined with respect to a radial direction and designed to interact with a projecting tip of the flexible tab (41); when said predefined tightening torque is exceeded, said tab (41) bends and the tip (410) slides along the first inclined surface (421).
7. The method according to claim 6, **characterized in that** disengagement of the abutment (42) brings about a predefined sound that signals to the user that the capsule (1) has been tightened adequately.

Patentansprüche

1. Kindersichere Verschlusskapsel zum Verschließen

eines Behälters, umfassend:

- i) eine Kappe (2), die mit einem Behälter assoziiert werden kann;
- ii) einen Deckel (3) der Kappe (2), wobei der Deckel (3) ausgestaltet ist, um von einem Nutzer gedreht zu werden, um die Kappe (2) zu verschließen;
- iii) Übertragungsmittel (4), um ein Verschlussmoment vom Deckel (3) auf die Kappe (2) zu übertragen, um die Kappe zu verschließen,

wobei die Übertragungsmittel (4) sich bei der Übertragung eines Verschlussmoments, das einen vorgegebenen Schwellenwert überschreitet, lösen, wobei dieser vorgegebene Schwellenwert auf einen Wert kalibriert ist, der ausreichend ist, um das korrekte Festziehen der Kappe (2) zu garantieren, wobei die Übertragungsmittel (4) umfassen:

- mindestens eine Lasche (41);
- mindestens einen Anschlag (42), der ausgestaltet ist, um mit der Lasche (41) zu interagieren, um das Verschlussmoment zu übertragen,

wobei die Lasche (41) und der Anschlag (42) jeweils am Deckel (3) bzw. an der Kappe (2) ausgebildet sind,

wobei die Lasche (41) flexibel ist, wobei die Lasche (41) über einem ersten Teil (310) einer seitlichen Oberfläche (31) der Kappe (2) oder des Deckels (3) angeordnet ist, von dem sie hervorsteht, **dadurch gekennzeichnet, dass**

sich die Lasche (41) hinführend zum ersten Teil (310) der seitlichen Oberfläche (31) schließt, wenn die Übertragungsmittel (4) gelöst sind; der Anschlag (42) eine erste Oberfläche (421) umfasst, die zu einer radialen Richtung geneigt und ausgestaltet ist, um mit einer hervorstehenden Spitze der flexiblen Lasche (41) zu interagieren; die Lasche (41) sich biegt und der Spitze (410) ermöglicht, entlang der ersten geneigten Oberfläche (421) verschoben zu werden, wenn der vorgegebene Schwellenwert überschritten wird.

2. Kapsel nach Anspruch 1, **dadurch gekennzeichnet, dass** der Anschlag (42) eine zweite geneigte Oberfläche (422) umfasst, die in Kombination mit mindestens der ersten geneigten Oberfläche (421) den Anschlag in der Form einer konvexen Kante ausformt, wobei die erste und die zweite Oberfläche (421, 422) oder deren Ausdehnungen konvergierend sind.

3. Kapsel nach Anspruch 2, **dadurch gekennzeichnet, dass** das Verschließen und Öffnen der Kappe (2) jeweils mit einer ersten und einer zweiten Rotationsrichtung des Deckels (3) assoziiert sind, wobei

die erste und die zweite Rotationsrichtung gegenläufig sind und wobei die zweite Rotationsrichtung des Deckels (3) das Verschieben eines oberen Teils (412) der Lasche entlang der zweiten Oberfläche (422) des Anschlags (42) herbeiführt.

