CLOSURE WITH HINGED LID FOR BOTTLES AND THE LIKE WITH AN AUTOMATIC LID OPENING SYSTEM COMPRISING AN IMPROVED BUTTON

VERSCHLUSS MIT ANGELENKTEM DECKEL FÜR FLASCHEN UND DERRLEICHEN MIT EINEM EINEN VERBESSERTEN KNOFP UMFASENDEN AUTOMATISCHEN DECKELOFFNUNGSSYSTEM

FERMETURE AVEC COUVERCLE ARTICULE POUR BOUTEILLES ET SIMILAIRES AVEC SYSTEME AUTOMATIQUE D’OUVERTURE DE COUVERCLE COMPRENANT UN BOUTON AMELIORE
Description

[0001] The invention relates to the field of closures with hinged lids for bottles and the like.

[0002] More particularly, the invention relates to a closure with a hinged lid for bottles and the like having an automatic lid opening system comprising an improved button, said closure comprising:

- a main body, having a supply mouth, suitable for being applied to the neck of a bottle or the like;
- a hinged lid joined to said main body by a hinge joint, so that said lid can pivot between an open position and a hinged position in which it blocks said supply mouth; said main body and said lid being moulded from rigid plastics material;
- an elastic element arranged between said main body and said lid so that it exerts a spring-back force on said lid towards its open position, said elastic element being made from an elastomer material other than said rigid plastics material;
- anchoring means between said lid and said main body suitable for retaining said lid in its hinged position; and
- a button suitable for operating the release of said anchoring means, so that by acting upon said button the lid is opened automatically and completely due to the action of the spring-back force exerted by said elastic element.

State of the art

[0003] Various closures of the type indicated at the beginning are known.

[0004] For example, documents EP0826606, EP0839735 and EP0975526 describe a closure of the type described at the beginning. A first characteristic of this closure is that the elastic element made from elastomer material extends over the lid and the main body covering the anchoring means, so that said anchoring means are pleasant to touch when the user acts upon them to release them. However, these anchoring means do not form a proper button and suffer from the drawback that an additional amount of elastomer material is required that must be moulded according to a relatively complicated shape, which has a negative affect on the closure’s manufacturing cost.

[0005] A second characteristic of the closure disclosed by said documents EP0826606, EP0839735 and EP0975526 is that the elastic element has an extendible section that passes from one side to the other of the hinge joint when the lid pivots between its open and hinged positions. Consequently, said extendible section is extended to the maximum when the lid is in an intermediate position, whereby the lid has two rest positions: the open position and the hinged position. When the lid is in the hinged position and the user wants to open it, he must release the anchoring means and push the lid against the force of the elastic element, beyond the intermediate position. This mode of operation suffers from the drawback that it complicates the lid opening operation for the user, and does not open the lid automatically and completely with one simple pressing action.

[0006] A third characteristic of the closure disclosed in said documents EP0826606, EP0839735 and EP0975526 is that, in addition to forming an extendible section on level with the hinge joint so as to produce a spring-back function for the lid, the elastomer material also extends over part of the lid to ensure the seal of the supply hole. In particular, the elastomer material extends over the outer wall of a pin that is provided on the lid and which is forcibly inserted into the supply mouth, whereby the elastomer material is compressed between the outer wall of the pin and the inner wall of the supply mouth. This solution suffers from the drawback that the pin is firmly wedged in the supply mouth, and so considerable force is required to open the lid.

[0007] Document EP0976663 discloses a closure of the type considered at the beginning, but which is different to the closure disclosed in the said documents EP0826606, EP0839735 and EP0975526 because the lid’s only rest position is the open position, which corresponds to a minimum extension of the extendible section of the elastic element. This mode of operation is obtained by virtue of the elastic element having an extendible section that is arranged between two ribs that form the hinge joint, and is joined to said rib, so that said extendible section cannot pass freely from one side to the other of the hinge joint. With respect to the opening system, in this case the closure comprises an elastic button made from the elastomer material. The user presses said elastic button to release the anchoring means and thus causes the lid to open automatically thanks to the spring-back force exerted on said lid. As for the seal of the supply mouth, in this case the lid is provided with a pin that is inserted into said supply mouth, but contrary to the closures cited above, the elastomer material does not extend over the pin, instead it forms the top edge of the supply mouth on the main body. In order to open the lid considerable force is required to extract the pin inserted into the supply mouth. Therefore, so that the lid opens automatically once the anchoring means have been released, the extendible section of the elastic element must exert a strong spring-back force. Furthermore, said extendible section has limited elasticity, since it is attached to the ribs forming the hinge joint. Consequently, the lid’s opening movement is fairly abrupt, which is not very pleasant for the user. Also, the design of the push button formed by the elastomer material has a negative affect on the closure’s manufacturing costs.

