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(54) **CLOSING DEVICE FOR A BOTTLE PROVIDED WITH A SLIDING PIPE**

VERSCHLUSSVORRICHTUNG FÜR EINE FLASCHE MIT GLEITROHR

DISPOSITIF A BOUCHER POUR BOUTEILLE A TUBULURE DEPLOYABLE

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Description

[0001] The invention relates to bottle closures with tamper-evident means used for expensive liquids to prevent refilling and indicating the first opening of the bottle.

[0002] Known in the art is a safety closure incorporating a discharge device, a fastening hood, a cap and a shutoff sleeve. The hood is connected with the shutoff sleeve via a weak line in the form of a few strips. The discharge device has ribs to distribute the flow over the free space. The shutoff sleeve has a spline on its interior surface being in engagement with the spline on the basic device. Aforesaid valve protects bottles from refilling (RU Patent No 2150417, Int. Cl. 7: B 65 D 49/02, published 10.06.2000). A drawback of this closure is in low reliability due to a small basic length of the valve within the guiding cavity of the discharge device as a result of which the valve may be jammed in the guide at a slight tilt.

[0003] Various closures incorporating an extensible dispenser of different dimension-types have appeared lately (RU Patent No 22937, Int. Cl. 7: B65D 41/34; 41/38, published 10.05.2002). Closures of the type commonly incorporate a decorative metallic or plastic casing with a tamper-evident means warning about the first opening of the bottle, and a polyethylene cap with a discharge device, which extends upwards and opens at turning the decorative casing of the bottle (RU Patent No 23290, Int. Cl. 7: B65D 39/00, published 10.06.2002). Rotation of the casing in reverse direction makes the cap operate like a gate closing tightly the unsealed bottle and preventing thereby its contents from evaporation.

[0004] Known is a polymeric hood with an extensible valve comprising a decorative cap, a shutoff and a discharge sleeves, a pouring tube, a gate and a fastening casing. The discharge device is made as a pouring tube able to seal the bottle cap tightly with the help of the gate. The pouring tube is screwed out of the hood cavity by unscrewing the decorative cap, which results in rupture of the strips that connect the decorative cap with the safety strap and rupture of said strap indicating the first opening of the bottle (RU Patent No 2238893, Int. Cl. 7: B 65D 47/20, published 27.10.2000). Above-mentioned closures do not, however, furnish sufficient protection from unauthorised opening and are rather inconvenient. Besides, there is a possibility of reassembling the breakable safety strap to mislead the customer.

[0005] The closest in its engineering essence and the effect attained is a safety closure (RU Patent No 2180311, Int. Cl. 7: B 65 D 47/20, published 10.03.2002) comprised of a decorative casing with a break-away element, a shutoff sleeve and a discharge device. The break-away element abuts against the decorative casing. The shutoff sleeve with splines on the interior surface is located in said decorative casing so as to provide their mutual rotation about the discharge sleeve and to engage its splines with the splines on the break-away element. The described closure is, however, insufficiently protected against unauthorised opening, and is neither tight

enough in a sealed form nor when screwed/unscrewed.

[0006] The proposed embodiment of technical solution intends to raise durability of the device, furnish an additional level of protection and make the closure more convenient for handling.

[0007] Named technical result is achieved by the accomplishment of the closure for bottles with a slide tube consisting of a decorative casing, a shutoff sleeve having splines on its interior surface, a threaded discharge sleeve with splines on its exterior side surface and a cap with a tube for liquid escape placed on its end, said decorative casing having a breakable upper piece weakened by vertical slots and furnished with strips on the side and end surfaces of the casing made at different spacing, wherein the last strip on the end surface in direction of breakage is strengthened and its length ratio to the weakened strip comprises at least 2.5. The interior surface of the decorative casing has slots and at least two restrictive collars, said slots on the casing being in engagement with the ribs made on the exterior side surface of the discharge sleeve.

[0008] Another embodiment of the closure has a decorative casing, the interior surface of said casing and the exterior surface of the discharge sleeve being threaded in different directions.

[0009] The mentioned technical result of the first and second embodiments is attained additionally by imparting surface roughness to a portion of the breakable element. The end surface of the shutoff sleeve is furnished with a breakable element with weakened strips, the interior end surface of said shutoff sleeve being made with a restrictive annular collar. The cap with the tube contains a cylindrical projection, wherein at least one sealing collar is made. The discharge sleeve incorporates a resilient element with a through opening and projections forming open on top annular cavity, said discharge sleeve being seated with its lower part in the annular cavity, thereby forming a gap between the bottom and projections of the resilient element.

[0010] The essence of the invention is embodied in the following figures:

Fig. 1. General view of the assembled closure.

Fig. 2. The decorative casing.

Fig. 3. Upper view of the casing.

Fig. 4. View A in Fig. 2.

Fig. 5. View B in Fig. 2.

Fig. 6. View C in Fig. 3.

Fig. 7. View D in Fig. 3.

Fig. 8. Shutoff sleeve.

Fig. 9. View E in Fig. 8.

Fig. 10. View F in Fig. 8.

Fig. 11. The cap with a tube.

