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Description

This invention relates to closure caps for opening and closing a discharge passage for flowable material extending between the interior and exterior of a container.

As known to those skilled in the art, closure caps are typically used on containers of flowable material, e.g. soap, detergent, shampoo, etc., for closing and sealing the container when in disuse and for being opened to permit the contents of the container to be dispensed as desired by the user. Such prior art closure caps are disclosed in U.S. Patent No. 3,276,640 issued October 4, 1966 to Kessler, U.S. Patent No. 3,439,843 issued April 22, 1969 to Corsette, U.S. Patent No. 3,516,581 to Micallef issued June 23, 1970, and U.S. Patent No. 3,572,559 to Stull issued March 30, 1971.

As further known to those skilled in the art, a common problem associated with such closure caps is that the component members between which relative movement is provided to open and close the passage do not remain in fluid tight engagement during the act of dispensing or during the acts of opening and closing the passage. This lack of fluid-tight engagement permits the dispensed flowable material to escape between the component members between which relative movement is provided and the material accumulates on the exterior and interior of the closure cap providing an unsightly and undesirably messy condition and, depending upon the material being dispensed, sometimes an unsanitary condition.

It has been found that this escape of flowable material problem is particularly prevalent in the closure caps known to the prior art which includes a lever mounted for angular movement in an plane perpendicular to the lid for closing the container and wherein the lever is provided with a downwardly extending member in engagement with an upwardly extending member mounted stationarily on the lid; the interiors of such members are provided, respectively, with ducts each of which forms a portion of the discharge passage. Since the lever experiences angular movement, the member mounted on the lever providing part of the discharge passage also must experience angular movement and since the member is in telescopic engagement with a stationarily mounted member, it has been found that the angular movement of one such member relative to the stationarily mounted other member causes the members not to always remain in fluid-tight or sealing engagement during dispensing and during the acts of opening and closing the closure cap. Obviously, either or both the member experiencing angular movement and the stationarily mounted member must be flexible to permit such telescopic, sliding movement therebetween and this may be seen and better understood from viewing Figs. 1 and 2 of the accompanying drawings.

In Fig. 1, there is shown prior art closure cap 10 mounted threadedly on the neck of a container 12 and which closure cap 10 upon being opened as shown in Fig. 2 provides a discharge path indicated by the arrows for communicating the interior of the container 12 with the exterior thereof for dispensing flowable material contained therein. The closure cap includes a lever 14 mounted pivotally at 16 with the forward portion of the lever including downwardly extending members 18 for sealingly engaging the upper portion of an upwardly extending and stationarily mounted member 20 to close the discharge path. For dispensing, the rearward portion of the lever 14 is forced downwardly causing the forward portion of the lever to pivot upwardly, as shown in Fig. 2, to open the discharge passage and since the members 18 mounted on the forward portion of the lever 14 also experience angular movement, the member 20 is distorted, as shown in Fig. 2, to permit relative movement between the sealing members 18 moving angularly and the member 20 remaining stationary. Of course, as known to the prior art, efforts to permit such relative movement—angular movement relative to a stationarily mounted member—the members have been made of flexible material, such as a suitable plastic, but even so, it has been found that such members do not remain in fluid-tight engagement and the dispensed material escapes therebetween. This may be better understood by reference to Figs. 3 and 4 wherein, as shown in Fig. 2, the members 18 and 20 easily remain in fluid-tight contact upon the closure cap being closed for sealing, but upon the lever 14 and members 18 experiencing angular movement while member 20 remains stationary, member 18 as shown in Fig. 2 must bend or distort to permit the relative sliding, telescopic movement and upon being bent or distorted, the members 18 and 20, as shown in Fig. 4, do not always remain in fluid-tight engagement and openings 61—61 have been found to exist between such members. These openings have been found to permit the unwanted escape of the flowable or dispensable material which may then accumulate on the interior and exterior of the closure apparatus causing the above-noted undesirable prior art problem. The conditions illustrated in Figs. 3 and 4 may also be noted by reference to Fig. 7 of the above noted U.S. Patent No. 3,516,581 where there is shown in broken lines the positions assumed by the parts between which such relative movement is experienced when the closure apparatus is in the dispensing or open position. Accordingly, it is an object of the present invention to provide improved closure cap wherein the telescopically interconnected members remain in fluid-tight engagement during dispensing and during the acts of moving such members into the dispensing and closing positions.

In addition, as is also known to those skilled in the art, it is desirable to provide such closure cap with some means for causing the closure cap to be fluid-tight while in the closed or sealed position. Several detent type structures are known to the prior art for this purpose, such as for example

the well-known prior art technique of providing an interference fit between the end of a spout defining arm and the surrounding cylinder whereby upon the arm being depressed into the sealing position the end of the spout defining arm is forced into engagement with the surrounding cylinder. However, it has been found that such prior art detent structures do not always provide the desired closing force to maintain the cap fluid-tight in the closed or sealing position. Hence, it has been found to be desirable to provide new and improved closure cap for maintaining the apparatus fluid-tight in the closed or sealing position during disuse; accordingly, another object of the present invention is to provide such improved closure cap.

The present invention, in particular, it is an improvement of the closure cap of the type illustrated in U.S. Patent No. 3,516,581. Accordingly, it is an object of the present invention to provide a closure cap in which the interconnected members remain in fluid-tight engagement during dispensing and closure and during the acts of moving these members into the dispensing and closing positions.