[0008] Document JP8113260 relates to a closure that resembles the type of closure referenced in the invention, but wherein the anchoring means are not released by means of a button, but rather by traditional means, pulling a visor provided on the lid. In this case, the elastomer material only performs the lid’s spring-back function, and...
it consists of a separate part that fits at its ends into housings provided in the lid and in the main body of the closure, and has an intermediate extendible section that is freely positioned externally with respect to the hinge joint. The lid’s only rest position is the open position, which corresponds to a maximum extension of the extendible section. This is achieved by virtue of a projection, provided on the outer surface of the lid, which receives and supports said extendible section and keeps it positioned externally with respect to the hinge joint. This projection arrangement suffers from the drawback that it imposes significant restrictions on the lid’s external design. For example, it makes it impossible to design a lid with a clear outer surface. Another drawback of this arrangement is that the projection has a reduced support surface that causes localised tension and wears the extendible section of the elastic element. Moreover, by arranging said projection it is not possible to manufacture the closure as an integral part by overmoulding the elastomer material, since the part cannot be stripped from the mould.

Document WO2004110889 discloses a type of closure in which the hinge joint is made from the actual elastic element arranged as a single connection means between the lid and the main body. This solution is different to the type of closure described in the invention and suffers from the drawback that it considerably complicates closure manufacturing. Moreover, in this case the closure does not comprise anchoring means in the strict sense; the function of maintaining the lid in its hinged position is carried out by the actual pin provided on the lid, which is inserted into the supply mouth to seal it and remains fixed therein by virtue of friction. The closure is provided with a button that is operated by pressing the lid upwards until the pin withdraws from the supply mouth. This opening system suffers from the drawback that the user must act upon the button, moving it sufficiently to remove the pin from the supply mouth. This is not very comfortable and differs from the operation of a proper button, which must act instantly. Document EP 0 976 663 A discloses a closure with the features of the preamble of claim 1.

Summary of the invention

[0010] The aim of the invention is to provide a closure of the type indicated at the beginning, which enables the lid to be opened automatically and completely by acting upon a button with a simple, comfortable action, and which does not suffer from the drawbacks of the known closures mentioned above.

[0011] In particular, the main aim of the invention is to provide a closure with a button that acts quickly releasing the anchoring means between the lid and the main body, without it being necessary to use elastomer material to form the button and without significantly complicating the manufacturing process.

[0012] This aim is achieved by means of a closure according to claim 1.

[0013] This closure according to the invention does not require using elastomer material to form the button; it is based on local geometric forms defined in the actual rigid plastics material of the main body and the lid. Moreover, thanks to the fact that the first part of said anchoring means is provided in the movable area of the main body, when the button is activated, the second part of the anchoring means are released directly and the lid is opened. The surface for activating the button is located in the actual movable area, whereby the user acts directly on the movable area. This direct activation and release, combined with the spring-back force exerted by the elastic element provided between the lid and the main body, easily and effectively opens the lid. In order to activate the button, the user acts upon the pressing surface defined on the front portion of the button, in other words on the side wall of the main body, so that the lid can be opened comfortably with one simple finger movement, while holding the bottle in one hand.

[0014] Said movable area is delimited on said main body by a deformable contour defined by a geometric weakening of the actual wall of said main body. This deformable contour makes the button more robust and, since it is deformable, allows the movable area limited but sufficient pivoting around the joining line.

[0015] Preferably, the geometric weakening of the wall of the main body that forms said deformable contour has, in section, a toggled shape and a reduced thickness with respect to the adjacent areas of said wall. By virtue of this particular shape, the deformable contour can be slightly stretched and contracted, allowing the movable area sufficient movement to release the anchoring means. Moreover, this geometric arrangement can be obtained easily during the moulding operation for the closure’s main body.

