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(54) **CHILD RESISTANT CLOSURE**

KINDERSICHERHEITSVERSCHLUSS

FERMETURE À L'ÉPREUVE DES ENFANTS

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Description

[0001] The present invention relates to a closure device for a container, such as a bottle, flask or the like, particularly for medicaments or other toxic or noxious products, having a safety system arranged to prevent, or at least hinder, the opening of the device by children and to ensure automatic closure of the device after use, as specified in the preamble of the appended independent claim 1. A closure device of the above-indicated type, and in accordance with the preamble of claim 1, is known from US 3830392.

[0002] US4203527 discloses a closure device for a container, particularly for medicaments, comprising a stationary part intended to be permanently mounted on the container and a movable part rotatable relative to the stationary part between a closed position, in which an opening in the movable part is not aligned with an opening in the stationary part, and an open position, in which the openings in the movable part and in the stationary part are aligned with each other, thereby allowing the product contained in the container to be dispensed. The movable part is kept in the closed position by a spring, which is fixed at the one end to a shaft in the middle of the stationary part and at the other end to a pin formed by the movable part. In order to control rotation of the movable part from the closed position to the open position, the movable part forms a lever portion which projects from a groove formed on the lateral cylindrical surface of the stationary part and is guided in that groove. The movable part also forms a button-like projection, which in the closed position engages in the opening of the stationary part, that projection being urged upwards by the spring acting on the movable part. In order to open the closure device, it is necessary first to press that projection downwards, against the resilient force of the spring, so as to disengage it from the opening in the stationary part, and then to rotate the movable part from the closed position to the open position.

[0003] A drawback of the US 4203527 disclosure is the rather complex structure, which does not allow to easily and inexpensively manufacture the device by moulding of plastic material. Moreover, in order to allow operation of the movable part by the user a control member projecting from the stationary part, in the present case a lever member, must be provided. Finally, the assembly of this known closure device is also not easy.

[0004] A further spring biased closure device is known from US 3410462.

[0005] It is therefore an object of the present invention to provide a closure device for containers, such as bottles, flasks and the like, particularly for medicaments or other toxic or noxious products, which is not affected by the above-mentioned drawbacks of the prior art.

[0006] This and other objects are fully achieved according to the invention by virtue of a closure device having the features set forth in independent claim 1.

[0007] Further advantageous features of the invention

are specified in the dependent claims, the contents of which is to be intended as integral and integrating part of the following description.

[0008] The features and the advantages of the invention will appear from the following detailed description, given purely by way of non-limiting example with reference to the appended drawings, in which:

Figures 1 and 2 are a perspective view and an exploded view, respectively, of a flask provided with a closure device according to a preferred embodiment of the present invention;

Figures 3 and 4 are perspective views, from the top and from the bottom, respectively, of the cap of the closure device of the flask of Figures 1 and 2;

Figure 5 is a perspective view of the resilient element of the closure device of the flask of Figures 1 and 2;

Figures 6 and 7 are perspective views, from the top and from the bottom, respectively, of the body of the closure device of the flask of Figures 1 and 2;

Figure 8 is a perspective view, partially in phantom, which shows the closure device of the flask of Figures 1 and 2 in the closed position;

Figure 9 is a perspective view which shows the mouth of the flask of Figures 1 and 2 in the closed position;

Figure 10 is a perspective view, partially in phantom, which shows the closure device of the flask of Figures 1 and 2 in the open position;

Figure 11 is a perspective view which shows the mouth of the flask of Figures 1 and 2 in the open position; and

Figures 12 to 16 show in sequence the various steps of the opening of the flask of Figures 1 and 2.

[0009] In the following description and claims, terms such as "axial" and "radial", "upper" and "lower" are to be intended as referred to the mounted condition of the closure device on the container. In particular, the term "axial" is to be intended as referred to the direction of the axis of the container, being the container, or at least its mouth, made as an axially symmetrical body, while the term "radial" is to be intended as referred to any direction perpendicular to the direction of the axis of the container.

[0010] With reference first to Figures 1 and 2, a closure device according to the invention is generally indicated 10 and is associated to a container C, which in the illustrated example is a flask for medicaments but which might be a container of any other kind, for instance a bottle, intended to contain a product of any other kind. The closure device 10 basically comprises a stationary body 12, intended to be mounted on the mouth of the container C, a cap 14 which covers the body 12 from the top and encloses it laterally, and a spring 16 interposed between the body 12 and the cap 14. The cap 14 is mounted on the body 12 so as to be rotatable between a closed position (Figures 8 and 9) and an open position (Figures 10 and 11) and the spring 16 is arranged to apply on the

cap 14 a resilient force tending to urge it towards the closed position.