Fig. 12. View G in Fig. 11.

Fig. 13. The discharge sleeve.

Fig. 14. The resilient element.

Fig. 15. The decorative casing with differently directed threading of embodiment 2.

Fig. 16. The discharge sleeve with differently directed threading of embodiment 2.

[0011] The closure for bottles with a slide tube consists of decorative casing 1, shutoff sleeve 2, cap 3, discharge sleeve 4 and resilient element 5.

[0012] The decorative casing 1 has a breakable upper piece disconnected by means of weakened strips 6 on the side surface and strips 7 on the end surface, and slots 8 separating the upper part. The last strip 9 in direction of rupture is strengthened, and its length ratio to the length of the weakened strip constitutes at least 2.5. The beginning of the breakable element has rough surface 10, wherein the direction of rupture 11 is indicated. Slots 12 and at least two restrictive collars 13 are provided on the interior lower part of decorative casing 1.

[0013] Shutoff sleeve 2 is fit with splines 14 on the interior side surface and has a breakable piece 15 with weakened strips 16 on the end surface of said shutoff sleeve. The annular restrictive projection 17 is made on the interior end surface of shutoff sleeve 2, and at least one slotted annular collar 18 is provided on the interior lower part of said shutoff sleeve.

[0014] Cap 3 is made with tube 19 forming opening 20 for liquid escape. The interior surface of cap 3 has thread 21 and its exterior surface is provided with splines 22 to engage with splines 14 of the shutoff sleeve. There is a cylindrical projection 23 inside cap 3 with at least one sealing collar 24 to provide tightness of the closure.

[0015] Discharge sleeve 4 contains inner tube 25 with a plugged end. The upper part of discharge sleeve 4 has cylindrical projection 26 with male screw 27 engaged with thread 21 on cap 3. The exterior surface of discharge sleeve 4 is provided with ribs 28 to engage with interior slots 12 of casing 1, and retaining slots 29 and 30 to enclose annular slotted collar 18 of shutoff sleeve 2 and restrictive collars 13 of decorative casing 1, preventing thereby its axial movement, wherein the interior surface of said discharge sleeve has ribs 31 for fastening on the bottleneck. Discharge sleeve 4 contains an elastic element 5 with through opening 32, and projections 33 and 34 forming on top annular cavity 35. Inner tube 25 is installed so as to accommodate its lower end in annular cavity 35 thereby forming hydraulic gate 36 (Fig. 1) and through channels 37 for liquid escape.

[0016] The given closure is assembled as follows: resilient element 5 is housed into the lower part of discharge sleeve 4, cap 3 with tube 19 is put on top of said sleeve, thereafter shutoff sleeve 2 is installed with breakable element 15 and decorative casing 1 with the upper breakable piece.

[0017] Discharge sleeve 4 with cap 3 is such as to allow swivel relative to shutoff sleeve 2. Decorative casing 1 made of a polymeric material fixes tightly shutoff sleeve 2 with cap 3 and discharge sleeve 4 over the interior surface with the aid of collars 13 and interior slots 12 engaged with ribs 28 of discharge sleeve 4. When installed on a bottle the safety cap is attached to the bot-

tleneck by means of ribs 31 of discharge sleeve 4.

[0018] According to the second embodiment of the closure consisting of the same elements as the first modification, is distinguished by implementing a new joint. The interior surface of decorative casing 1 and exterior surface of discharge sleeve 4 are made with threads of unlike direction 38 and 39, respectively (Figs. 16, 17), which allow for reliable protection of the casing from the circumferential and axial dislocation. Aforesaid differently directed threading can be made as a single or multiple-thread. Such implementation of the assembly of the decorative casing with the discharge sleeve eliminates certain structural elements like slots, ribs and collars, simplifies the design and is labour saving. The described unit is assembled by pressing the casing against the sleeve and locking by means of a tight fit of named threads.

[0019] The described closure is handled as follows: the break-away element with a rough surface 10 is pushed along arrow 11 breaking thereby strips 6 and 7 on the side and end surfaces of the casing and leading to rupture of the upper piece of the decorative casing. Since the side and end strips are spaced differently the rupture proceeds easily without any effort. In addition, vertical slots 8 in the upper piece of casing 1 facilitate folding of the breakable element, the end surface being ruptured together with the side breakable elements and remaining on the last side element owing to strengthened strip 9. Thus, the whole broken upper piece of the casing is left in hand for throw-away. Further, shutoff sleeve 2 is rotated, rotating simultaneously cap 3 with discharge sleeve 4 relative to the bottle. Owing to the engagement between splines 14 of shutoff sleeve 2 and splines 22 of cap 3 as well as thread 27 of discharge sleeve 4, cap 3 is displaced along the axis of the device. As a result, cap 3 squeezes breakable element 15 out of shutoff sleeve 2 by tube 20, breaking thereby strips 16, and forcing tube 19 outside shutoff sleeve 2.