[0016] Said deformable contour has an upper section that defines in said upper base an upper part of the movable area and respective side sections that define in said side wall the front portion of the movable area, said side sections extending the ends of said upper section as far as said joining line. With this arrangement a particularly robust button is obtained. When using the finger to press the pressing surface, the movable area is pivoted with little effort because the contour of the upper section contracts and the side sections are deformed sideways. The button only works if the pressing area is pressed in a direction that is noticeably perpendicular to the closure’s side wall, thereby minimising the possibility that the lid opens accidentally when it comes into contact with some external element.

[0017] Preferably, said geometric weakening forms said deformable contour in the shape of a groove the depth of which decreases in said side sections towards the lower ends thereof, which reinforces the button without considerably affecting the pivoting of the deformable area around the joining line.

[0018] Preferably, the anchoring means consist of a window in said front portion of the movable area and a
hook-shaped projection formed on the lid. When the user acts upon the pressing surface, the moveable area is moved away from the side wall thereby unhooking the projection from the window.

0019  Said deformable contour defines a continuous joining surface between said moveable area and the rest of said main body, thereby preventing dirt or any external element from entering through the deformable contour.

0020  The invention contemplates, optionally, some advantageous embodiments including characteristics regarding the elastic element and the parts of the main body and the lid that interact with it to perform the lid’s spring-back function. These characteristics, in combination with those described above in connection with the button, contribute to obtaining an improved performance of the lid’s automatic opening, in particular, a more effective opening that is not too abrupt, and which does not negatively affect closure manufacturing costs.

0021  In an advantageous embodiment of the invention, the closure is shaped as follows:

- the elastic element has at least one first joining area fixedly attached to said main body and at least one second joining area fixedly attached to said lid, with at least one extendible section of said elastic element being defined between said first and second joining areas;
- the main body of the closure comprises at least one projection that defines a seating surface positioned externally with respect to said hinge joint; and
- said extendible section of the elastic element extends freely in front of said seating surface,

so that when the lid pivots towards its hinged position said seating surface receives said extendible section of the elastic element, which rests on said seating surface, and keeps said extendible section positioned externally with respect to the hinge joint. This arrangement ensures that the extendible section of the elastic element is always positioned externally with respect to the hinge joint, whereby the lid’s only rest position is the open position that corresponds to a minimum extension of the elastic element’s extendible section. By virtue of the fact that the extendible section is arranged freely opposite the seating surface, its elasticity is not affected by interference with the rigid elements of the closure. Moreover, providing said projection on the main body of the closure maintains the freedom of the lid’s design, making particularly advantageous solutions possible.

0022  One of these advantageous solutions consists in the projection defining the seating surface extending from a lower end of the main body next to said first joining area of the elastic element, to an upper end that projects from said main body and that is next to said second joining area of the elastic element when the lid is in its hinged position. By virtue of this arrangement, when the lid is in the hinged position the extendible section of the elastic element rests its entire length on the seating surface, thereby avoiding localised tension and wear. Also said extendible section is prevented from catching on any outside body while the bottle incorporating the closure is in transit or being handled.

0023  Preferably, said seating surface has a convex shaped section on which the elastic element’s extendible section rests in the lid’s hinged position, therefore providing gentle support that prevents localised tension.

0024  In a preferred embodiment of the invention, said second joining area of the elastic element has an elongated shape that extends parallel to the axis of said hinge joint, and said elastic element has two of said first joining areas, separated by an open space facing said hinge joint, and two of said free extendible sections defined between said first joining areas and said second joining area, said main body comprising two of said projections that respectively define two of said seating surfaces positioned externally with respect to the hinge joint and respectively facing said two extendible sections of the elastic element. This arrangement distributes the elastic effort between two extendible sections, thereby allowing an improved spring-back force adjustment. Also, it makes it easier to form the hinge joint, which is framed at the sides by the two extendible sections.

0025  In an advantageous embodiment of the invention, said main body and said lid have a contour that is truncated by respective flat surfaces joined by a bridge that forms said hinge joint, said projection protruding from the flat surface of the main body, and said flat surface of the lid having at least one window through which said projection and said extendible section of the elastic element protrude when the lid is in the hinged position. This embodiment of the closure has the advantage that it is particularly compact.