According to the present invention a closure cap for opening and closing a discharge passage for flowable material extending between the interior and the exterior of a container, comprising a lid portion adapted to be mounted to the container for covering the open mouth thereof, said lid portion having an upstanding first, tubular, member with an interior passage forming a part of said discharge passage, and a lever mounted for pivotal movement in a plane normal to the lid portion and having a second member arranged for engaging said first member, said lever when pivoted in a first direction causing said second member to close said discharge passage and when pivoted in a second direction to open said discharge passage, is characterized in that said lever has hinge means interconnecting a forward lever portion comprising said second member, and a rearward lever portion comprising the pivotal mounting of the lever, for providing translational movement between said first and second members upon pivoting said lever in said first and second directions.

In the closure cap according to the invention translational or straight-line relative movement is provided between the members which are in telescopic, sliding engagement, whereby the telescopically interconnected members remain in fluid-tight engagement in the closed or sealing position during disuse and during the movement between the dispensing and sealing positions. In addition the telescopic straight-line engagement prevents distortion or bending of the interconnected members resulting in that an effective sealing or closure of the discharge passage in the closing position of the members can be achieved by a simple face to face engagement of opposite flat faces of the interconnected members. Thus specific sealing means can be omitted in many cases.

According to a preferred embodiment of the invention the lever is generally disk-shaped and said hinge mens comprises a°) a centrally formed, semi-circular slot extending between said rearward and forward portions of said lever and in the direction of said rearward portion of said lever and b°) a pair of axially aligned portions of reduced thickness formed integrally between said rearward and forward portions of said lever and extending respectively between the ends of said semi-circular slot and the edge of said lever.

Preferably a spout is provided at the forward portions of said lever, said forward portion including an intake duct opening towards the lid portion and communicating with the spout and an outlet duct defined by said first, tubular, member, said ducts with said spout forming said discharge passage from the interior to the exterior of the container, and cooperating sealing means are provided respectively on the intake and outlet ducts for closing one of the ducts upon the lever being in the sealing position.

The second member according to another preferred embodiment of the invention may comprise a second tubular member depending from said flat bottom surface of said forward portion of said lever and being movable in a translational manner with respect to said first, tubular, member, said second tubular member having an interior larger than the exterior of said first, tubular, member and being provided at its lower portion with an inwardly extending annular projection for sliding engagement with the exterior of said first, tubular, member, the latter being provided at its upper portion with an outwardly extending annular projection for sealing interference engagement with the interior of said second tubular member whereby upon said translation movement said sliding interference engagements provide sliding seals between said first and second tubular members preventing said flowable material from escaping therebetween and accumulating on said closure cap.

Further the present invention provides an improved sealing structure for sealing the discharge passage in the closing position of the telescopically interconnected members. Accordingly the first, tubular, member may be provided with resilient means for being compressed upon said forward portion of said lever and said second member being moved toward said first member, said resilient means upon being compressed applying force to said lever to force said second member into engagement with said first member to facilitate the closure of said discharge passage.

The invention will be described in detail hereafter with reference to the drawings in which a preferred embodiment of the invention is shown. In the drawings:

Figs. 1 and 2 are vertical, cross-sectional views of a prior art closure cap over which the present invention is an improvement;

Figs. 3 and 4 are, respectively, cross-sectional views taken generally along the lines 2—2 and 4—4 in the direction of the arrows, respectively, in

Figs. 1 and 2;

Fig. 5 is a vertical cross-sectional view of a closure cap embodying the present invention and shown in the closed position the cap being shown in threaded engagement with the neck of a partially shown container;

Fig. 6 is a vertical cross-sectional view of the cap of Fig. 5 but shown in the open or dispensing position;

Fig. 7 is a top view of the cap of Fig. 5 but shown as it would appear in full or complete view;

Fig. 8 is a vertical cross-sectional view taken generally along the line 8—8 in Fig. 7 and in the direction of the arrows;

Figs. 9 and 10 are partial side views taken generally along the lines 9—9 and 10—10 in Fig. 8 and in the direction of the arrows; and

Fig. 11 is an irregular cross-sectional view taken generally along the line 11—11 in Fig. 5 in the direction of the arrows;

Fig. 12 is an alternative embodiment of the present invention which provides top rather than side dispensing.

Description of the preferred embodiment

Referring now to Figs. 5—11 and in particular to Figs. 5 and 6, there is shown an improved dispenser closure apparatus or closure cap embodying the present invention and indicated generally by numerical designation 20. As may be noted from Figs. 5, 6, 7 and 11, the closure cap 20 is generally of cylindrical shape or configuration, but may also have a generally rectangular shape, if desired. In its preferred embodiment the closure cap 20 comprises two parts, namely a generally cylindrically shaped lower portion 21 and a generally disk-shaped upper portion or lever 22.

The lower portion 21 is provided with internal threads, as shown, for threaded engagement with the external threads provided on the neck 23 of a container 24 of flowable material of the type noted above. In addition, the lower portion 21 is provided with a lid portion 26 for closing the container 24 and an upwardly extending member 28 of generally cylindrical or tubular configuration. Provided on the upper portion of the lid 26 is a fulcrum indicated by general numerical designation 29 and in the preferred embodiment of the present invention illustrated in Figs. 5, 6 and 11, the fulcrum 29 is formed integrally with the lower portion 21. The fulcrum 29 includes two generally triangularly shaped members 30—30 supported transversely by a cross member 31; the apexes of the triangular members 30—30 provide the fulcrum point for the lever 22. The interior of the member 28 provides an outlet duct 32 and the upper portion of the member 28 is provided with a hollow, inverted, generally conical resilient member 34, best seen in cross-section in Fig. 6, mounted coaxially on top of the member 28 and extending upwardly and outwardly therefrom with the interior 35 of the conical resilient member in communication with the outlet duct 32.