[0020] At tilting the liquid inside the bottle flows through opening 35 into annular cavity 36 of gate 37 formed by annular cavity 3 of resilient element 5 and inner sleeve 25, then flows via through channels 38 and is poured out of the bottle through tube 19. On returning into the upright position the liquid found in through channels 38 runs into the annular cavity of gate 37 and then into the bottle, creating thereby excess pressure and hindering further flow of the liquid. The restored initial position of the shutoff sleeve makes the interior surface of tube 19 abut tightly on the exterior surface of discharge sleeve 2 sealing thereby reliably the bottle.

[0021] All elements of the closure are made of ecologically friendly polymeric materials, e.g. polyethylene and polystyrene using high-tech thermoplastic machines by injection moulding in moulds with a hot-channel system and dies. End strips 7, 9 and slots 8 of casing 1 are made by moulding in a mould, while side strips 6 are produced by automatic cutting. The bottle is closed by pressing top-down in a capping machine.

[0022] A pre-production sample of the bottle closure with a slide tube has been manufactured at an experimental industrial enterprise IUPP "Belkeps" using the turning/milling equipment.

[0023] The proposed invention allows for an additional level of proofing against tampering by means of making the end piece of the casing breakable at opening. This also improves reliability of operation during bottling of liquids by excluding mechanical parts in the discharge sleeve that may cause sticking or jamming.

Claims

1. A closure for bottles with a slide tube containing a decorative casing (1), a shutoff sleeve (2) with splines on the interior surface, a threaded discharge sleeve (4) on which top a cap (3) with a pouring tube (19) is installed with splines (22) on the exterior side surface, **characterised in that** it is the decorative casing (1) is made with a break-away upper piece weakened by vertical slots (8), said casing having strips on the side and end surfaces made at different spacing, wherein the last strip (6, 7) on the end surface in direction of rupture is strengthened and its length ratio to the weakened strip (9) length is at least 2.5, and there are slots (12) on the interior surface of the decorative casing (1) and at least two restrictive collars (13), said slots being in engagement with the ribs (28) found on the exterior side surface of the discharge sleeve (4).
2. A bottle closure with a slide tube containing a decorative casing (1), a shutoff sleeve (2) with splines on the interior surface, a threaded discharge sleeve (4) on which top a cap (3) with a tube (19) is installed for liquid escape, said discharge sleeve having splines (22) on the exterior side surface, **characterised in that** it is the decorative casing (1) is fit with a breakable upper element weakened by vertical slots (8), and having strips (6,7) on the side and end surfaces made at different spacing, the last strip (9) thereof on the end surface in direction of rupture being strengthened, and having length ratio to the weakened strip at least 2.5, the interior surface of aforesaid decorative casing (1) and the exterior surface of the discharge sleeve (4) being threaded in different directions (38 39).
3. Closure as claimed in Claims 1 or 2, wherein a portion of the side breakable element of the casing has a rough surface (10).
4. Closure as claimed in Claims 1 or 2, wherein the end surface of the shutoff sleeve has a breakable element (15) with weakened strips (16), said sleeve having an annular sealing projection (17) on the interior surface, and a cap (3) with a tube (19) contain-

ing a cylindrical projection (23) with at least one sealing collar (24).

5. Closure as claimed in Claims 1 or 2, wherein the discharge sleeve has a resilient element (5) with a through opening (32) and projections (33, 34) forming open on top annular cavity (35), said discharge sleeve having its lower part accommodated in the annular cavity and forming a gap between the bottom and projections of the resilient element thereof.

Patentansprüche

1. Verschluss für Flaschen mit einem Gleitrohr umfassend ein dekoratives Gehäuse (1), eine Absperrhülse (2) mit Schlitzen auf der inneren Oberfläche, eine Ablasshülse mit Gewinde (4), auf deren Kopf ein Deckel (3) mit einem Ausgießrohr (19) mit Schlitzen (22) auf der äußeren Seitenfläche angebracht ist, **dadurch gekennzeichnet, daß** das dekorative Gehäuse (1) mit einem Sollbruch-Oberteil ausgeführt ist, der durch vertikale Rillen (8) geschwächt ist, wobei das Gehäuse an den Stirn- und Seitenflächen Streifen mit unterschiedlichem Abstand aufweist, wobei der letzte Streifen (6, 7) auf der Stirnfläche in Richtung des Bruchs verstärkt ist und das Längenverhältnis der verstärkten zu der geschwächten Streifen (9) mindestens 2,5 beträgt, und auf der inneren Oberfläche des dekorativen Gehäuses (1) Rillen (12) ausgeführt sind, und mindestens zwei einschränkenden Kragen (13), wobei diese Rillen in Eingriff mit den Rippen (28) stehen, die sich auf der äußeren Seitenfläche der Ablasshülse (4) befinden.
2. Flaschenverschluss mit einem Gleitrohr umfassend ein dekoratives Gehäuse (1), eine Absperrhülse (2) mit Schlitzen auf der inneren Oberfläche, eine Ablasshülse mit Gewinde (4), auf deren Kopf ein Deckel (3) mit einem Ausgießrohr (19) für den Flüssigkeitsaustritt angebracht ist, wobei die Ablasshülse Schlitzen (22) auf der äußeren Seitenfläche aufweist, **dadurch gekennzeichnet, daß** das dekorative Gehäuse (1) ein zerbrechbares obere Element aufweist, der durch vertikale Nuten (8) geschwächt ist, und mit Streifen (6,7) an den Stirn-und Seitenflächen in unterschiedlichem Abstand ausgeführt ist, wobei der letzte Streifen (9) an der Stirnfläche in Richtung des Bruchs verstärkt ist, und das Längenverhältnis der verstärkten zu der geschwächten Streifen mindestens 2,5 beträgt, wobei die Innenfläche des genannten dekorativen Gehäuses (1) und die äußere Oberfläche der Ablasshülse (4) mit Gewindegänge in unterschiedlichen Richtungen (38,39) versehen sind.
3. Verschluss nach Anspruch 1 oder 2, wobei ein Teil des seitlichen zerbrechbaren Elements des Gehäus-