[0011] With reference also to Figures 6 and 7, the body 12 includes a lower tubular portion 18, an upper tubular portion 20 on which the cap 14 is rotatably mounted and a partition wall 22 which closes the body 12 from the top and which has an opening 24 intended to allow, in the open position of the closure device, the product to be dispensed from the container C. The lower tubular portion 18, the upper tubular portion 20 and the partition wall 22 are preferably made as a single piece, in particular a single piece of moulded plastic material. The upper tubular portion 20 has an outer circumferential groove 26, in which a circumferential retaining lip 28 (which can be seen in Figures 9 and 11) of the cap 14 engages so as to axially retain the cap 14 to the body 12 and to allow at the same time the cap 14 to axially translate (for instance, with a travel of approximately 1 mm) relative to the body 12, as well as to rotate relative to the body 12. The partition wall 22 forms, in the middle of its upper face, a projection 30 for retention of the spring 16. In the illustrated example, in which the spring 16 is made as a ribbon spring having a straight branch 16a and a spiral branch 16b ending with a straight end length 16c (Figure 5), the projection 30 has a diametral slit 32 into which the straight end length 16c of the spring 16 is inserted, in such a manner that this length of the spring is prevented from rotating relative to the body 12. First and second stop teeth 34 and 36 are also provided on the partition wall 22, which stop teeth extend radially inwards from the inner cylindrical surface of the upper tubular portion 20 and are arranged to cooperate with first and second stop teeth 38 and 40, respectively, projecting downwards from the cap 14 to stop the rotational movement of the cap in the closed position and in the open position, respectively. The angular distance between the two stop teeth 36 and 40 defines the angular travel of the opening/closing rotational movement of the cap 14, and hence the deformation of the spring 16. The opening 24 in the partition wall 22 preferably, though not necessarily, has an elliptical shape or more generally a shape which is elongated in the tangential direction, i.e. in a direction perpendicular to the radial direction. In any case, the shape of the opening 24 may be varied depending on the shape of the product (solid product) contained in the container C. The opening 24 is delimited by a rim 42 which projects upwards from the upper face of the partition wall 22 and which forms at its upper end a retaining lip 44 (which can be seen in Figures 9 and 11) radially projecting inwards. Next to the opening 24, the partition wall 22 has a cavity 46 which is delimited inwardly by a projection 48 of similar shape to that of the opening 24 and outwardly by a rim 50 which extends all around the projection 48 at a constant distance from this latter. The distance between the centre of the projection 48 and the centre of the partition wall 22 is substantially identical to the distance between the centre of the opening 24 and the centre of the partition wall 22. Moreover, the angular distance (with respect to

an axis perpendicular to the partition wall 22 and passing through the centre of this latter) between the projection 48 and the opening 24 is substantially identical to the travel of the rotational movement of the cap 14 in the opening/closing direction. On the diametrically opposite side with respect to the opening 24 and to the cavity 46, the partition wall 22 has an arched groove 52 in which a pair of retaining projections 54 provided on the lower face of the cap 14 slidably engage. The lower tubular portion 18 is connected to the upper tubular portion 20 by a plurality of ribs 72 and forms, on its inner cylindrical surface, a plurality of retaining teeth 74 (Figures 7, 9 and 11) arranged to snap engage a special flange 76 (Figures 9 and 11) provided at the mouth of the container C so as to secure the body 12 of the closure device 10 to the container C. The profile of the retaining teeth 74 is shaped so as to prevent the lower tubular portion 18 from being detached from the mouth of the container C, once the retaining teeth 74 engage the flange 76. Therefore, if someone tried to detach the body 12 of the closure device 10 from the container C, the ribs 72 would inevitably be broken. The presence of broken ribs 72 would then be a clear indication of the attempt of tampering with the container.