Referring now to the lever 22, the lever is provided with a forward arm 38 in turn provided with a spout 39 and the lever is further provided with a rearward arm 40 fulcrumed on the apexes of the triangular members 30—30 for angular movement in a plane normal to the lid portion 26 between sealing and dispensing positions, as described in detail below, in which the forward arm 38 is moved toward and away from the lid portion 26 and in particular toward and away from the upwardly extending tubular member 28 and the conical resilient member 34. The forward arm 38 is further provided with a downwardly extending generally cylindrically shaped member 42, Fig. 6, which depends downwardly from a surrounding flat surface 43, Fig. 6, provided on the underside of the forward arm 38. Also depending downwardly from the forward arm 38 is a generally cylindrical or tubular member 44, Figs. 5 and 6, which coaxially surrounds the cylindrical member 42 and is mounted on the underside of the forward arm 38 for movement with the cylindrical member 42 toward and away from the cylindrical member 28. The interior of the tubular member 44 surrounding the exterior of the cylindrical member 42 provides an intake duct 45 in communication with the spout 39.

It will be understood, and referring again to Fig. 6, that the outlet duct 32, the interior 35 of the conical resilient member 34, the inlet duct 45 and the spout 39 cooperatively form a discharge path or passage, indicated by the arrows, from the interior to the exterior of the container 24 upon the lever 22 being in the dispensing position shown in Fig. 6.

The cylindrical or tubular members 28 and 44, as may be understood from Figs. 5 and 6, are interconnected in a sliding, reciprocating, telescopic relationship with the interior of the lower portion of the tubular member 44 being provided with an inwardly extending annular projection 48 and with the exterior of the upper portion of the tubular member 28 provided with an outwardly extending annular projection 50; upon such sliding, reciprocating, telescopic movement, described in detail below, the annular projections 48 and 50 are in sliding interference engagement, respectively, with the exterior and interior of the respective tubular members and provide sliding seals between the tubular members preventing flowable material from escaping therebetween and unwantedly accumulating between the members and on the interior of the closure cap 20.

The manner in which translational or straight line relative movement is provided between the tubular members 28 and 44 will now be described in detail by reference primarily to Fig. 7. The forward arm 38 of the lever 22 is interconnected with the rearward arm 40 of the lever by hinge or hinging structure indicated generally by numerical designation 54. The hinge or hinging structure includes a centrally formed, semi-circular slot 56, Figs. 5 and 7, extending between the forward and rearward arms of the lever 22 and in the direction of the rearward arm 40; in addition, the hinge or hinging structure 54 includes a pair of axially

aligned sections or portions 58—58 of reduced wall thickness, shown in Figs. 9 and 10, formed integrally between the rearward and forward arms of the lever 20 and extending outwardly, respectively, as shown in dashed outline in Fig. 7 between the ends of the semi-circular slot 56 and the edge of the disk-shaped lever 22.

Thus, upon the rearward arm 40 being depressed by the finger of the user to pivot the rearward arm 40 downwardly as shown in Fig. 6, the forward arm 38 will pivot about the hinge or hinging structure 54 and will be moved vertically upwardly in translational or straight line relative movement with respect to the tubular member 28 whereby the tubular member 44 and cylindrical member 42 will be provided with translation or straight line movement with respect to the tubular member 28. Thus, contrary to the telescopically interconnected members 18 and 20 described above and shown in Fig. 2, the telescopically received tubular members 28 and 44 will not be bent or distorted and will remain in sealing engagement with the annular projections 48 and 50, described above, remaining in sliding, sealing engagement thereby preventing escape of the flowable material therebetween either during dispensing, as illustrated in Fig. 6, or during the acts of moving into the sealing and closing position, with the closing position being indicated in Fig. 5. Such translational relative movement has been found to provide an advance and improvement in the closure apparatus art and to prevent the unwanted escape of flowable material described above.

A further feature of the present invention, and in accordance with the further teachings thereof, is provided by the conical resilient member 34 described above and best seen in Fig. 6. As will be recalled, the conical resilient member 34 is mounted coaxially on the upper portion of the tubular member 28 and extends generally upwardly and outwardly as shown in Fig. 6. The conical resilient member 34 acts in cooperation with an outwardly extending annular projection 60 formed on the lower portion of the cylindrical member 42 to seal the closure cap when in disuse to provide the cylindrical member 42 with some inward flexibility, the interior thereof may be hollowed as shown in Figs. 5 and 6 and the conical resilient member 34 may be formed of suitable flexible material more fully described below in the general description of the material of which the members of the closure apparatus of the present invention may be preferably formed. Hence, upon the downward translational movement of the forward arm 38 and the cylindrical member 42, the upper portion of the conical resilient member 34 will engage the flat under surface of the forward arm 38 surrounding the cylindrical member 42 and, as shown in Fig. 5, the conical resilient member will be compressed outwardly and downwardly and hence upon the annular projection 60 formed on the cylindrical member 42 being forced through the conical resilient member as shown in Fig. 5, the compressed conical resilient member 34 will provide and apply upwardly acting force acting upwardly against the forward arm 38 causing the annular projection 60 provided on the lower portion of the cylindrical member 42 to be forced into sealing engagement with the lower portion of the conical resilient member 34 thereby closing and sealing the above-described discharge passage. It will be understood that while the sealing engagement between the projection 60 and the lower portion of the conical resilient member 34 provided by the compressed conical resilient member 34 is sufficient to maintain sealing while the closure cap of the present invention is in disuse, it is not sufficiently great to prevent it to be overcome by downwardly acting force applied to the rearward arm 40 of the lever 22 by a user, which downwardly acting force is sufficient to force the cylindrical member 42 upwardly, with some compression thereof due to its resilient as described above, and permit the cylindrical member to be forced upwardly through the conical resilient member to open the discharge path described above and illustrated in Fig. 6.