ses une raue Oberfläche (10) hat.

4. Verschluß nach Anspruch 1 oder 2, wobei die Stirnfläche der Absperrhülse ein zerbrechbares Element (15) mit geschwächten Streifen (16) aufweist, wobei diese Hülse einen ringförmigen Dichtungsvorsprung (17) auf der inneren Oberfläche aufweist, und der Deckel (3) mit dem Rohr (19) mit einem zylindrischen Vorsprung (23) mit mindestens einem Dichtungskragen (24) vorgesehen ist. 5
5. Verschluß nach Anspruch 1 oder 2, wobei die Auslaufhülse ein elastisches Element (5) mit einer Durchgangsöffnung (32) und Vorsprünge (33,34) aufweist, die einen nach oben geöffneten ringförmigen Hohlraum (35) bilden, wobei die Auslaufhülse mit ihrem unteren Teil in dem ringförmigen Hohlraum untergebracht ist und einen Spalt zwischen dem Boden und die Vorsprünge des elastischen Elements bildet. 15 20

Revendications

1. Dispositif de bouchage pour bouteille muni d'un tuyau contenant une chemise décorative (1), douille de serrage (2) avec des fentes sur la surface interne, douille de vidage à filetage (4) sur la surface de laquelle est installé un capuchon (3) muni de tube de vidage (19) avec des fentes (22) sur la surface extérieure, **caractérise en ce que** dans la chemise décorative (1) est élaborée avec une pièce allégée au sommet qui peut être arrachée à l'aide de cannelures verticaux (8), ou la chemise mentionnée est avec des bords sur les surfaces aux cotés et au bout à des distances différentes l'un par rapport aux autres, où le dernier bord (6, 7) au bout de la surface dans la direction de la rupture est fortifié et la proportion entre sa longueur et la longueur du bord allégé (9) est au moins 2,5, et il y a des cannelures (12) sur la surface intérieure de la chemise décorative (1) et au moins deux collerettes limitatives (13), où les douilles mentionnées sont en interaction avec les cannelures (28) situées sur la surface extérieure du dispositif de vidage (4). 25 30 35 40 45
2. Dispositif de bouchage pour bouteille muni d'un tuyau contenant une chemise décorative (1), douille de serrage (2) avec des fentes sur la surface interne, douille de vidage à filetage (4) sur la surface de laquelle est installé un capuchon (3) muni de tube de vidage (19) avec des fentes (22) sur la surface extérieure, **caractérise en ce que** la chemise décorative (1) est munie d'un élément au sommet qui peut être cassé et qui est allégé à l'aide de cannelures verticales (8) et des bords (6, 7) au bout et à coté à des distances différentes l'un par rapport aux autres, où le bord (9) au bout de la surface dans la direction 50 55

de la rupture est fortifié, et dont la proportion par rapport à la longueur du bord allégé est au moins 2,5, la surface intérieure de la chemise décorative (1) ainsi que la surface extérieure de l'élément de vidage (4) étant fileté dans de directions différentes (38, 39).

3. Dispositif de bouchage selon les revendications 1 ou 2, où une partie de l'élément qui peut être cassé de la chemise est d'une surface rugueuse (10). 10
4. Dispositif de bouchage selon les revendications 1 ou 2, où la surface au bout de la douille de serrage est muni d'un élément (15) qui peut être cassé avec des bords allégés (16), où la douille citée est munie d'une garniture d'étanchéité annulaire (17) sur la surface intérieure, et un capuchon (3) avec un tube (19) contenant une projection cylindrique (23) avec au moins une collerette d'étanche (24). 15 20
5. Dispositif de bouchage selon les revendications 1 ou 2, où la douille de vidage a un élément élastique (5) avec un orifice (32) et projections (33, 34) qui forment ainsi l'ouverture au sommet de la cavité annulaire (35), où la douille de vidage a sa partie plus légère accommodée dans la cavité annulaire et formant ainsi un écartement entre le fond et les projections de l'élément élastique. 25 30 35 40 45

