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

(11) EP 1 632 437 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
**05.12.2007 Bulletin 2007/49**

(51) Int Cl.:
***B65D 47/20*** *(2006.01)* ***B65D 5/74*** *(2006.01)*
***B65D 47/24*** *(2006.01)*

(21) Application number: **04255277.8**

(22) Date of filing: **01.09.2004**

(54) **Dispensing caps for beverage containers**

Zapfen für Getränkebehälter

Bouchon distributeur pour récipients à boisson

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR**

(43) Date of publication of application:
**08.03.2006 Bulletin 2006/10**

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(56) References cited:
**EP-A- 0 790 192**
**DE-U- 8 518 074**
**WO-A-94/14588**
**US-B1- 6 669 054**

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## Description

**[0001]** The present invention relates to dispensing caps for beverage bottles or other beverage containers. Such caps may be fitted to the mouth of a beverage bottle and provide the ability to drink from the bottle without removing the cap. In this form such caps are referred to as drinking caps. Such caps may also be provided on an upper surface of a larger beverage container, e.g. of waxed cardboard, of the type which are commonly used to store milk or fruit juice. In this form one may drink from the cap or use it to pour the beverage into a drinking glass or the like.

**[0002]** Drinking caps typically include two moulded plastic components which are connected together and are relatively movable between a first position, in which the bottle, to which the cap is connected, is sealed and a second position, in which the interior of the bottle communicates with the exterior through one or more openings through which a liquid in the bottle may flow. Such caps thus also provide a resealing facility.

**[0003]** Various different constructions of dispensing or drinking cap are known but these all include at least two components which must be moulded separately and then connected together. This is both time-consuming and expensive.

**[0004]** A dispensing cap according to the preamble of claim 1 is known from WO/9414588 A.

**[0005]** It is therefore the object of the invention to provide a dispensing cap which is both simple and cheap and, in particular, constitutes a one-piece plastic moulding.

**[0006]** According to the present invention, a dispensing cap constitutes a one-piece moulding of polymeric material, such as polypropylene, and includes a first circular section tubular portion with a first radius for connection to a beverage container and a second circular section tubular portion with a second radius smaller than the first radius, one end of the first tubular portion being connected to one end of the second tubular portion by a resilient, annular, integral web, in which one or more flow openings are formed, the width of the web being equal to or greater than the difference between the first and second radii, the other end of the second tubular portion being closed, the second tubular portion carrying a peripheral flange whose radius is equal to or greater than that of the first tubular portion, the first and second tubular portions being coaxial and relatively movable in the axial direction between an open position, in which the second tubular portion is located outside the first tubular portion and the flow openings are unobstructed, and a closed position, in which the said one end of the second tubular portion is located within the said one end of the first tubular portion and the peripheral flange is in sealing engagement with the said one end of the first tubular portion, whereby the flow openings are prevented from communicating with the atmosphere, characterised in that the web (4) carries a projecting annular first sealing flange (20), whereby when the first and second tubular portions (2, 6) are in the closed position the flow openings (18) are prevented from communicating with the interior of the first tubular portion (2) by the sealing engagement of the first sealing flange (20) with the internal surface of the first tubular portion (2) and that the first sealing flange (20) projects from the web (4) in a direction substantially parallel to the axis of the first and second tubular portions (2,6), when they are in the open position.

**[0007]** Thus the dispersing cap in accordance with the invention includes two circular section tubular portions of different radius, one end of each of which is connected by a resilient web whose width, that is to say length in the generally radial direction, is equal to or greater than the difference between the two radii. The other end of the tubular portion of greater radius is adapted for connection to the mouth of a bottle or the like or to the upper surface of a larger beverage container whilst the other end of the tubular portion of lesser radius is closed. The second tubular portion carries a peripheral flange, preferably at its upper end, whose radius is equal to or greater than that of the first tubular portion. The resilient web has at least one and preferably a number of spaced flow openings formed in it. The tubular portion of lesser diameter is movable in the axial direction with respect to the other tubular portion between an open position, in which it is situated wholly outside the tubular portion of greater diameter and the flow openings are unobstructed, and a closed position in which its end connected to the web is situated inside the adjacent end of the tubular portion of greater diameter. In this closed position, the flow apertures are situated within the tubular portion of greater diameter and the peripheral flange is in sealing engagement with the upper end of the first tubular portion. This means that the flow openings are sealed from, that is to say do not communicate with the exterior, that is to say the atmosphere. The beverage container to which the dispensing cap is connected is thus also sealed and no liquid may leave it.