0026  The invention also contemplates, optionally, some advantageous embodiments including characteristics regarding the lid’s seal of the supply mouth. These characteristics are intended to provide a closure wherein the interaction between the lid and the supply mouth does not produce significant friction between these elements, so that when the anchoring means are released by acting upon the button, the lid opens without any impediment, stretched by the spring-back action of the elastic element, without the latter having to exert any significant force to unblock the supply mouth.

0027  So, in a preferred embodiment of the invention, said lid is provided on its inner surface with a flat contact area made from elastomer material and facing said supply mouth in the lid’s hinged position, so that said flat contact area of the elastic element is applied against the upper edge of said supply mouth. This flat contact area made from elastomer material ensures the supply mouth has an airtight seal, without any outer or inner coupling with the supply mouth, whereby said supply mouth is unblocked simply by lifting the lid, without it being necessary to overcome any strong friction force.

0028  Preferably, the inner surface of said lid has a hollow area that houses said flat contact area, and makes
it easier to join it to the lid when manufacturing the closure.

Preferably, said elastic element made from elastomer material that ensures the lid’s spring-back action, also forms said flat contact area. This avoids having different pieces of elastomer material and facilitates the closure manufacture process by overmoulding the elastomer material over the rigid plastics material of the main body and the lid.

Preferably, said elastic element comprises a connection strip that extends between said flat contact area and the part of the elastic element where the second joining area is provided, and the inner surface of said lid has a channel that leads into said hollow area and houses said connection strip. In particular, this solution facilitates forming the elastic element made from elastomer material with an overmoulding method, because the channel and the hollow area act as a mould.

Preferably, said flat contact area and said connection strip are arranged level with said hollow area and said channel, respectively, thereby preventing any projections on the inner surface of the lid where dirt could accumulate.

Preferably, the elastic element made from elastomer material is overmoulded on the piece of rigid plastics material made up of said main body and said lid, for example using a bi-injection method. In an advantageous solution, said elastic element goes through the thickness of said lid from said contact area and forms an outer layer of elastomer material that extends over at least part of the lid’s outer surface. This way the elastomer material can be injected over the lid’s outer surface and, at the same time, an outer coating of elastomer material can be obtained that is suitable for forming a publicity or geometric motif that personalises the closure.

Detailed description of some embodiments of the invention

Other advantages and characteristics of the invention will be appreciated from the following description which, in a non-limiting manner explains preferable embodiments of the invention, with reference to the accompanying drawings, in which:

Fig. 1, 2 and 3, respectively, a lower, side and upper view of a closure according to a first embodiment of the invention, with the lid in the open position;

Fig. 4, an upper perspective view of said closure;

Fig. 5 and 6, lower perspective views, respectively front and back, of said closure;

Fig. 7 and 8, respectively, upper and lower perspective views of said closure, sectioned along a middle plane;

Fig. 9, a side view of said closure sectioned along a middle plane, with the lid in the hinged position;
externally with respect to hinge joint 4 and face the elastic projections 9 that define seating surfaces 10 positioned that faces said hinge joint 4. Main body 1 comprises two first joining areas are separated by an open space 23 positioned externally with respect to hinge joint 4. The thus formed deformable contour 8 has a U-shaped upper section 8a provided in upper base 12 of main body 1 and respective side sections 8b that extend into side wall 11 extending the ends of upper section 8a and defining in said side wall 11 a front portion 5a of movable area 5. The lower end of said front portion 5a, in to which the two side sections 8b lead, is joined to side wall 11 forming a joining line 22 around which movable area 5 pivots. As can be seen in Figs. 4 to 6, the depth of the groove formed by the geometric weakness that shapes contour 8 decreases towards the lower ends of side sections 8a, as far as joining line 22. A pressing surface 13, suitable for receiving a user’s finger, is provided on front portion 5a of movable area 5.

The closure comprises anchoring means between lid 3 and main body 1 consisting of a window 6a in front portion 5a of movable area 5 and a hook-shaped projection 6b formed on lid 3. In order to close lid 3, the user pivots it by acting against the spring-back force of elastic element 7, until the lid reaches the hinged position shown in Fig. 9, wherein projection 6b is anchored in window 6a.