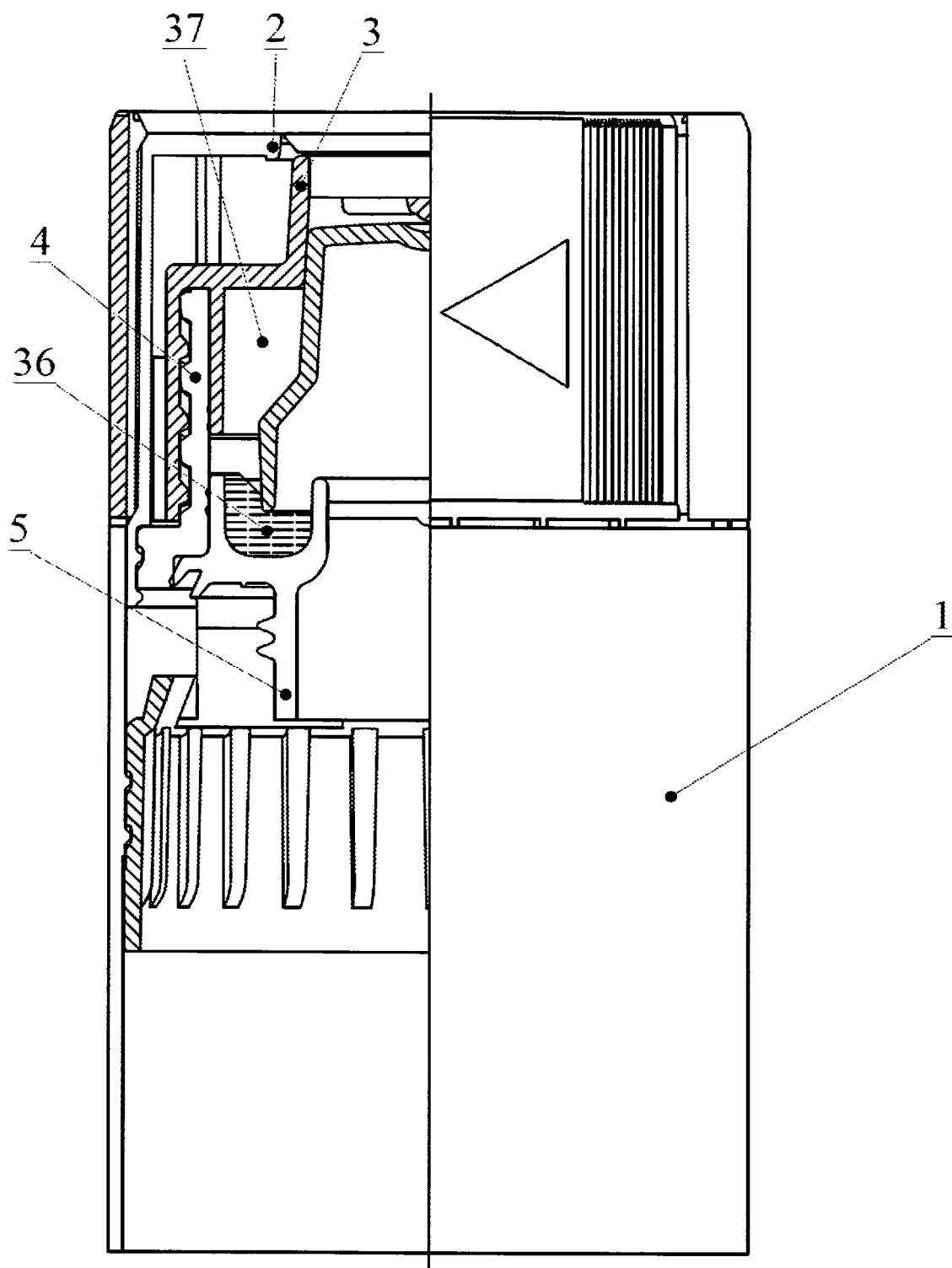
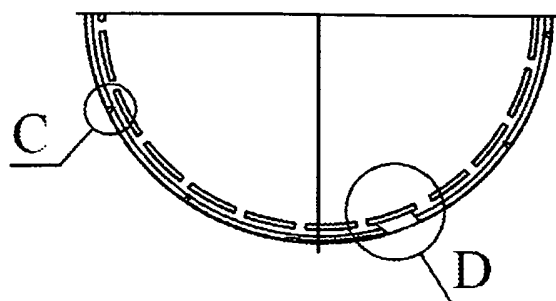
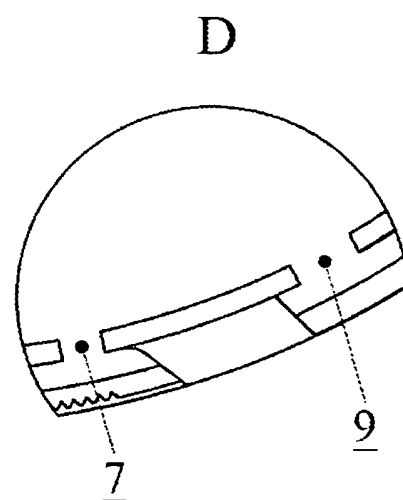