**[0008]** It will be appreciated that when the two tubular portions are in the open position and a force is applied to the tubular portion of smaller diameter to move it into the closed position, the initial movement of the tubular portion of the smaller diameter will necessarily result in compression and/or deformation of the web due to the fact that its length is greater than the difference between the radii of the two tubular portions. This compression and/or deformation will result in the web exerting a restoring force on the tubular portion of lesser diameter urging it back towards the open position. However, as the closing force continues to be exerted, the tubular portion of smaller diameter will move progressively in the axial direction towards the tubular portion of greater diameter. As it passes through the position in which the web extends substantially in the radial direction, the force exerted by the web on the tubular portion of smaller diameter will act on it to urge it towards the closed position. The tubular portion of smaller diameter is thus effectively

bistable and if no external force is applied to it it will automatically move to either the open or the closed position. The peripheral flange is positioned and dimensioned such that it is moved into sealing contact with the opposing end surface of the tubular portion of larger diameter before the web has reached the fully relaxed position. This means that, in the closed position, the underside of the peripheral flange is biased into contact with the upper end surface of the first tubular portion and forms a constant substantially line seal with it.

**[0009]** This seal may be sufficient on its own but it is preferred that an additional seal is also provided for additional security. In the preferred embodiment, the web carries a projecting annular first sealing flange, whereby when the first and second tubular portions are in the closed position the flow openings are prevented from communicating with the interior of the first tubular portion by the sealing engagement of the first sealing flange with the internal surface of the first tubular portion. In this embodiment, the sealing flange is positioned and dimensioned such that it is moved into sealing contact with the opposing surface on either the internal surface of the tubular portion of larger diameter or the web before the web has reached the fully relaxed position. A secondary seal is thus formed.

**[0010]** It is preferred that the first sealing flange is integral with the web. The first sealing flange projects from the web in a direction substantially parallel to the axis of the first and second tubular portions, when they are in the open position. This is particularly convenient because it enables the drinking cap to be readily removed from an injection mould at the end of the injection moulding process in the axial direction. It is also convenient because the web, and thus the first sealing flange integral with it, will typically rotate through about 90° when moving from the open to the closed position, which means that if the first sealing flange extends in the axial direction, when the cap is in the open position, it will extend in the generally radial direction, when the cap is in the closed position, which will mean that its free edge will form a substantially line seal with the opposing surface.

**[0011]** Whilst the first sealing flange may form a seal directly with the internal surface of the tubular portion of greater diameter, it is preferred that the internal surface of the first tubular portion carries a resilient annular second sealing flange, which projects at an acute angle to the axis of the first and second tubular portions and away from the second tubular portion and is positioned so that it is sealingly engaged by the first sealing flange, when the first and second tubular portions are in the closed position. This second sealing flange will be caused to yield somewhat in the generally radial direction by the engagement of the first sealing flange and this is found to result in a further enhancement of the sealing integrity.

**[0012]** In order to minimise the risk that the tubular portion of greater diameter might be deformed by physical engagement, when in the closed position, thereby breaking the seal, it is preferred that the first tubular portion carries an external annular stiffening or reinforcing bead adjacent its connection with the web. This stiffening bead will resist deformation forces and thus minimise the risk of inadvertent leakage occurring.

**[0013]** As mentioned above, the dispensing cap may be attached to the mouth of a beverage bottle and used as a drinking cap. It may, however, also be attached and sealed to an upper surface, which may be horizontal or inclined, of a beverage container of the type which is commonly used to accommodate milk, fruit juice or the like and is typically made of waxed cardboard or a laminate material, typically comprising paper and polyethylene and optionally aluminium. In this event, it will be secured to the surface over an aperture in the container. This aperture is typically sealed by a membrane of polyethylene or other plastic material, aluminium or a laminated material. This membrane must be ruptured before the beverage may be dispensed. In order to rupture this membrane, the dispensing cap may include an elongate piercing member, one end of which is connected to the second tubular portion, the piercing member being so dimensioned and arranged that, when the first and second tubular portions are in the open position, the other end is situated within the first tubular portion and when they are in the closed position it projects beyond the other end of the first tubular portion.

**[0014]** Thus, in this embodiment, the beverage container would be sold with the dispensing cap in the open position. When it is desired to dispense the beverage, the cap is moved into the closed position so as to move the lower end of the piercing member, which is preferably relatively sharp, out of the first tubular portion. This will press it against the membrane and rupture it, thereby opening the container. The cap is then returned to the open position by grasping the peripheral flange with the fingers and the beverage may be dispensed. If only a proportion of the contents of the container is dispensed, the cap may be moved again into the closed position in which it seals the container by virtue of the seal between the underside of the peripheral flange and the upper edge of the first tubular portion and optionally also the seal formed by the first sealing flange and the surface with which it comes into engagement.