The inwardly and outwardly extending annular projections 48 and 50 provided respectively on the tubular members 44 and 28 perform a dual purpose. In addition to providing the above described sliding, sealing engagement during translational movement between the telescopically interconnected tubular members, such annular projections also provide the snap-fit between the lever 22 and the lower portion 21 of the closure cap 20 thereby providing means for assembly and prevention of easy disassembly of the two members when in the open position.

Referring now to Fig. 12, there is shown an alternate embodiment of the present invention which provides top rather than side dispensing. In this embodiment, structure corresponding to that identified in the earlier embodiment is given the same numerical designation and the embodiment of Fig. 12 in addition to providing the top dispensing through orifice or spout 39A in addition is also provided with a post or member 62 shaped for insertion into the orifice 39A and upon each closure of the apparatus, the post 62 cleans the orifice 39A.

It will be understood by those skilled in the art that the closure cap of the present invention, instead of being provided with threads for mounting and dismounting from a container may, if desired and if the economics involved permit, be formed integrally with a container; that is, the lower portion 21 of the closure apparatus may be formed integrally therewith with the lever member thereafter assembled thereto as described above or may be provided with suitable structure providing a snap-fit with the neck of the container.

The lower portion 21 and lever 22 of the closure of the present invention may be suitably formed by injection molding and may be preferably formed from a suitable plastic material such as any one of several suitable polymers or copolymers known to those skilled in the art.

Claims

1. A closure cap for opening and closing a discharge passage for flowable material extending between the interior and the exterior of a container, comprising a lid portion (26) adapted to be mounted to the container for covering the open mouth thereof, said lid portion (26) having an upstanding first, tubular, member (28) with an interior passage forming a part of said discharge passage, and a lever (22) mounted for pivotal movement in a plane normal to the lid portion (26) and having a second member arranged for engaging said first member (28), said lever (22) when pivoted in a first direction causing said second member to close said discharge passage and when pivoted in a second direction to open said discharge passage, characterized in that said lever (22) has hinge means (54) interconnecting a forward lever portion (38) comprising said second member, and a rearward lever portion (40) comprising the pivotal mounting of the lever for providing translational movement between said first and second members (28) upon pivoting said lever (22) in said first and second directions.

2. The closure cap according to claim 1, wherein said lever (22) is generally disk-shaped and wherein said hinge means (54) comprises a°) a centrally formed, semi-circular slot (56) extending between said rearward and forward portions (38, 40) of said lever (22) and in the direction of said rearward portion of said lever and b°) a pair of axially aligned portions (58) of reduced thickness formed integrally between said rearward and forward portions of said lever and extending respectively between the ends of said semi-circular slot and the edge of said lever.

3. The closure cap according to claim 1 or 2, wherein a spout (39) is provided at the forward portion (38) of said lever (22), said forward portion including an intake duct (45) opening towards the lid portion (26) and communicating with the spout (39) and an outlet duct (32) defined by said first, tubular, member (28), said ducts with said spout forming said discharge passage from the interior to the exterior of the container, and wherein cooperating sealing means (48, 50) are provided respectively on the intake and outlet ducts (45, 32) for closing one of the ducts upon the lever being in the sealing position.

4. The closure cap according to claim 1, 2 or 3, wherein said second member comprises a second tubular member (44) depending from said flat bottom surface (43) of said forward portion (38) of said lever (22) and being movable in a translational manner with respect to said first, tubular, member (28), said second tubular member (44) having an interior larger than the exterior of said first, tubular, member (28) and being provided at its lower portion with an inwardly extending annular projection (48) for sliding engagement with the exterior of said first, tubular, member (28), the latter being provided at its upper portion with an outwardly extending annular projection (50) for sealing interference engagement with the interim or of said second tubular member (44) whereby upon said translational movement said sliding interference engagements provide sliding seals between said first and second tubular members (28, 44) preventing said flowable material from escaping therebetween and accumulating on said closure cap.

5. The closure cap according to any one of the preceding claims, wherein said first, tubular, member (28) is provided with resilient means (34) for being compressed upon said forward portion (38) of said lever (22) and said second member being moved toward said first member (28), said resilient means (34) upon being compressed applying force to said lever to force said second member into engagement with said first member to facilitate the closure of said discharge passage.