4. Kapsel nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** ein Hohlraum (411) zwischen der Lasche (41) und dem ersten Teil (310) eingeklemt ist, wobei der Hohlraum (411) eine Vertiefung ist, die der Lasche (41) Flexibilität verleiht, und wobei die Lasche (41) einen Winkel von weniger als 30° mit der Oberfläche der Kappe (2) oder des Deckels (3) formt, aus der sie sich erstreckt.
5. Kapsel nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Lasche (41) in den Deckel (3) integriert ist und der Anschlag (42) in die Kappe (2) integriert ist.
6. Verfahren zum Verschließen einer kindersicheren Kapsel für einen Behälter, wobei die Kapsel (1) eine Kappe (2) umfasst, die mit dem Behälter assoziiert werden kann, und einen Deckel (3) der Kappe (2), wobei das Verfahren den Schritt zum Drehen des Deckels (3) der Verschlusskappe (2) in eine erste Rotationsrichtung umfasst, die die Kappe (2) festzieht, wobei der Schritt zum Drehen des Deckels (3) der Kappe (2) in die erste Rotationsrichtung eine Interaktion einer Lasche (41) und eines Anschlags (42) herbeiführt, die die Rotationsbewegung des Deckels (3) auf die Kappe (2) überträgt, wobei die Lasche (41) und der Anschlag (42) jeweils mit der Kappe (2) bzw. mit dem Anschlag (42) assoziiert sind und die Lasche (41) einem Biegeprozess unterzogen wird, wenn ein vorgegebenes Anzugsmoment, das vom Deckel (3) auf die Kappe (2) übertragen wird, überschritten wird, sodass ein Lösen des Anschlags (42) herbeigeführt wird, wobei die Lasche (41) über einem ersten Teil (310) einer seitlichen Oberfläche (31) der Kappe (2) oder des Deckels (3) angeordnet ist, von der sie hervorsteht, wobei der Anschlag (42) eine erste Oberfläche (421) umfasst, die zu einer radialen Richtung geneigt und ausgestaltet ist, um mit einer hervorstehenden Spitze der flexiblen Lasche (41) zu interagieren, wobei die Lasche (41) sich biegt und die Spitze (410) entlang der ersten geneigten Oberfläche (421) verschoben wird, wenn das vorgegebene Anzugsmoment überschritten wird.
7. Verfahren nach Anspruch 6, **dadurch gekennzeichnet, dass** das Lösen des Anschlags (42) ein vorgegebenes Geräusch erzeugt, das den Nutzer darauf hinweist, dass die Kapsel (1) angemessen festgezogen wurde.

Revendications

1. Capsule de fermeture à l'épreuve des enfants pour fermer un récipient, comprenant :

5

i) un bouchon (2) pouvant être associé à un récipient ;

10

ii) une couverture (3) du bouchon (2), ladite couverture (3) étant conçue pour être tournée par un utilisateur pour la fermeture du bouchon (2) ;

15

iii) des moyens de transmission (4) pour transmettre un couple de fermeture de la couverture (3) au bouchon (2) pour fermer le bouchon ; les moyens de transmission (4) se désengageant lors de la transmission d'un couple de fermeture excédant un seuil préétabli, ce seuil préétabli étant calibré à une valeur suffisante pour garantir le serrage correct du bouchon (2), les moyens de transmission (4) comprenant :

20

- au moins une languette (41) ;

- au moins une butée (42) conçue pour interagir avec la languette (41) pour la transmission du couple de fermeture ;

25

la languette (41) et la butée (42) étant réalisées l'une sur la couverture (3) et l'autre sur le bouchon (2) ; dans laquelle la languette (41) est flexible ; la languette (41) surmontant une première partie (310) d'une surface latérale (31) du bouchon (2) ou de la couverture (3) de laquelle elle dépasse ; **caractérisée en ce que,**

30

lorsque les moyens de transmission (4) sont désengagés, la languette (41) se referme vers ladite première partie (310) de la surface latérale (31) ;

35

ladite butée (42) comprend une première surface (421) étant inclinée par rapport à une direction radiale et conçue pour interagir avec une pointe en saillie de la languette flexible (41) ; lorsque ledit seuil préétabli est dépassé, ladite languette (41) se plie en permettant à la pointe (410) de coulisser le long de la première surface inclinée (421).

40

45

2. Capsule selon la revendication 1, **caractérisée en ce que** ladite butée (42) comprend une seconde surface inclinée (422) qui, en combinaison avec au moins la première surface inclinée (421), façonne ladite butée sous la forme d'une arête convexe, les première et seconde surfaces (421, 422) ou les extensions de celles-ci étant convergentes.

50

55

3. Capsule selon la revendication 2, **caractérisée en ce que** la fermeture et l'ouverture du bouchon (2) sont associées, respectivement, à une première et une seconde direction de rotation de la couverture (3), la première et la seconde direction de rotation étant opposées l'une à l'autre, et la seconde direction de rotation de la couverture (3) entraînant le coulis-

sement d'une partie supérieure (412) de la languette le long de la seconde surface (422) de la butée (42).