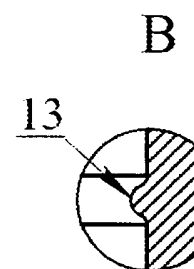
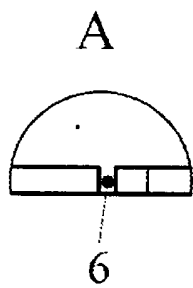
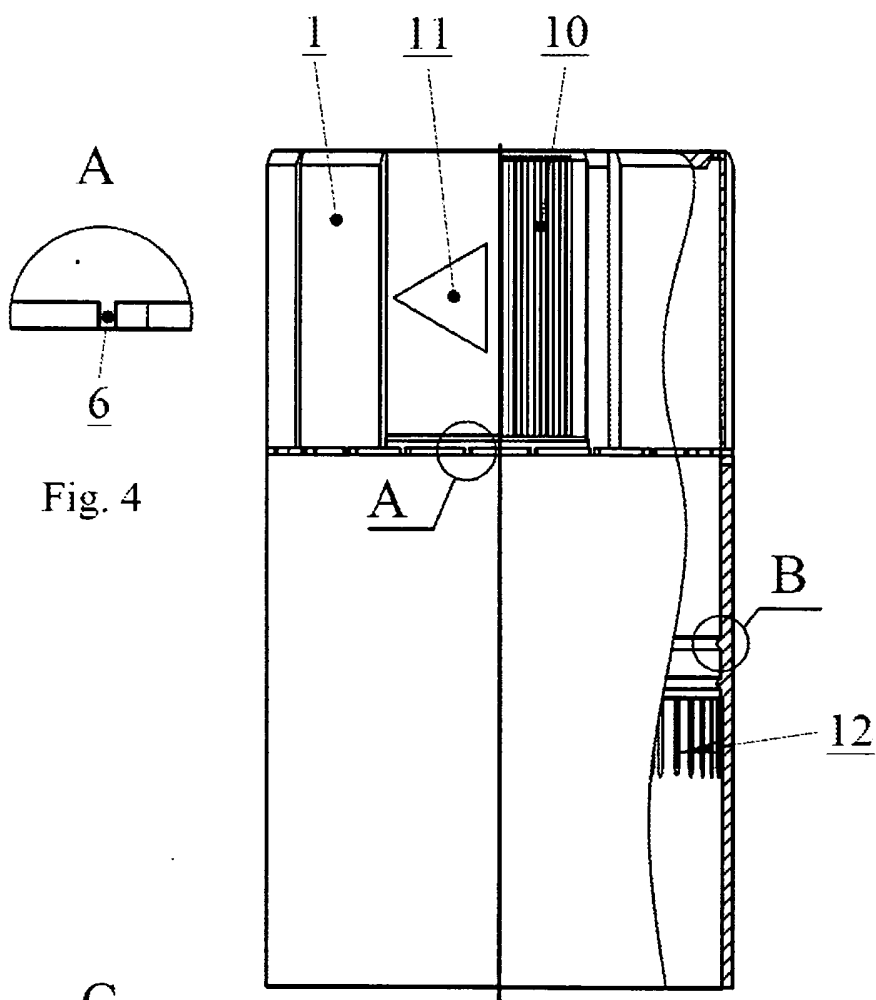