6. The closure cap according to claim 5, wherein said first, tubular, member (28) is a cylindrical member having a central axis coincident with the interior passage, said resilient means is a hollow inverted, generally conical resilient member (34) mounted coaxially on top of said first member (28) and extending upwardly and outwardly therefrom with the interior of said conical resilient member providing a portion of said discharge passage, the forward portion (38) of said lever is provided with a flat bottom surface (43), from which a cylindrical member (42) depends downwardly, said cylindrical member (42) is dimensioned for movement into and through said conical resilient member (34) and provided at its lower portion with a generally annular outwardly extending projection (60) slightly larger in diameter than the lower portion of said conical resilient member (34) and being resiliently compressible to permit the outwardly extending projection (60) to be forced through said lower portion of said conical resilient member (34) upon said forward portion (38) of said lever (22) and the cylindrical member (42) being moved towards said first member (28), and wherein said conical resilient member (34) having an effective height greater than the length of said cylindrical member (42) between the flat bottom surface (43) and said generally annular outwardly extending projection (60), whereby upon said annular projection (60) being forced through said lower portion of said conical resilient member (34) said flat bottom surface (43) engages the upper portion of said conical resilient member (34) and bends the upper portion outwardly to cause said conical resilient member (34) to produce force acting generally upwardly against said flat bottom surface (43) to force said generally annularly outwardly extending projection (60) upwardly into engagement with the lower portion of said conical resilient member thereby closing and sealing said discharge passage.

7. The closure cap according to claim 6, wherein said tubular member (44) coaxially surrounds said cylindrical downwardly depending member (42).

Patentansprüche

1. Verschlußkappe zum Öffnen und Verschließen einer sich zwischen dem Inneren und der Außenseite eines Behälters erstreckenden Auslaßpassage für fließfähiges Material, mit einem am Behälter zur Abdeckung von dessen offener Mündungsöffnung befestigbaren Deckelteil (26) mit einem davon abstehenden ersten rohrförmigen Element (28) mit einer inneren Passage, die einen Teil der Auslaßpassage bildet, und mit einem schwenkbeweglich in einer Ebene senkrecht zum Deckelteil (26) gehaltenen Hebel (22) mit einem zur Eingriffnahme mit dem ersten Element (28) angeordneten zweiten Element, wobei der Hebel (22) bei Verschwenkung in einer ersten Richtung bewirkt, daß das zweite Element die Auslaßpassage verschließt, und bei Verschwenkung in einer zweiten Richtung bewirkt, daß die Auslaßpassage geöffnet wird, dadurch gekennzeichnet, daß der Hebel (22) eine Gelenkeinrichtung (54) aufweist, die einen vorderen, das zweite Element umfassenden Hebelabschnitt (38) und einen hinteren, die Schwenkhalterung des Hebels aufweisenden Hebelabschnitt (40) miteinander verbindet, um eine translatorische Bewegung zwischen dem ersten und zweiten Element bei einer Verschwenkung des Hebels (22) in die erste und zweite Richtung vorzusehen.

2. Verschlußkappe nach Anspruch 1, dadurch gekennzeichnet, daß der Hebel (22) im wesentlichen scheibenförmig ist, und daß die Gelenkeinrichtung (54) umfaßt a) einen zentral ausgebildeten halbkreisförmigen Schlitz (56), der sich zwischen dem vorderen und hinteren Abschnitt (38, 40) des Hebels (22) und in Richtung des hinteren Hebelabschnittes erstreckt, und b) ein paar axial ausgerichtete Bereiche (58) mit verringerter Dicke, die integral zwischen dem hinteren und vorderen Hebelabschnitt ausgebildet sind und sich zwischen dem betreffenden Ende des halbkreisförmigen Schlitzes und der Kante des Hebels erstrecken.

3. Verschlußkappe nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß ein Ausguß (39) am vorderen Abschnitt (38) des Hebels (22) vorgesehen ist, welcher vordere Abschnitt einen Einlaßkanal (45) enthält, der sich zum Deckelteil (26) öffnet und mit dem Ausguß (39) sowie einem durch das erste rohrförmige Element (28) gebildeten Auslaßkanal (32) in Verbindung steht, wobei die Kanäle zusammen mit dem Ausguß die Auslaßpassage vom Inneren zur Außenseite des Behälters bilden, und daß eine zusammen wirkende Abdichtungseinrichtung (48, 50) an Ein- bzw. Auslaßkanal (45, 32) vorgesehen ist, um einen der Kanäle zu verschließen, wenn sich der Hebel in der abdichtenden Position befindet.

4. Verschlußkappe nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß das zweite Element ein zweites rohrförmiges Element (44) umfaßt, das sich von der flachen Unterfläche (43) des vorderen Abschnitts (38) des Hebels (22) nach unten erstreckt und in translatorischer Weise relativ zum ersten rohrförmigen Element (28) bewegbar ist, welches zweite rohrförmige Element (44) innen größer als die äußere Abmessung des ersten rohrförmigen Elementes (28) ist und an seinem unteren Bereich mit einem nach innen ragenden ringförmigen Vorsprung (48) zur gleitenden Eingriffnahme mit der Außenseite des ersten rohrförmigen Elementes (28) versehen ist, welch letzteres an seinem oberen Bereich mit einem nach außen ragenden ringförmigen Vorsprung (50) zur abdichtenden berührenden Eingriffnahme mit der Innenseite des zweiten rohrförmigen Elementes (44) versehen ist, so daß bei der translatorischen Bewegung die gleitenden berührenden Eingriffnahmen Gleitdichtungen zwischen dem ersten und zweiten rohrförmigen Element (28, 44) vorsehen, die einen Austritt des fließfähigen Materials zwischen den rohrförmigen Elementen und dessen Ansammlung an der Verschlußkappe verhindern.