The thus formed movable area 5 forms a button suitable for operating the release of said anchoring means 6a, 6b and causing the subsequent automatic opening of lid 3. To do this, the user presses pressing surface 13 with his finger causing movable area 5 to pivot slightly, the top part of which moves away from wall 11, whereby projection 6b withdraws from window 6a and releases lid 3, which pivots to its open position thanks to the spring-back force exerted by elastic element 7. The pivoting of movable area 5 around joining line 22 is accompanied by a transverse contraction of upper section 8a and a sideways deformation of side sections 8b and the longitudinal sides of said upper section 8a.

This embodiment of the closure according to the invention also includes some particular characteristics regarding elastic element 7, and the parts of main body 1 and lid 3 that interact with it to perform the spring-back function of lid 3. As can be seen in particular in Figs. 10 to 13, elastic element 7 has two joining areas 7a integral with main body 1 and one second joining area 7b integral with lid 3. Between the first joining areas 7a and the second joining area 7b respective extendible sections 7c of the elastic element are provided, which are freely positioned externally with respect to hinge joint 4. The first joining areas are separated by an open space 23 that faces said hinge joint 4. Main body 1 comprises two projections 9 that define seating surfaces 10 positioned externally with respect to hinge joint 4 and face the elastic element’s extendible sections 7c. Each projection 9 extends from a lower end located on main body 1, next to a first joining area 7a of the elastic element, to an upper end that projects from main body 1 and is located next to the second joining area 7b of the elastic element in the lid’s hinged position 3. Surface 10 formed on each projection 9 has a convex shaped section at the top thereof, whereas the lower part is flat to facilitate mould stripping.

Main body 1 and lid 3 have a contour that is truncated by respective flat surfaces 19, 20 joined by the bridge 4 that forms the hinge joint. Projections 9 project from flat surface 19 of the main body and flat surface 20 of the lid has respective windows 21 through which projections 9 and extendible sections 7c of elastic element 7 protrude in the hinged position of lid 3, as can be seen in Figs. 11, 12 and 13.

When lid 3 pivots towards the hinged position illustrated in Figs. 9, 12 and 13, seating surfaces 10 receive and support extendible sections 7c of elastic element 7 and keep them positioned externally with respect to hinge joint 4. By virtue of this arrangement, in any position of lid 3 between its open and hinged positions, extendible sections 7c are extended elastically, with respect to their state in said open position of lid 3, whereby said open position is the only rest position of lid 3. As can be seen in said figures, in the lid’s hinged position the entire length of each extendible section is applied against surface 10.

Also, this embodiment of the closure according to the invention includes particular characteristics regarding the lid’s airtight seal of the supply mouth. Elastic element 7 made from elastomer material extends, from the part where the second joining area 7b is provided, along a connection strip 15 to form at the end of the latter a flat contact area 14 between lid 3 and supply mouth 2. The inner surface of lid 3 has a channel 16 that leads into said central hollow area 17. Elastic element 7 made from elastomer material is formed by an overmoulding method over the piece of rigid plastics material formed by main body 1 and lid 3, so that connection strip 15 and flat contact area 14 are provided on level, respectively, with said channel 16 and said hollow area 17. As can be seen in Fig. 9, in the hinged position of lid 3 flat contact area 14 made from elastomer material is applied against the upper edge of supply mouth 2, without being inserted therein through friction.

This second embodiment that is a variant of the first. In this case, lid 3 has a central hole through which the elastomer material is injected in the overmoulding process, so that elastic element 7 that is made from elastomer material and is formed by this process goes through the thickness of lid 3 from said flat contact area 14 and forms an outer layer 18 of elastomer material that extends over part of the outer surface of lid 3. The shape and appearance of said external layer 18 can be personalised for each closure.

Finally, Figs. 15 to 17 illustrate a third embodi-
1. Closure with hinged lid for bottles and the like having an automatic lid opening system comprising an improved button; said closure comprising:

- a main body (1), provided with a supply mouth (2), suitable for being applied to the neck of a bottle or the like; said main body (1) having a side wall (11) and an upper base (12) on which said supply mouth (2) is provided;
- a hinged lid (3) joined to said main body (1) by a hinge joint (4), so that said lid (3) can pivot between an open position and a hinged position in which it blocks said supply mouth (2); said main body (1) and said lid (3) being moulded from rigid plastics material;
- an elastic element (7) arranged between said main body (1) and said lid (3) so that it applies a spring-back force on said lid (3) towards its open position, said elastic element (7) being made from an elastomer material other than said rigid plastics material;
- anchoring means (6a, 6b) between said lid (3) and said main body (1) suitable for retaining said lid (3) in its hinged position; and
- a button suitable for operating the release of said anchoring means (6a, 6b), so that by acting upon said button the lid is opened automatically and completely due to the action of the spring-back force applied by said elastic element (7); said button being made up of a movable area (5) moulded integrally with said main body (1) in rigid plastics material, so that said movable area (5) and said main body (1) forms an integral part moulded from rigid plastics material; said movable area (5) comprising at least one front portion (5a) delimited on said side wall (11) and joined at its lower end to said side wall (11) by a joining line (22) that defines a pivoting axis of said movable area (5); said front portion (5a) having a pressing surface (13) suitable for receiving a user’s finger; and said anchoring means (6a, 6b) comprising a first part (6a) formed in said movable area (5) and a second part (6b) formed in said lid (3) and suitable for being anchored in said first part (6a);

- characterised in that said movable area (5) is delimited on said main body (1) by a deformable contour (8) defined by a geometric weakness of the actual wall of said main body (1), said deformable contour (8) defining a continuous joining surface between said movable area (5) and the rest of said main body (1); and
- said deformable contour (8) has an upper section (8a) that defines in said upper base (12) an upper part (5b) of movable area (5) and respective side sections (8b) that shapes said deformable contour (8) has, in section, a toggled shape and a reduced thickness with respect to the adjacent areas of said wall.

2. Closure according to claim 1, characterised in that the geometric weakness in the wall of main body (1) that shapes said deformable contour (8) has, in section, a toggled shape and a reduced thickness with respect to the adjacent areas of said wall.

3. Closure according to claim 2, characterised in that said geometric weakness shapes said deformable contour (8) in the form of a groove which, in said side sections (8b) has a depth that decreases towards the lower ends of said side sections (8b).

4. Closure according to any of the claims 1 to 3, characterised in that said anchoring means (6a, 6b) consist of a window (6a) formed in said front portion (5a) of movable area (5) and a hook-shaped projection (6b) formed on said lid (3).

Patentansprüche

1. Verschluss mit klappbarer Kappe für Flaschen oder Ähnliches, mit einem automatischen Kappenöffnungssystem mit verbessertem Knopf, wobei der Verschluss Folgendes aufweist:

- einen mit einer Austrittsöffnung (2) versehenen Hauptkörper (1) zur Anbringung am Hals einer Flasche oder Ähnlichem, wobei der Hauptkörper (1) eine Seitenwand (11) und eine obere Basis (12), auf der die Austrittsöffnung (2) vorge sehen ist, aufweist,
- eine klappbare Kappe (3), die mit dem Hauptkör per (1) über eine Gelenkverbindung (4) verbunden ist, so dass sie zwischen einer offenen Stellung und einer eingeklappten Stellung, in der sie die Austrittsöffnung (2) blockiert, schwenken kann, wobei der Hauptkörper (1) und die Kappe (3) aus steifem Plastikmaterial geformt sind,
- ein elastisches Element (7), das zwischen dem Hauptkörper (1) und der Kappe (3) so ange-
2. Verschluss nach Anspruch 1, **dadurch gekennzeichnet, dass** die geometrische Schwächung in der Wand des Hauptkörpers (1), die die deformierbare Kontur (8) bildet, im Querschnitt eine hin- und hergehende Form und eine gegenüber den benachbarten Bereichen der Wand verringerte Dicke aufweist.

3. Verschluss nach Anspruch 2, **dadurch gekennzeichnet, dass** die geometrische Schwächung der deformierbaren Kontur (8) die Form einer Rinne verleihet, die in den Seitenabschnitten (8b) eine zu deren unteren Enden hin abnehmende Tiefe aufweist.

4. Verschluss nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Halteeinrichtung (6a, 6b) ein im Frontabschnitt (5a) des beweglichen Bereichs (5) ausgebildetes Fenster (6a) und einen auf der Kappe (3) ausgebildeten hakenförmigen Vorsprung (6b) aufweist.