Fig. 1



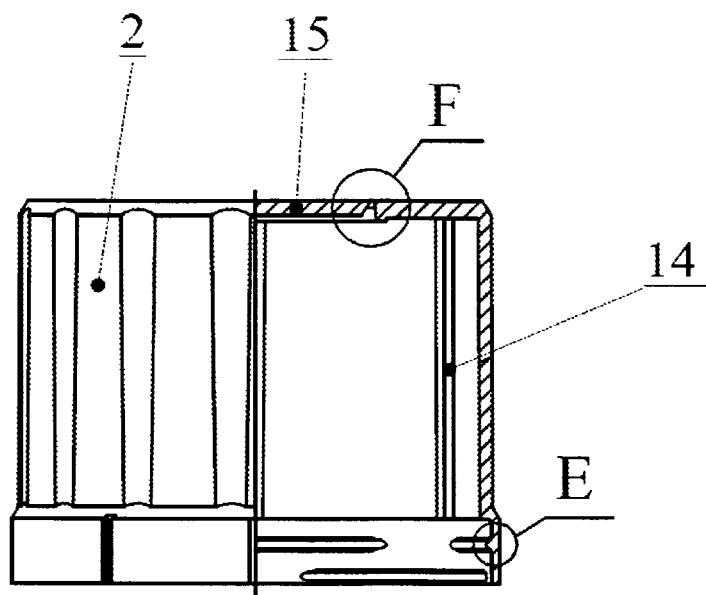


Fig. 8

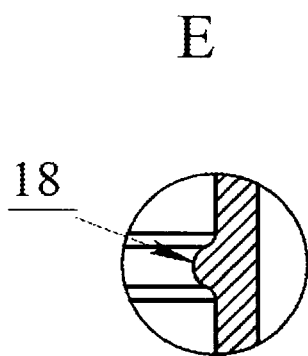


Fig. 9

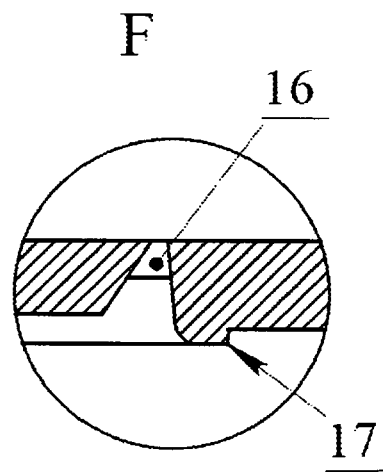


Fig. 10

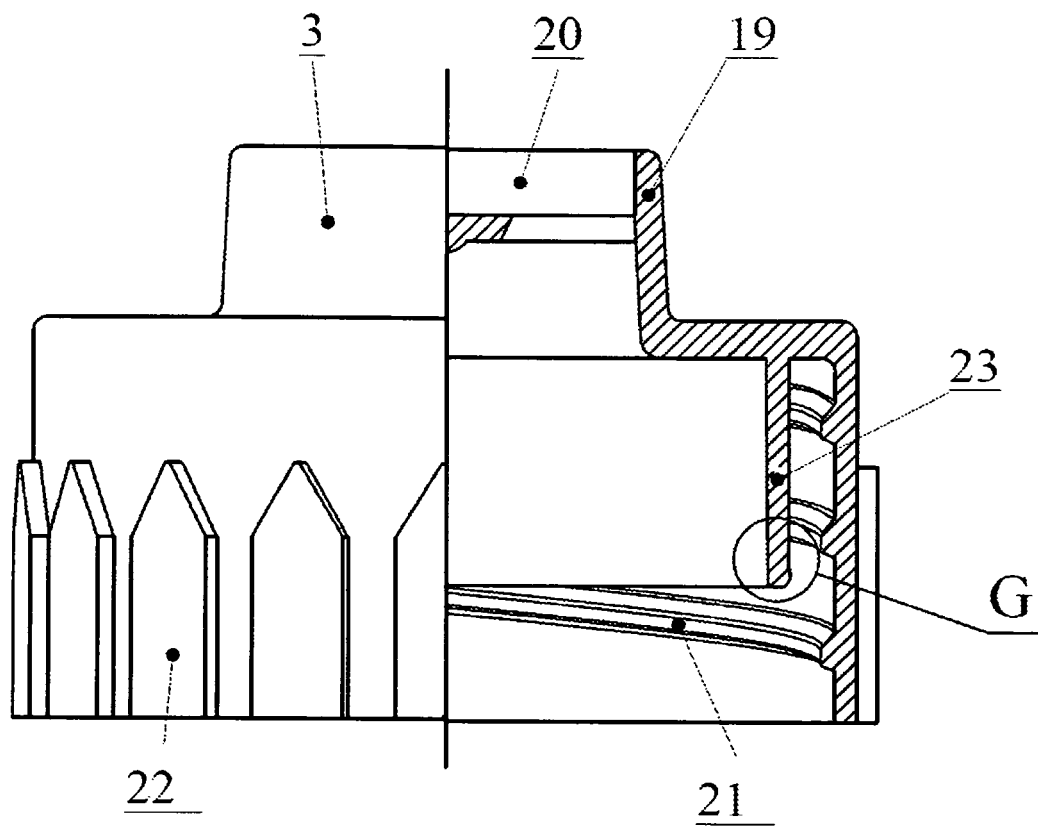


Fig.11

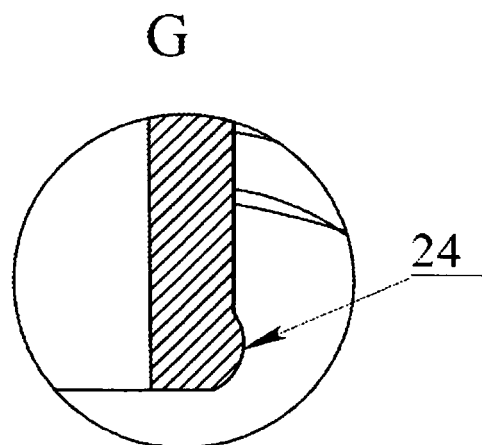


Fig.12