**[0015]** In order to facilitate the piercing or rupturing of the membrane, it is preferred that the piercing member is of generally cruciform cross-sectional shape, at least at its end remote from the second tubular portion.

**[0016]** Depending on the material of which the membrane is made, there is a risk that, when the piercing member is retracting after piercing the membrane, the portions of the membrane will return to their original position and reform at least a partial seal of the opening. In order to prevent this happening, it is preferred that the end of the piercing member carries one or more lateral projections adapted to deflect the portions of the ruptured membrane to a position from which they cannot readily return to reform a seal. In the preferred embodiment, each limb of the cruciform shape carries lateral displace-

ment members on each side projecting in opposite directions to the length of the associated limb.

**[0017]** As mentioned above, the beverage container may be sold with the dispensing cap in the open position. Loss of the beverage will be prevented by the sealing member over the aperture in the beverage container. In order to prevent unintentional depression of the second tubular portion and thus unintentional rupturing of the membrane, it is preferred that the cap includes removable retaining means which retain the first and second tubular portions in the open position.

**[0018]** The retaining means may take various forms and they are constituted by an annular strip or band integrally connected to the first tubular portion and to the peripheral flange on the second tubular portion by respective lines of weakness, whereby the annular strip may be manually removed when the cap is first used and will serve, prior to removal, as a tamper evident indicator.

**[0019]** In order to further enhance the integrity of the seal of the dispensing cap, when closed, it is preferred that the underside of the peripheral flange affords a radial shoulder whose shape and position match those of the upper end of the first tubular portion, whereby when the second tubular portion is moved into the closed position, the underside of the peripheral flange forms a seal with the end surface of the first tubular portion and the side surface of the shoulder forms a seal with a side surface of the first tubular portion adjacent the said end surface.

**[0020]** Further features and details of the invention will be apparent from the following description of two specific embodiments of dispensing cap in accordance with the invention, which is given by way of example only with reference to the accompanying drawings, in which:

Figure 1 is a side view of the dispensing cap, in the open configuration in which it is sold;

Figure 2 is a side view of the dispensing cap, when closed;

Figure 3 is an axial sectional view of the dispensing cap, in the open configuration in which it is sold;

Figure 4 is an axial sectional view of the drinking cap, when closed;

Figure 5 is a sectional view of the circled portion of the cap in Figure 4 on an enlarged scale; and

Figure 6 is an end view of the piercing member of an alternative embodiment.

**[0021]** The dispensing cap is a one-piece injection moulded component of polymeric material, such as polypropylene, and comprises a first circular section tubular portion 2 of relatively large diameter, which is integrally connected at one end by a resilient, flexible web 4 to one end of a second circular section tubular portion 6 of relatively smaller diameter.

**[0022]** The larger tubular portion 2 is adapted to be connected and sealed to an upper surface of a beverage container around a dispensing aperture, which is initially sealed by a membrane. The upper end of the smaller diameter tubular portion 6 is closed by an integral lid 14, the diameter of which is greater than that of the tubular portion 6, whereby its radially outer edge constitutes a projecting peripheral flange or lip 16, which may be grasped by the user and whose radius is equal to that of the larger tubular portion 2.

**[0023]** As may be seen in Figure 1, a plurality of holes 18 is formed in the resilient web 4. As best seen in Figure 4, the width of the resilient web 4, that is to say its length between the lower end of the tubular portion 6 and the upper end of the tubular portion 2, is greater than the difference between the radii of the two tubular portions. Integral with the internal surface of the web 4 is a first annular sealing flange 20, which extends substantially in the axial direction, when the cap is in the open position illustrated in Figure 3. Integral with the internal surface of the upper end of the larger tubular portion 2 is a second resilient sealing flange 22, which extends both downwardly, that is to say away from the smaller diameter tubular portion 4, and inwardly towards the axis of the cap, whereby it subtends an acute angle with the axial direction of the cap. The underside of the peripheral flange 16 has an annular shoulder 8 formed in it with a radius equal to that of the upper edge of the tubular portion 2, whereby this underside has an annular portion whose shape precisely matches that of the upper edge of the tubular portion 2. The upper end of the lower tubular portion thus forms a seal not only with the underside of the flange 16 but also with the side surface of the shoulder 8.