5. Verschlußkappe nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das erste rohrförmige Element (28) mit einer nachgiebigen Einrichtung (34) versehen ist, die gestaucht wird, wenn der vordere Abschnitt (38) des Hebels (22) und das zweite Element gegen das erste Element (28) bewegt werden, wobei die nachgiebige Einrichtung (34) bei Stauchung eine Kraft auf den Hebel ausübt, um das zweite Element in Eingriff mit dem ersten Element zum verbesserten Verschließen der Auslaßpassage zu drücken.

6. Verschlußkappe nach Anspruch 5, dadurch gekennzeichnet, daß das erste rohrförmige Element (28) ein zylindrisches Element mit einer mit der inneren Passage zusammenfallenden Mittelachse ist, daß die nachgiebige Einrichtung ein hohles invertiertes, im wesentlichen konisches nachgiebiges Element (34) ist, das koaxial auf der Oberseite des ersten Elementes (28) angebracht ist und sich davon nach oben und nach außen erstreckt sowie einen Teil der Auslaßpassage vorsieht, daß der vordere Hebelabschnitt (38) mit einer flachen Unterfläche (43) versehen ist, von der ein zylindrisches Element (42) nach unten absteht, welches zur Bewegung in und durch das konische nachgiebige Element (34) bemessen und an seinem unteren Bereich mit einem im wesentlichen ringförmigen nach außen ragenden Vorsprung (60) versehen ist, der einen etwas größeren Durchmesser als der untere Bereich des konischen nachgiebigen Elementes (34) und nachgiebig zusammendrückbar ist, so daß der nach außen ragende Vorsprung (60) durch den unteren Bereich des konischen nachgiebigen Elementes (34) gedrückt werden kann, wenn der vordere Abschnitt (38) der Hebels (22) und das zylindrische Element (42) gegen das erste Element (28) bewegt werden, und daß das konische nachgiebige Element (34) eine effektive Höhe hat, die größer als die Länge des zylindrischen Elementes (42) zwischen der flachen Unterfläche (43) und dem im wesentlichen ringförmigen nach außen ragenden Vorsprung (60) ist, so daß nach Durchdrücken des ringförmigen Vorsprungs (60) durch den unteren Bereich des konischen nach-

giebigen Elementes (34) die flache Unterfläche (43) in Eingriff mit dem oberen Bereich des konischen nachgiebigen Elementes (34) kommt und deren obere Bereich nach außen abgebogen wird, so daß das konische nachgiebige Element (34) eine im wesentlichen nach oben gegen die flache Unterfläche (43) wirkende Kraft hervorruft, um den im wesentlichen ringförmigen nach außen ragenden Vorsprung (60) nach oben in Eingriff mit dem unteren Bereich des konischen nachgiebigen Elementes zu drücken und dadurch die Auslaßpassage zu verschließen und abzudichten.

7. Verschlußkappe nach Anspruch 6, dadurch gekennzeichnet, daß das rohrförmige Element (44) koaxial das zylindrische nach unten ragende Element (42) umgibt.

Revendications

1. Bouchon d'obturation permettant l'ouverture et la fermeture d'un passage d'écoulement d'une matière fluide entre l'intérieur et l'extérieur d'un contenant, comportant une partie couvercle (26) s'adaptant sur le contenant de manière à en couvrir l'orifice, ladite partie couvercle (26) comportant un premier élément tubulaire (28) dirigé vers le haut, avec un passage intérieur formant une partie dudit passage d'écoulement, et un levier (22) installé de manière à basculer dans un plan normal à la partie couvercle (26), ainsi qu'un deuxième élément disposé pour s'engager dans ledit premier élément (28), ledit levier (22), lorsqu'il est basculé dans un premier sens, provoquant la fermeture dudit passage d'écoulement par ledit deuxième élément et, lorsqu'il est basculé dans un deuxième sens, provoquant l'ouverture dudit passage d'écoulement, caractérisé en ce que ledit levier (22) comporte un système de charnière (54) reliant une première partie avant (38) du levier, laquelle comprend ledit deuxième membre, à une deuxième partie arrière (40) du levier, laquelle comprend le support de basculement du levier, destiné à fournir un mouvement de translation entre ledit premier élément et ledit deuxième élément (28), lorsque ledit levier (22) est basculé dans lesdits premier et deuxième sens.

2. Bouchon d'obturation suivant la revendication 1, au sein duquel ledit levier (22) présente généralement la forme d'un disque et au sein duquel ledit système de charnière (54) comporte a) une gorge centrale semi-circulaire (56) disposée entre lesdites parties arrière et avant (38, 40) dudit levier (22), dans le sens de ladite partie arrière dudit levier (22), et b) deux parties (58), d'épaisseur réduite et alignées axialement, formées intégralement entre lesdites parties arrière et avant dudit levier et se prolongeant respectivement entre les extrémités de ladite gorge semi-circulaire et le bord dudit levier.