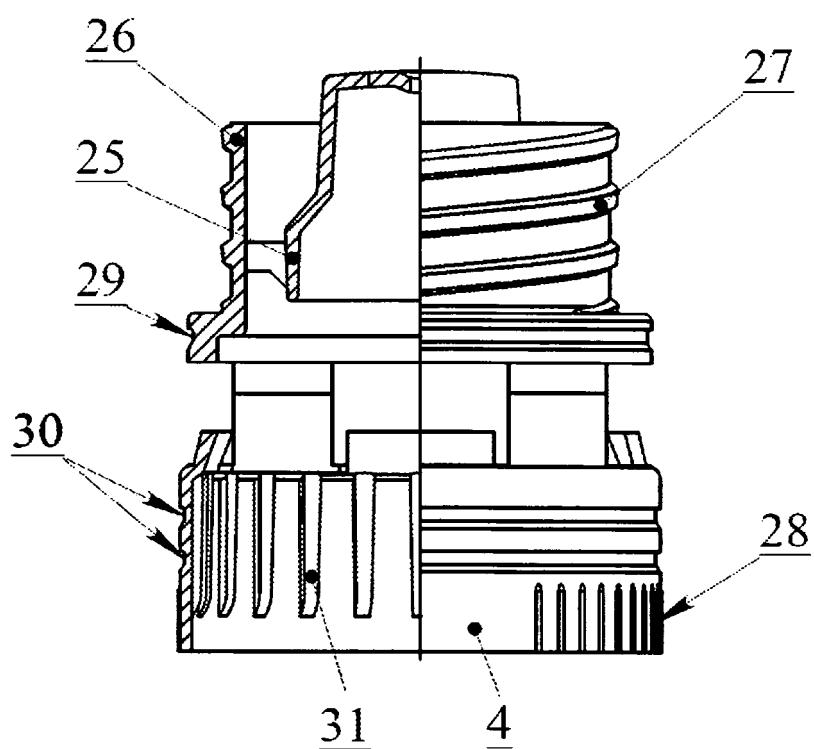


Fig. 13

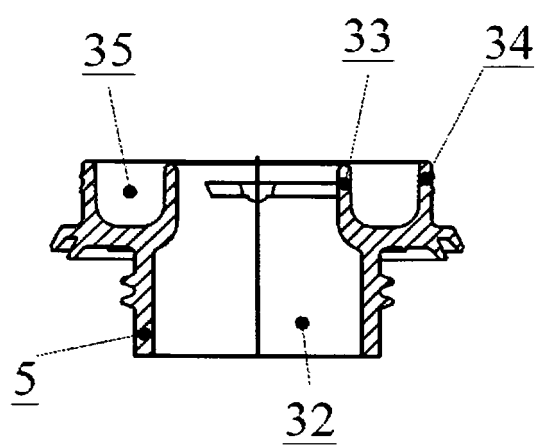


Fig. 14

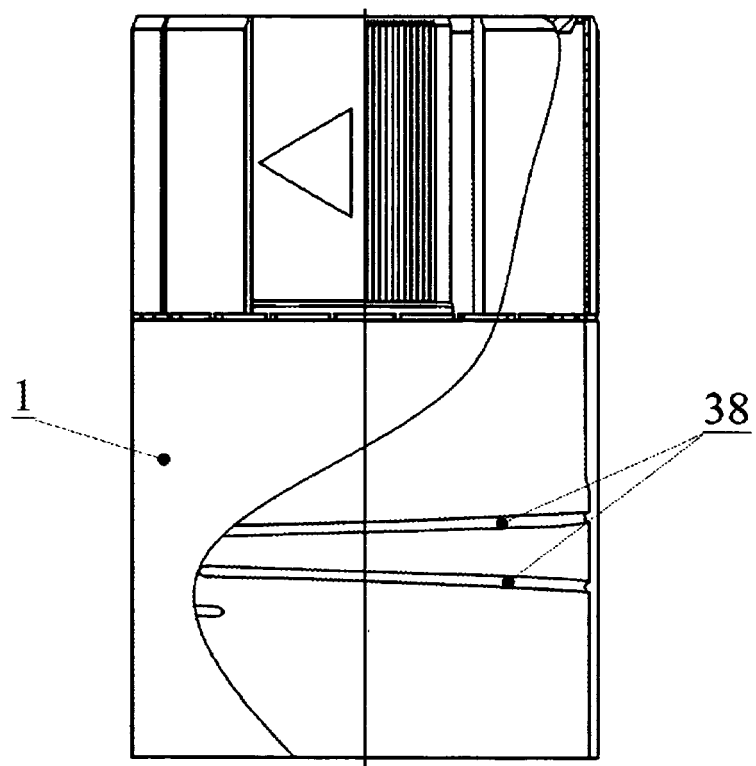


Fig. 15

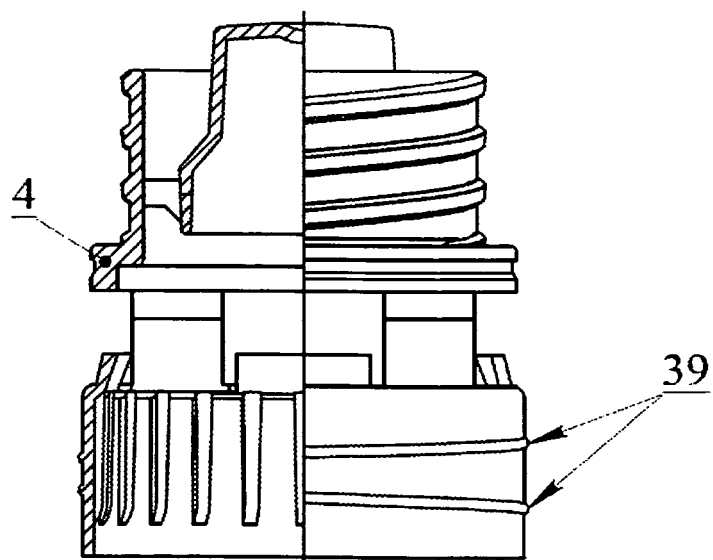


Fig. 16

REFERENCES CITED IN THE DESCRIPTION

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