**[0024]** When the cap is in the open position shown in Figures 1 and 3, the tubular portion 4 is located wholly outside the tubular portion 2. The web 4 extends upwardly out of the tubular portion 2 and also inwardly in the axial direction and the flow openings 18 communicate with the interior of the cap, whereby liquid in the container to which the cap is connected can flow out through the openings 18. If a downward force is exerted on the cap 14, the tubular portion 6 begins to move downwardly. This results in compression and distortion of the web 4, which thus exerts a restoring force on the tubular portion 6 urging it back towards the fully open position. As the force continues to be exerted on the cap 14, the tubular portion 6 moves downwardly until the web 4 extends approximately horizontally, that is to say in the radial direction. As the tubular portion 6 moves through and beyond this "dead centre" position, the force exerted by the web 4 on the tubular portion 6 acts in the downward direction. The tubular portion 6 continues to move downwardly and this is accompanied by continuing rotation of the web 4. This movement continues until the underside of the peripheral flange 16 engages the upper surface of the tubular portion 2 and the free edge of the sealing flange 40 engages

the surface of the resilient sealing flange 22. This occurs before the web 4 is fully relaxed, whereby when the downward force on the cap 14 is removed, the force exerted by the web 4 continues to urge the underside of the flange 16 against the upper surface of the tubular portion 2 to form a sealed line contact and to urge the two sealing flanges 20, 22 into contact and the free edge of the flange 20 makes sealed line contact with the surface of the sealing flange 22. The first contact line is above the flow openings 18 and thus seals them from the atmosphere whilst the second contact line is situated below the flow openings 18, which means that these flow openings are sealed from the interior of the cap. The interior of the bottle is thus sealed and no liquid can flow out through the openings 18. If it is desired to reopen the bottle, an upward force is exerted on the peripheral flange 16 and the process described above is reversed until the cap is again in the open position illustrated in Figures 1 and 3.

**[0025]** As mentioned above, when the cap is in the closed position, the interior of the liquid container is sealed from the exterior. If, however, a significant lateral force were exerted on one side of the tubular portion 2, there is a risk that it could deform sufficiently to break the seal, thereby permitting liquid within the container to escape through the openings 18. This risk is minimised by the provision of an annular external stiffening or reinforcing bead 24 on the upper portion of the tubular portion 2 in the vicinity of its connection to the web 4. This stiffening bead will resist deformation of the tubular portion 2 and thus minimise the risk of leakage occurring.

**[0026]** The dispensing cap as so far described is suitable for application to the mouth of a bottle for use as a drinking cap. However, the illustrated cap is particularly intended for connection to the surface of a beverage carton or the like over an aperture in the surface sealed by a rupturable membrane. In order to rupture this membrane, the cap is provided with an elongate piercing member 30, the upper end of which is integral with the tubular portion 6 or the lid 14, which coaxially downwardly. The length of the piercing member is such that it is wholly within the cap, when the cap is in the open position, but protrudes below the lower end of the tubular portion 2, when the cap is in the closed position.

**[0027]** In order to ensure that the cap and thus the beverage container are not opened earlier than desired by the inadvertent application of pressure to the lid 14, the cap is provided with an integral tear-away plastic band 32 which is connected to the peripheral flange 16 and the tubular portion 2, which restrains relative movement of the two tubular portions. When it is desired to open the container and dispense some of the beverage in it, the plastic band 32 is grasped by a projecting tag or the like and torn away from the cap. The tubular portion is then moved downwardly into the closed position and this causes the lower end of the piercing member to extend out of the lower end of the tubular portion 2 and thus rupture the membrane sealing the aperture in the container. beverage may now be dispensed, whereafter the cap may be closed again. The fact that the plastic band has been removed is clearly visible and this band thus acts also as a tamper evident indicator.

**[0028]** In the embodiment of Figures 1 to 5, the piercing member is of simple, regular cruciform shape in cross-section, preferably with a relatively sharp lower end in order to facilitate rupturing the membrane. However, it is found that under certain circumstances the four portions or flaps of the ruptured membrane can return to their original position after the piercing member has been withdrawn and recreate a substantial seal. This problem is eliminated in the modified embodiment shown in Figure 6, in which the piercing member is again of generally cruciform cross-section. However, at the lower edge of each limb 34 of the cruciform there are two lateral projections 36 extending transversely to the limb. These projections force the flaps of the ruptured membrane aside to positions from which they are unlikely to be able to return to their original position. Accordingly, use of this embodiment results in the beverage container remaining able to dispense beverage, once the membrane has been ruptured and eliminates the risk of a seal being recreated by the flaps of the ruptured membrane.