3. Bouchon d'obturation suivant la revendication 1 ou 2, au sein duquel il est prévu un bec (39) dans la partie avant (38) dudit levier (22), ladite partie avant comportant un conduit d'entrée (45) s'ouvrant en direction de la partie couvercle (26) et communiquant avec le bec (39) ainsi qu'un conduit de sortie (32) formé par ledit premier élément tubulaire (28), lesdits conduits avec ledit bec formant ledit passage d'écoulement depuis l'intérieur vers l'extérieur du contenant, et au sein duquel il est prévu des moyens d'obturation (48, 50) agissant l'un vis-à-vis de l'autre, respectivement sur les conduits d'entrée et de sortie (45, 32), de manière à fermer un des conduits lorsque le levier se trouve en position d'obturation.

4. Bouchon de fermeture suivant la revendication 1, 2 ou 3, au sein duquel ledit deuxième élément comporte un deuxième élément tubulaire (44) suspendu à ladite surface plane inférieure (43) de ladite partie avant (38) dudit levier (22) et pouvant être déplacé suivant un mouvement de translation par rapport audit premier élément tubulaire (28), ledit deuxième élément tubulaire (44) ayant une section interne supérieure à la section externe dudit premier élément tubulaire (28) et comportant, à sa partie inférieure, un prolongement annulaire vers l'intérieur (48) de manière à s'engager dans la section externe dudit premier élément tubulaire (28), lequel est pourvu, à sa partie supérieure, d'un prolongement annulaire vers l'extérieur (50) de manière à venir s'engager de façon étanche dans la section interne dudit deuxième élément tubulaire (44), en sorte que, lors dudit mouvement de translation, lesdites parties s'insérant l'une dans l'autre de façon étanche entre lesdits premier et deuxième éléments tubulaires (28, 44) empêchent ladite matière fluide de s'échapper entre lesdits élémefits tubulaires et de s'accumuler sur ledit bouchon d'obturation.

5. Bouchon d'obturation suivant n'importe laquelle des revendications qui précèdent, au sein duquel le premier élément tubulaire (28) est pourvu d'une partie souple (34) prévue pour être comprimée contre ladite partie avant (38) dudit levier (22) et au sein duquel, lorsque ledit deuxième élément est déplacé vers ledit premier élément (28), ladite partie souple (34) se trouve comprimée lorsqu'il est appliqué une force sur ledit levier, de manière à contraindre ledit deuxième élément à venir s'insérer dans ledit premier élément, en vue de faciliter l'obturation dudit passage d'écoulement.

6. Bouchon de fermeture suivant la revendication 5, au sein duquel ledit premier élément tubulaire (28) est un élément cylindrique dont l'axe central coïncide avec le passage intérieur, ladite partie souple est un élément souple creux inversé généralement conique (34) installé coaxialement sur ledit premier élément (28), dirigé vers le haut et vers l'extérieur, dont la section interne dudit élément souple conique représente une partie dudit passage d'écoulement, la partie avant (38) dudit levier est pourvue d'une surface plane inférieure (43), à laquelle est suspendu vers le bas un élément cylindrique (42), ledit élément cylindrique (42) est dimensionné de manière à se déplacer dans et à travers ledit élément conique souple (34) et est pourvu, à sa

partie inférieure, d'un prolongement annulaire (60) s'ouvrant généralement vers l'extérieur, de section légèrement supérieure à la partie inférieure dudit élément conique souple (34) et pouvant être comprimé sans se déformer, de manière à pouvoir être inséré dans ladite partie inférieure dudit élément conique souple (34), lors du déplacement de ladite partie avant (38) dudit levier (22) et dudit élément cylindrique (42) en direction du premier élément (28), et au sein duquel ledit élément conique souple (34) possède une hauteur supérieure à la longueur dudit élément cylindrique (42), entre la surface inférieure plane (42) et le prolongement annulaire (60) s'ouvrant généralement vers l'extérieur, en sorte que, lors de la pénétration dudit prolongement annulaire (60) dans ladite partie inférieure dudit élément conique souple (34), ladite surface inférieure plane (43) permet l'insertion de la partie supérieure dudit élément conique souple (34) et plie ladite partie supérieure vers l'extérieur, de manière à ce que ledit élément conique souple (34) exerce une force agissant généralement vers le haut sur ladite surface inférieure plane (43), en vue d'insérer le prolongement annulaire (60) s'ouvrant généralement vers l'extérieur, vers le haut, dans la partie inférieure dudit élément conique souple et d'obturer de manière étanche ledit passage d'écoulement.

7. Bouchon d'obturation suivant la revendication 6 au sein duquel ledit élément tubulaire (44) entoure coaxialement ledit élément cylindrique (42) suspendu vers le bas.