4. Capsule selon l'une quelconque des revendications de 1 à 3, **caractérisée en ce qu'**une concavité (411) est calée entre la languette (41) et ladite première partie (310), ladite concavité (411) étant un renfoncement donnant de la souplesse à la languette (41), et la languette (41) formant un angle inférieur à 30° avec la surface du bouchon (2) ou de la couverture (3) de laquelle elle se prolonge. 5
10

5. Capsule selon l'une quelconque des revendications de 1 à 4, **caractérisée en ce que** la languette (41) est intégrée dans ladite couverture (3) et ladite butée (42) est intégrée dans ledit bouchon (2). 15

6. Procédé de fermeture d'une capsule à l'épreuve des enfants d'un récipient, ladite capsule (1) comprenant un bouchon (2) pouvant être associé au récipient et à une couverture (3) du bouchon (2), ledit procédé comprenant l'étape consistant à tourner la couverture (3) du bouchon de fermeture (2) dans une première direction de rotation, qui serre le bouchon (2) ; l'étape consistant à tourner la couverture (3) du bouchon (2) dans la première direction de rotation entraînant l'interaction d'une languette (41) et d'une butée (42) qui transmettent le mouvement de rotation de la couverture (3) au bouchon (2), ladite languette (41) et ladite butée (42) étant associées l'une au bouchon (2) et l'autre à la butée (42), et lorsqu'un couple de serrage prédéfini transmis de la couverture (3) au bouchon (2) dépasse, ladite languette (41) subit un processus de pliage permettant l'entraînement du désengagement de la butée (42); la languette (41) surmontant une première partie (310) d'une surface latérale (31) du bouchon (2) ou de la couverture (3) de laquelle elle dépasse ; ladite butée (42) comprenant une première surface (421) étant inclinée par rapport à une direction radiale et conçue pour interagir avec une pointe en saillie de la languette flexible (41) ; lorsque ledit couple de serrage prédéfini est dépassé, ladite languette (41) se plie et la pointe (410) coulisse le long de la première surface inclinée (421). 20
25
30
35
40
45

7. Procédé selon la revendication 6, **caractérisé en ce que** le désengagement de la butée (42) provoque un son prédéfini indiquant à l'utilisateur que la capsule (1) a été serrée de manière appropriée. 50