## Claims

1. A dispensing cap constituting a one-piece moulding of polymeric material including a first circular section tubular portion (2) with a first radius for connection to a beverage container and a second circular section tubular portion (6) with a second radius smaller than the first radius, one end of the first tubular portion (2) being connected to one end of the second tubular portion (6) by a resilient, annular, integral web (4), in which one or more flow openings (18) are formed, the width of the web (4) being equal to or greater than the difference between the first and second radii, the other end of the second tubular portion (6) being closed, the second tubular portion (6) carrying a peripheral flange (16) whose radius is equal to or greater than that of the first tubular portion (2), the first and second tubular portions (2, 6) being coaxial and relatively movable in the axial direction between an open position, in which the second tubular portion (6) is located outside the first tubular portion (2) and the flow openings (18) are unobstructed, and a closed position, in which the said one end of the second tubular portion (6) is located within the said one end of the first tubular portion (2) and the peripheral flange (16) is in sealing engagement with the said one end of the first tubular portion (2), whereby the flow openings (18) are prevented from communicating with the atmosphere, **characterised in that** the web (4) carries a projecting annular first sealing flange (20), whereby when the first and second tubular portions (2, 6) are in the closed position the flow openings (18) are prevented from commu-

nicating with the interior of the first tubular portion (2) by the sealing engagement of the first sealing flange (20) with the internal surface of the first tubular portion (2) and that the first sealing flange (20) projects from the web (4) in a direction substantially parallel to the axis of the first and second tubular portions (2, 6), when they are in the open position.

**2.** A cap as claimed in Claim 1 in which the internal surface of the first tubular portion (2) carries a resilient annular second sealing flange (22), which projects at an acute angle to the axis of the first and second tubular portions (2, 6) and away from the second tubular portion (6) and is positioned so that it is sealingly engaged by the first sealing flange (20), when the first and second tubular portions (2, 6) are in the closed position.

**3.** A cap as claimed in any one of the preceding claims in which the first tubular portion (2) carries an external annular stiffening bead (24) adjacent its connection with the web (18).

**4.** A cap as claimed in any one of the preceding claims including an elongate piercing member (30), one end of which is connected to the second tubular portion (6), the piercing member (30) being so dimensioned and arranged that, when the first and second tubular portions (2, 6) are in the open position, the other end is situated within the first tubular portion (2) and when they are in the closed position it projects beyond the other end of the first tubular portion (2).

**5.** A cap as claimed in Claim 4 in which the piercing member (30) is of generally cruciform cross-sectional shape, at least at its end remote from the second tubular portion (6).

**6.** A cap as claimed in Claim 5 in which each limb (34) of the cruciform shape carries lateral displacement members (36) on each side projecting in opposite directions transversely to the length of the associated limb.

**7.** A cap as claimed in any one of Claims 4 to 6 including removable retaining means (32) which retain the first and second tubular portions (2, 6) in the open position.

**8.** A cap as claimed in Claim 7 in which the retaining means are constituted by an annular strip (32) integrally connected to the first tubular portion (2) and to the peripheral flange (16) on the second tubular portion (6) by respective lines of weakness, whereby the annular strip (32) may be manually removed when the cap is first used and will serve, prior to removal, as a tamper evident indicator.

**9.** A cap as claimed in any one of the preceding claims in which the underside of the peripheral flange (16) affords a radial shoulder (8) whose shape and position match those of the upper end of the first tubular portion (2), whereby when the second tubular portion (6) is moved into the closed position, the underside of the peripheral flange (16) forms a seal with the end surface of the first tubular portion (2) and the side surface of the shoulder (8) forms a seal with a side surface of the first tubular portion (2) adjacent the said end surface.