**Revendications**

1. Fermeture avec couvercle articulé pour des bouteilles et analogues, ayant un système d’ouverture de couvercle automatique comportant un bouton amélioré, ladite fermeture comportant :

- un corps principal (1), muni d’une embouchure d’alimentation (2), adapté pour être appliqué sur le col d’une bouteille ou analogue, ledit corps principal (1) ayant une paroi latérale (11) et une base supérieure (12) sur laquelle ladite embouchure d’alimentation (2) est disposée,
- un couvercle articulé (3) relié à un élément élastique (7) par une articulation (4), de telle sorte que ledit couvercle (3) peut pivoter entre une position ouverte et une position articulée dans laquelle il bloque ladite embouchure d’alimentation (2), ledit corps principal (1) et ledit couvercle (3) étant moulés à partir d’une matière plastique rigide,
- un élément élastique (7) agencé entre ledit corps principal (1) et ledit couvercle (3) de façon à appliquer une force de retour élastique sur ledit couvercle (3) vers sa position ouverte, ledit élément élastique (7) étant fabriqué à partir d’un matériau élastomère autre que ladite matière plastique rigide,
- des moyens d’ancrage (6a, 6b) entre ledit couvercle (3) et ledit corps principal (1) adaptés pour retenir ledit couvercle (3) dans sa position articulée, et
- un bouchon adapté pour déclencher la libération desdits moyens d’ancrage (6a, 6b), de telle sorte qu’en agissant sur ledit bouchon, le couvercle est ouvert automatiquement et entièrement en raison de l’action de la force de retour élastique appliquée par ledit élément élastique (7), ledit bouchon étant constitué d’une zone mobile (5) moulée d’un seul tenant avec ledit corps principal (1) en matière plastique rigide, de telle sorte que ladite zone mobile (5) et ledit corps principal (1) forment une pièce d’un seul tenant moulée à partir d’une matière plastique rigide, ladite zon-
ne mobile (5) comportant au moins une partie avant (5a) délimitée sur ladite paroi latérale (11) et assemblée à son extrémité inférieure à ladite paroi latérale (11) par une ligne d’assemblage (22) qui définit un axe de pivotement de ladite zone mobile (5), ladite partie avant (5a) ayant une surface de pression (13) adaptée pour recevoir un doigt d’utilisateur, et lesdits moyens d’ancrage (6a, 6b) comportant une première partie (6a) formée dans ladite zone mobile (5) et une seconde partie (6b) formée dans ledit couvercle (3) et adaptée pour être ancrée dans ladite première partie (6a),
- caractérisée en ce que ladite zone mobile (5) est délimitée sur ledit corps principal (1) par un contour déformable (8) défini par une faiblesse géométrique de la paroi réelle dudit corps principal (1), ledit contour déformable (8) définissant une surface d’assemblage continue entre ladite zone mobile (5) et le reste dudit corps principal (1), et
- ledit contour déformable (8) a un tronçon supérieur (8a) qui définit dans ladite base supérieure (12) une partie supérieure (5b) de la zone mobile (5) et des tronçons latéraux respectifs (8b) qui définissent dans ladite paroi latérale (11) la partie avant (5a) de la zone mobile (5), lesdits tronçons latéraux (8b) prolongeant les extrémités dudit tronçon supérieur (8a) jusqu’à ladite ligne d’assemblage (22).

2. Fermeture selon la revendication 1, caractérisée en ce que la faiblesse géométrique dans la paroi du corps principal (1) qui forme ledit contour déformable (8) a, en coupe, une forme de bascule et une épaisseur réduite par rapport aux zones adjacentes de ladite paroi.

3. Fermeture selon la revendication 2, caractérisée en ce que ladite faiblesse géométrique forme ledit contour déformable (8) sous la forme d’une gorge qui, dans lesdits tronçons latéraux (8b), a une profondeur qui diminue vers les extrémités inférieures desdits tronçons latéraux (8b).

4. Fermeture selon l’une quelconque des revendications 1 à 3, caractérisée en ce que lesdits moyens d’ancrage (6a, 6b) sont constitués d’une fenêtre (6a) formée dans ladite partie avant (5a) de la zone mobile (5) et d’une saillie en forme de crochet (6b) formée sur ledit couvercle (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

- EP 0826606 A [0004] [0005] [0006] [0007]
- EP 0839735 A [0004] [0005] [0006] [0007]
- EP 0975526 A [0004] [0005] [0006] [0007]
- EP 0976663 A [0007] [0009]
- EP 8113260 B [0008]
- WO 2004110889 A [0009]