55

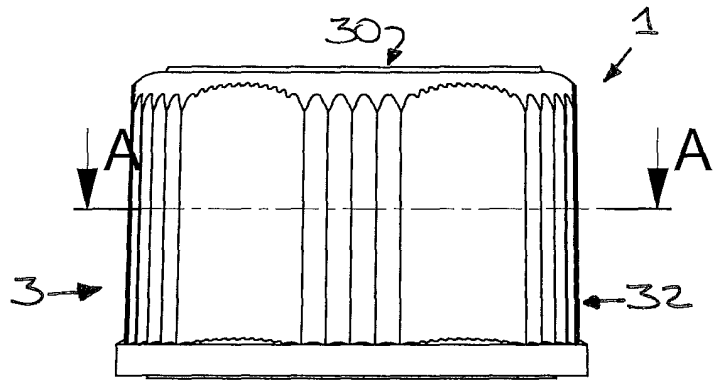


Fig. 1

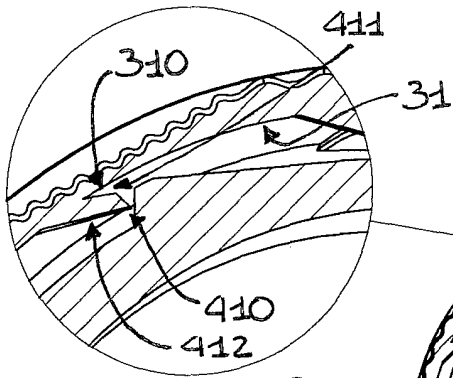


Fig. 2a

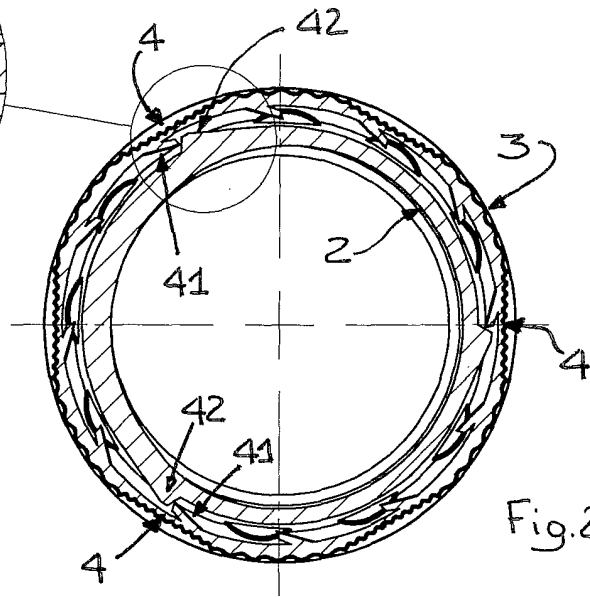


Fig. 2

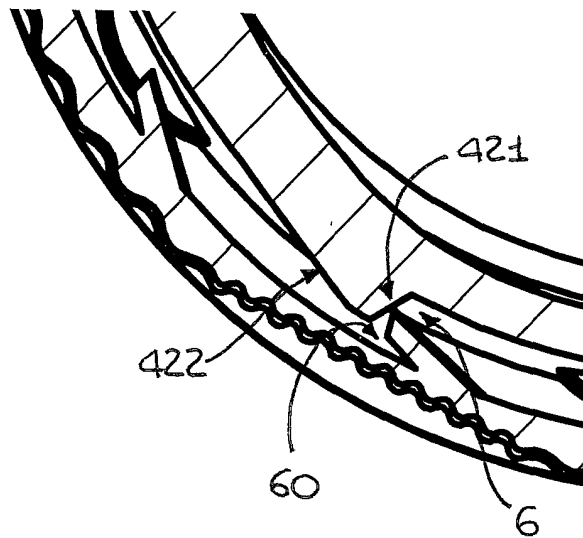


Fig. 2b

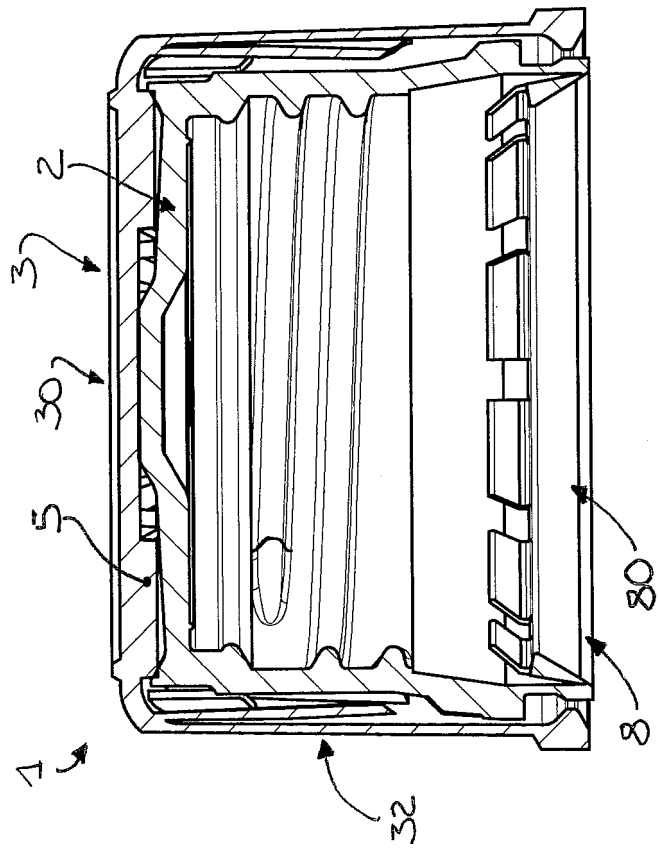


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 3912101 A [0002]
- US 4523688 A [0009]
- US 5197616 A [0009]