**Patentansprüche**

**1.** Ein Spenderverschluss bestehend aus einem einteiligen Formteil aus Kunststoffmaterial mit einem ersten rohrförmigen Abschnitt (2) mit kreisförmigem Querschnitt und einem ersten Radius zum Anschluss an einen Getränkebehälter und mit einem zweiten rohrförmigen Abschnitt (6) mit kreisförmigem Querschnitt und einem zweiten Radius, der kleiner als der erste Radius ist, wobei ein Ende des ersten rohrförmigen Abschnitts (2) mit einem Ende des zweiten rohrförmigen Abschnitts (6) verbunden ist durch einen integrierten elastischen, ringförmigen Steg (4), in welchem eine oder mehrere Durchflussöffnungen (18) gebildet sind, wobei die Breite des Stegs (4) größer oder gleich der Differenz zwischen dem ersten und dem zweiten Radius ist, wobei das andere Ende des zweiten rohrförmigen Abschnitts (6) geschlossen ist und der zweite rohrförmige Abschnitt (6) einen äußeren Flansch (16) trägt, dessen Radius größer oder gleich demjenigen des ersten rohrförmigen Abschnitts (2) ist, wobei der erste und der zweite rohrförmige Abschnitt (2, 6) koaxial angeordnet sind und in axialer Richtung relativ zueinander bewegbar sind zwischen einer geöffneten Stellung, in der der zweite rohrförmige Abschnitt (6) außerhalb des ersten rohrförmigen Abschnitts (2) angeordnet ist und die Durchflussöffnungen (18) frei liegen, und einer geschlossenen Stellung, in welcher das eine Ende des zweiten rohrförmigen Abschnitts (6) innerhalb des einen Endes des ersten rohrförmigen Abschnitts (2) liegt und der äußere Flansch (16) mit diesem einen Ende des ersten rohrförmigen Abschnitts (2) eine Dichtverbindung bildet, wodurch die Durchflussöffnungen (18) daran gehindert werden, mit der Umgebung in Verbindung zu stehen, **dadurch gekennzeichnet, dass** der Steg (4) einen vorstehenden ringförmigen ersten Dichtflansch (20) trägt, wobei dann, wenn der erste und der zweite rohrförmige Abschnitt (2, 6) in der geschlossenen Stellung sind, die Durchflussöffnungen (18) durch die Dichtverbindung des ersten Dichtflansches (20) mit der Innenseite des ersten rohrförmigen Abschnitts (2) daran gehindert werden, mit dem Innenraum des ersten rohrförmigen Abschnitts (2) in Ver-

bindung zu stehen, und dass der erste Dichtflansch (20) von dem Steg (4) in einer im Wesentlichen parallel zur Achse des ersten und zweiten rohrförmigen Abschnitts (2, 6) verlaufenden Richtung vorsteht, wenn sie in der geöffneten Stellung sind.

**2.** Ein Verschluss nach Anspruch 1, wobei die Innenseite des ersten rohrförmigen Abschnitts (2) einen elastischen ring-förmigen zweiten Dichtflansch (22) trägt, welcher im spitzen Winkel zur Achse des ersten und zweiten rohrförmigen Abschnitts (2, 6) und in Richtung weg von dem zweiten rohrförmigen Abschnitt (6) vorspringt, und derart angeordnet ist, dass er von dem ersten Dichtflansch (20) abgedichtet wird, wenn der erste und zweite rohrförmige Abschnitt (2, 6) in der geschlossenen Stellung sind.

**3.** Ein Verschluss nach einem der vorhergehenden Ansprüche, wobei der erste rohrförmige Abschnitt (2) in der Nähe seiner Verbindung mit dem Steg (18) eine äußere ringförmige Verstärkungslippe (24) aufweist.

**4.** Ein Verschluss nach einem der vorhergehenden Ansprüche mit einem länglichen Perforierbauteil (30), dessen eines Ende mit dem zweiten rohrförmigen Abschnitt (6) verbunden ist, wobei das Perforierbauteil (30) derart dimensioniert und angeordnet ist, dass, wenn der erste und zweite rohrförmige Abschnitt (2, 6) in der geöffneten Stellung sind, sein anderes Ende innerhalb des ersten rohrförmigen Abschnitts (2) angeordnet ist, und wenn sie in der geschlossenen Stellung sind, es über das andere Ende des ersten rohrförmigen Abschnitts (2) vorspringt.

**5.** Ein Verschluss nach Anspruch 4, in welchem das Perfo-35 rierbauteil (30) wenigstens an seinem von dem zweiten rohrförmigen Abschnitt (6) entfernt angeordneten Ende einen im Wesentlichen kreuzförmigen Querschnitt hat.

**6.** Ein Verschluss nach Anspruch 5, wobei jeder Schenkel (34) der Kreuzform seitliche Verdrängungselemente (36) auf jeder Seite aufweist, die in entgegengesetzten Richtungen quer zur Längsrichtung des zugehörigen Schenkels vorspringen.

**7.** Ein Verschluss nach einem der Ansprüche 4 bis 6 mit abnehmbaren Haltemitteln (32), welche den ersten und zweiten rohrförmigen Abschnitt (2, 6) in der geöffneten Stellung halten.

**8.** Ein Verschluss nach Anspruch 7, wobei die Haltemittel von einem ringförmigen Streifen (32) gebildet sind, der durch entsprechende Zonen geringer Festigkeit fest mit dem ersten rohrförmigen Abschnitt (2) und mit dem äußeren Flansch (16) auf dem zweiten rohrförmigen Abschnitt (6) verbunden ist, wodurch der ringförmige Streifen (32) manuell entfernt werden kann, wenn der Verschluss zum ersten Mal benutzt wird, und er vor dem Entfernen als manipulationssicherer Indikator dient.