[0012] With reference now in particular to Figures 3 and 4, the cap 14 includes a cylindrical sleeve 56 which in the assembled condition of the closure device is arranged coaxially with and outwardly of the upper tubular portion 20 of the body 12, a seal 58 fixed to the cylindrical sleeve 56 so as to be able to be torn out from it and a base 60 which closes the cylindrical sleeve 56 from the top. The cylindrical sleeve 56, the seal 58 and the base 60 are preferably made as a single piece, in particular as a single piece of moulded plastic material. The cylindrical sleeve 56 forms the above-mentioned circumferential retaining lip 28 which projects radially inwards and which engages, in the assembled condition of the closure device, in the circumferential groove 26 of the upper tubular portion 20 of the body 12. The base 60 has an opening 62 the shape and size of which correspond to those of the opening 24 in the body 12 and which is located so as to be aligned, in the open position of the closure device 10 (Figures 10 and 11), with the opening 24 in the body 12 to allow the product to be dispensed from the container C. In the proposed embodiment, the opening 62 is closed by a further seal 64 which is fixed to the base 60 so as to be able to be torn out. The seal 64, as well as the seal 58, might even be omitted. The opening 62 is also delimited by a rim 66 which projects downwards from the lower face of the base 60 and which, in the open position of the closure device 10, faces the rim 42 delimiting the opening 24 in the body 12 and defines with this latter a substantially closed conduit for allowing the product contained in the container C to pass therethrough. The base 60 also forms on its lower face, next to the rim 66, a rim 68 which extends downwards and is located and shaped so as to be inserted into the opening 24 of the body 12 when the closure device 10

is in the closed position (Figures 8 and 9). The rim 68 forms a retaining lip 70 which projects radially outwards to cooperate, in the closed position of the closure device (Figure 9), with the retaining lip 44 of the rim 42 of the body 12, thereby sealing the opening 24 of the body 12. On the diametrically opposite side with respect to the opening 62 and to the rim 68, the base 60 forms the above-mentioned pair of retaining projections 54, between which there is provided a slit 70 which is oriented radially and in which the free end of the straight branch 16a of the spring 16 engages. The base 60 also forms the above-mentioned first and second stop teeth 38 and 40, arranged on opposite sides of the retaining projections 54.

[0013] As already stated above, the spring 16 is preferably made as a ribbon spring having a straight branch 16a, the free end of which engages between the retaining projections 54 of the cap 14 so as to be drivingly connected for rotation with this latter, a spiral branch 16b ending with a straight end length 16c which engages in the slit 32 of the body 12 and is thus prevented from rotating. The height of the spring 16 and of the retaining projections 54 is such that, even in case the cap 14 is raised, for instance by approximately 1 mm, as stated before, the free end of the straight branch 16a of the spring 16 remains engaged in the slit 70 and therefore the spring 16 is able to apply on the cap 14 a resilient force tending to urge it towards the closed position. Moreover, the spring 16 is shaped and mounted in such a manner that in the closed position it is pre-loaded and hence allows to take up possible plays and to ensure that the cap 14 is always moved back in the closed position even in case of small rotations of the cap. The spring 16 may be made of metal, of plastic material or more generally of any material which can be resiliently deformed.

[0014] The operation of the closure device will now be described, with reference in particular to Figures 8 to 16.

[0015] Figures 8 and 9 show the closure device 10 in the closed position, in which the cap 14 is oriented with respect to the body 12 in such a manner that on the one hand the opening 62 of the cap 14 is aligned with the projection 48 of the body 12, the rim 66 which delimits the opening 62 being inserted into the cavity 46 of the body 12, and on the other hand the projection 68 of the cap 14 is aligned with the opening 24 of the body 12, the retaining lip 70 of the projection 68 snap engaging the retaining lip 44 of the rim 42 which encloses the opening 24. In this position, therefore, the opening 24 of the body 12 is sealed by the cap 14 and rotation of the cap 14 in counter-clockwise direction (i.e. in the opening direction) is prevented both by the rim 66 of the cap 14 engaging in the cavity 46 of the body 12, and by the projection 68 of the cap 14 engaging the rim 42 of the body 12, while rotation of the cap 14 in clockwise direction (i.e. in the closing direction) is prevented by the first stop tooth 38 of the cap 14 abutting against the first stop tooth 34 of the body 12.

[0016] Figures 10 and 11 show the closure device 10

in the open position, in which the cap 14, viewed from the top, is rotated counter-clockwise with respect to the closed position in such a manner that the opening 62 of the cap 14 is aligned with the opening 24 of the body 12 and the respective rims 66 and 42 of these openings delimit a substantially closed conduit for allowing the product contained in the container C to pass there-through. When the cap 14 is in the open position, a further rotation of the cap 14 relative to the body in counter-clockwise direction (i.e. in the opening direction) is prevented by the second stop tooth 38 of the cap 14 abutting against the second stop tooth 34 of the body 12. Rotation of the cap 14 relative to the body 12 in the opposite direction (i.e. in the closing direction) is not prevented, but on the contrary the spring 16 tends to move the cap 14 back into the closed position.