FIG. 1

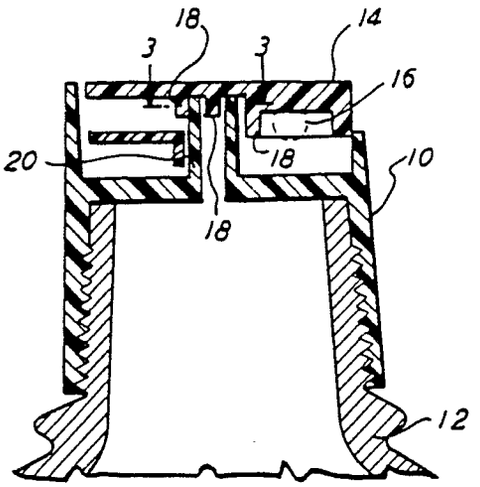


FIG. 2

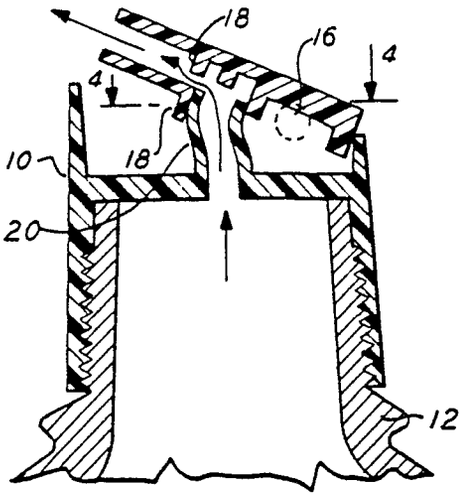


FIG. 3

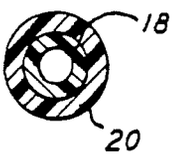
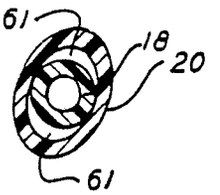


FIG. 4



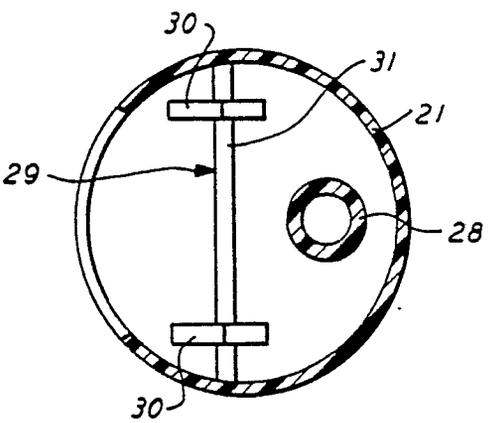


FIG. 11

FIG. 5

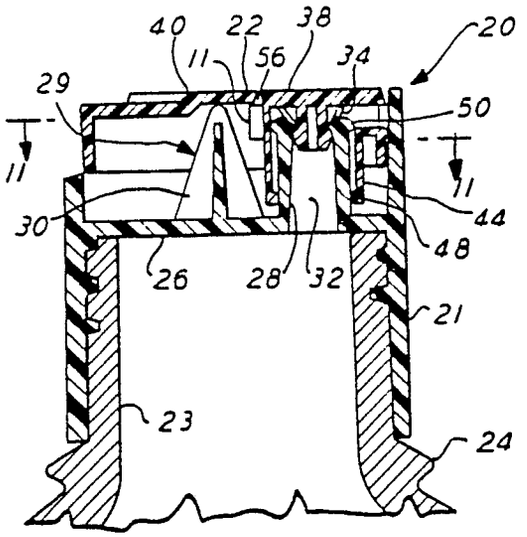


FIG. 6

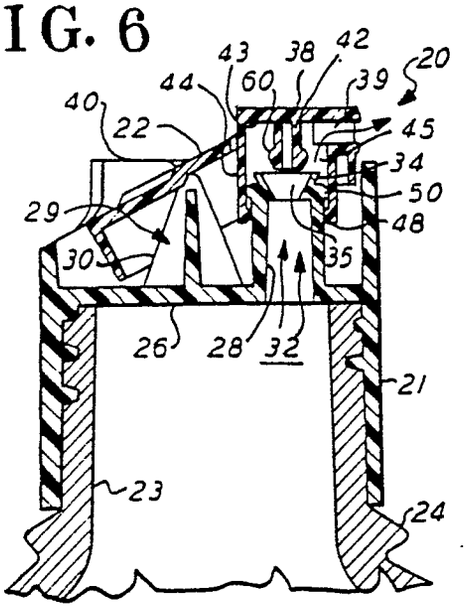


FIG. 9

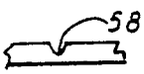


FIG. 7

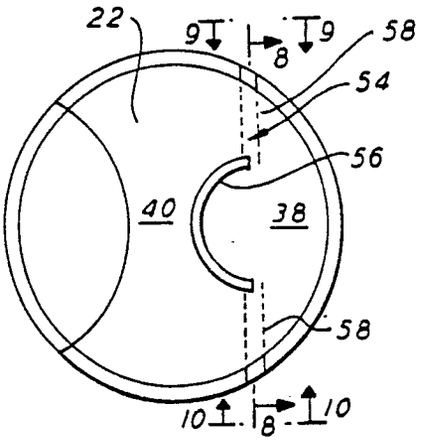


FIG. 8

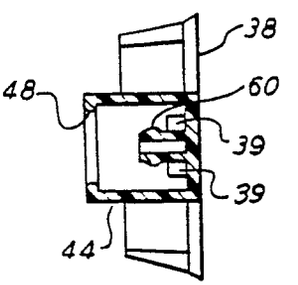


FIG. 12

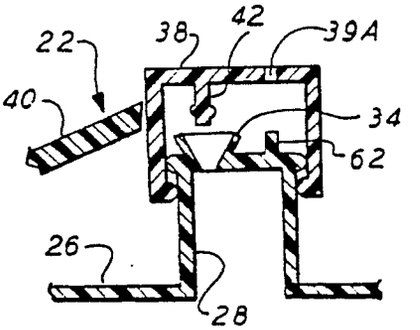


FIG. 10