**9.** Ein Verschluss nach einem der vorhergehenden Ansprüche, wobei die Unterseite des äußeren Flansches (16) eine radiale Schulter (8) aufweist, deren Form und Position zu dem oberen Ende des ersten rohrförmigen Abschnitts (2) passt, wobei beim Bewegen des zweiten rohrförmigen Abschnitts (6) in die geschlossene Stellung die Unterseite des äußeren Flansches (16) eine Dichtung mit der Stirnfläche des ersten rohrförmigen Abschnitts (2) bildet und die Seitenfläche der Schulter (8) eine Dichtung mit einer zu der Stirnfläche benachbarten Seitenfläche des ersten rohrförmigen Abschnitts (2) bildet.

**Revendications**

**1.** Bouchon distributeur formant un objet moulé en une pièce de matériau polymère incluant une première partie tubulaire de section circulaire (2) présentant un premier rayon à raccorder à un récipient de boisson et une deuxième partie tubulaire de section circulaire (6) présentant un deuxième rayon inférieur au premier rayon, une extrémité de la première partie tubulaire (2) étant raccordée à une extrémité de la deuxième partie tubulaire (6) par une âme d'un seul tenant annulaire élastique (4), dans laquelle une ou plusieurs ouvertures d'écoulement (18) sont formées, la largeur de l'âme (4) étant égale ou supérieure à la différence entre le premier rayon et le deuxième rayon, l'autre extrémité de la deuxième partie tubulaire (6) étant fermée, la deuxième partie tubulaire (6) comportant un bourrelet périphérique (16) dont le rayon est égal ou supérieur à celui de la première partie tubulaire (2), les première et deuxième parties tubulaires (2, 6) étant coaxiales et mobiles l'une par rapport à l'autre dans le sens axial entre une position ouverte, dans laquelle la deuxième partie tubulaire (6) se trouve en dehors de la première partie tubulaire (2) et les ouvertures d'écoulement (18) ne sont pas obstruées, et une position fermée, dans laquelle ladite première extrémité de la deuxième partie tubulaire (6) se trouve à l'intérieur de ladite première extrémité de la première partie tubulaire (2) et le bourrelet périphérique (16) vient en prise étanche avec ladite première extrémité de la première partie tubulaire (2), de manière à empêcher les ouvertures d'écoulement (18) de communiquer avec l'atmosphère, **caractérisé en ce que** l'âme (4) comporte un premier bourrelet de fermeture annulaire saillant (20), de manière, lorsque les première et deuxième parties tubulaires (2, 6) se trouvent dans la position fermée, à empêcher les ouvertures d'écoulement (18) de communiquer avec l'intérieur

de la première partie tubulaire (2) par la prise étanche du premier bourrelet de fermeture (20) avec la surface interne de la première partie tubulaire (2) et **en ce que** le premier bourrelet de fermeture (20) fait saillie depuis l'âme (4) dans une direction sensiblement parallèle à l'axe des première et deuxième parties tubulaires (2, 6), lorsqu'elles se trouvent dans la position ouverte.

**2.** Bouchon suivant la revendication 1, dans lequel la surface interne de la première partie tubulaire (2) comporte un deuxième bourrelet de fermeture annulaire élastique (22), qui saille selon un angle aigu par rapport à l'axe des première et deuxième parties tubulaires (2, 6) et dans la direction opposée à la deuxième partie tubulaire (6) et est placé de manière à ce que le premier bourrelet de fermeture (20) vienne en prise étanche avec lui, lorsque les première et deuxième parties tubulaires (2, 6) se trouvent dans la position fermée.

**3.** Bouchon suivant l'une quelconque des revendications précédentes, dans lequel la première partie tubulaire (2) comporte une nervure de renforcement annulaire externe (24) jouxtant son raccord à l'âme (18).

**4.** Bouchon suivant l'une quelconque des revendications précédentes, incluant un élément de perçage allongé (30), dont une extrémité est raccordée à la deuxième partie tubulaire (6), l'élément de perçage (30) ayant des dimensions telles et étant disposé de telle manière que, lorsque les première et deuxième parties tubulaires (2, 6) se trouvent dans la position ouverte, l'autre extrémité se trouve à l'intérieur de la première partie tubulaire (2) et, lorsqu'elles se trouvent dans la position fermée, elle fait saillie au-delà de l'autre extrémité de la première partie tubulaire (2).

**5.** Bouchon suivant la revendication 4, dans lequel l'élément de perçage (30) est de forme généralement cruciforme en coupe transversale, au moins à son extrémité distante de la deuxième partie tubulaire (6).