[0017] Figures 12 to 16 show in sequence the steps necessary to open the closure device 10. First of all (Figure 12) the user must remove the seals 58 and 64, if any. Then (Figures 13 and 14) the user must raise the cap 14 relative to the body 12 so as to disengage the retaining lips 44 and 70 of the rim 42 of the body 12 and of the rim 68 of the cap 14, respectively, and allow rotation of the cap 14 relative to the body 12. At this point (Figures 15 and 16), the user must rotate the cap 14 counter-clockwise, overcoming the biasing torque produced by the spring 16, until it brings the cap 14 into the open position. By keeping the cap 14 in the open position against the biasing action of the spring 16, the user can therefore dispense the product from the container C.

[0018] Since shifting from the closed position to the open position requires both to raise and to rotate the cap, it is more difficult for children to open the container. Moreover, the provision of the spring tending to move the cap back into the closed position prevents the container from being inadvertently left open, and thus provides an additional safety measure against children, especially in case the container contains toxic products or any other product which can be dangerous for the health.

[0019] The closure device according to the invention has also the advantage of being simple and inexpensive to manufacture, particularly by moulding of plastic material.

[0020] Naturally, the principle of the invention remaining unchanged, the constructional details may vary widely, both in terms of shape and in terms of number, with respect to what is described and illustrated purely by way of non-limiting example, without thereby departing from the scope of the invention as defined in the appended claims.

[0021] For instance, the kind, shape and size of the spring might vary depending on the operational requirements. Likewise, the number of springs might vary as well. The spring might also be incorporated in either of the rigid components of the closure device, i.e. in the cap or in the body. In this connection, the spring might be either made of metal, in which case the cap and the body would be overmoulded thereon, or made of plastic ma-

terial as a single piece with the cap or with the body.

[0022] Moreover, though not forming a part of the invention, the closure device might have a special seat for an hygroscopic pad, in case the product contained in the container is sensitive to humidity.

[0023] The shape of the projections provided on the body and/or on the cap might also vary, within the scope of the invention as defined by the claims, with respect to the one described and illustrated, for instance due to reasons linked to the manufacturing process of those components and to law provisions.

Claims

1. Closure device (10) for a container (C), such as a bottle, flask or the like, comprising a body (12) intended to be mounted onto the mouth of the container (C), a cap (14) which covers the body (12) on the top and encloses it laterally and which is rotatably mounted onto the body (12) to rotate between a closed position and an open position, and resilient means (16) interposed between the body (12) and the cap (14) to apply onto the cap (14) a biasing torque tending to bring it back into the closed position, wherein the body (12) and the cap (14) have a first opening (24) and a second opening (62), respectively, which, in the closed position, are angularly offset with respect to each other to prevent the product contained in the container (C) from being dispensed and, in the open position, are aligned with each other to allow the product contained in the container (C) to be dispensed, wherein the body (12) includes an upper tubular portion (20) and a partition wall (22) which closes the body (12) and in which the first opening (24) is provided, and wherein the cap (14) includes a cylindrical sleeve (56) mounted around the upper tubular portion (20) of the body (12) and a base (60) in which the second opening (62) is provided,
characterized in that the upper tubular portion (20) of the body (12) has a circumferential groove (26) and the cylindrical sleeve (56) of the cap (14) comprises a circumferential retaining lip (28) projecting inwards and engaging into the circumferential groove (26) so as to allow the cap (14) to axially translate, as well as to rotate, relative to the body (12).
2. Closure device according to claim 1, wherein the height of the circumferential groove (26) and the vertical position of the circumferential retaining lip (28) are such as to allow a given axial displacement of the cap (14) relative to the body (12).
3. Closure device according to claim 1 or claim 2, wherein the cap (14) forms a first rim (66) projecting downwards and extending around the second open-

ing (62) and wherein the body (12) has a cavity (46) configured to engage, in the aforesaid closed position, the first rim (66).