**6.** Bouchon suivant la revendication 5, dans lequel chaque branche (34) de la croix comporte des éléments de déplacement latéral (36) de chaque côté faisant saillie dans des directions opposées dans le sens transversal par rapport à la longueur de la branche associée.

**7.** Bouchon suivant l'une quelconque des revendications 4 à 6, incluant des moyens de maintien amovibles (32) qui maintiennent les première et deuxième parties tubulaires (2, 6) dans la position ouverte.

**8.** Bouchon suivant la revendication 7, dans lequel les moyens de maintien sont composés d'une bande annulaire (32) raccordée d'un seul tenant à la première partie tubulaire (2) et au bourrelet périphérique (16) sur la deuxième partie tubulaire (6) par des lignes de faiblesse respectives, de manière à ce que la bande annulaire (32) puisse être retirée manuellement lorsque le bouchon est utilisé pour la première fois et serve, avant son retrait, d'indicateur d'inviolabilité.

**9.** Bouchon suivant l'une quelconque des revendications précédentes, dans lequel le côté inférieur du bourrelet périphérique (16) fournit un épaulement radial (8) dont la forme et la position correspondent à celles de l'extrémité supérieure de la première partie tubulaire (2), de manière à ce que, lorsque la deuxième partie tubulaire (6) se déplace dans la position fermée, le côté inférieur du bourrelet périphérique (16) forme un joint d'étanchéité avec la surface d'extrémité de la première partie tubulaire (2) et la surface latérale de l'épaulement (8) forme un joint d'étanchéité avec une surface latérale de la première partie tubulaire (2) jouxtant ladite surface d'extrémité.

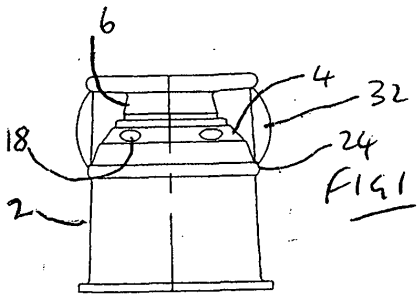



FIG 1

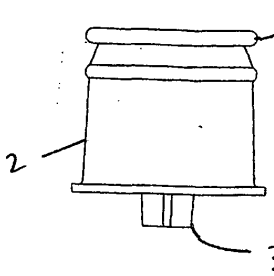



FIG 2

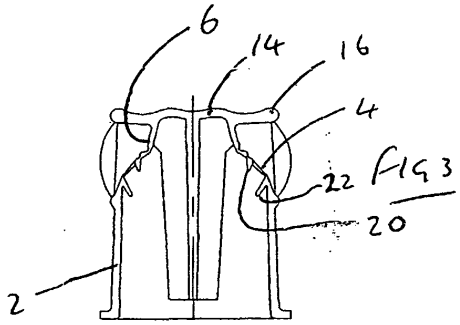



FIG 3

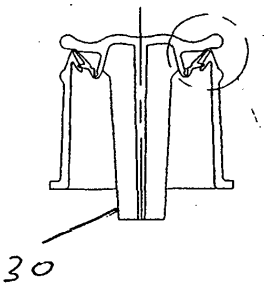



FIG 4

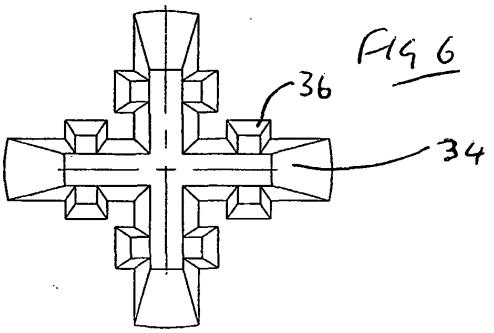



FIG 6

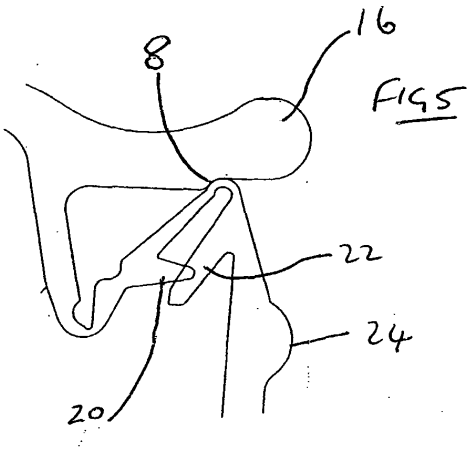



FIG 5

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- WO 9414588 A **[0004]**