4. Closure device according to any of the preceding claims, wherein the cap (14) comprises a second rim (68) projecting downwards, wherein the body (12) comprises a third rim (42) projecting upwards and extending around the first opening (24), and wherein the second and third rims (68, 42) are provided with respective retaining lips (70, 44) arranged to snap engage with each other in the aforesaid closed position.
5. Closure device according to any of the preceding claims, wherein the body (12) is provided with a first pair of stop teeth (34, 36), wherein the cap (14) is provided with a second pair of stop teeth (38, 40), wherein in the aforesaid closed position a first tooth (34) of the first pair of stop teeth (34, 36) is in abutment against a first tooth (38) of the second pair of stop teeth (38, 40) to prevent the cap (14) from rotating further relative to the body (12) in the closing direction, and wherein in the aforesaid open position a second tooth (36) of the first pair of stop teeth (34, 36) is in abutment against a second tooth (40) of the second pair of stop teeth (38, 40) to prevent the cap (14) from rotating further relative to the body (12) in the opening direction.
6. Closure device according to any of the preceding claims, wherein the body (12) and the cap (14) are made of plastic material and wherein said resilient means (16) are made as a single piece with the body (12) or with the cap (14).
7. Closure device (10) according to claim 1, mounted onto the mouth of a container (C), said mouth comprising a flange (76), wherein the body (12) of the closure device (10) includes a lower tubular portion (18) connected to the upper tubular portion (20) by a plurality of ribs (72), and wherein the lower tubular portion (18) is provided with a plurality of retaining teeth (74) snap engaged on the flange (76).

Patentansprüche

1. Verschlussvorrichtung (10) für einen Behälter (C), wie etwa eine Flasche, ein Fläschchen oder ähnliches, die umfasst: einen Körper (12), der dafür gedacht ist, auf die Mündung des Behälters (C) montiert zu werden, eine Kappe (14), die den Körper (12) auf der Oberseite bedeckt und ihn seitlich umschließt und die drehbar auf den Körper (12) montiert ist, um zwischen einer geschlossenen Position und einer offenen Position gedreht zu werden, und elastische Mittel (16), die zwischen dem Körper (12) und der

- Kappe (14) eingefügt sind, um auf die Kappe (14) ein Vorspanndrehmoment anzuwenden, das dazu neigt, sie in die geschlossene Position zurück zu bringen, wobei der Körper (12) und die Kappe (14) jeweils eine erste Öffnung (24) und eine zweite Öffnung (62) haben, die in der geschlossenen Position winkelig gegeneinander versetzt sind, um zu verhindern, dass das in dem Behälter (C) enthaltene Produkt abgegeben wird, und die in der offenen Position miteinander ausgerichtet sind, um zuzulassen, dass das in dem Behälter (C) enthaltene Produkt abgegeben wird, wobei der Körper (12) einen oberen rohrförmigen Abschnitt (20) und eine Trennwand (22), die den Körper (12) schließt und in der die erste Öffnung (24) bereitgestellt ist, umfasst, und wobei die Kappe (14) eine zylindrische Hülse (56), die um den rohrförmigen Abschnitt (20) des Körpers (12) herum montiert ist, und eine Basis (60), in der die zweite Öffnung (62) bereitgestellt ist, umfasst,
- dadurch gekennzeichnet, dass** der obere rohrförmige Abschnitt (20) des Körpers (12) eine Umfangsrille (26) hat und die zylindrische Hülse (56) der Kappe (14) eine Umfangsrückhaltelippe (28) umfasst, die nach innen vorsteht und in die Umfangsrille (26) eingreift, um zuzulassen, dass die Kappe (14) axial verschoben ebenso wie relativ zu dem Körper (12) gedreht wird.
2. Verschlussvorrichtung nach Anspruch 1, wobei die Höhe der Umfangsrille (26) und die vertikale Position der Umfangsrückhaltelippe (28) derart sind, dass sie eine vorgegebene axiale Verschiebung der Kappe (14) relativ zu dem Körper (12) zulassen.
 3. Verschlussvorrichtung nach Anspruch 1 oder Anspruch 2, wobei die Kappe (14) einen ersten Rand (66) bildet, der nach unten vorsteht und sich um die zweite Öffnung (62) herum erstreckt, und wobei der Körper (12) einen Hohlraum (46) hat, der aufgebaut ist, um in der vorher genannten geschlossenen Position in den ersten Rand (66) einzugreifen.
 4. Verschlussvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Kappe (14) einen zweiten Rand (68) umfasst, der nach unten vorsteht, wobei der Körper (12) einen dritten Rand (42) umfasst, der nach oben vorsteht und sich um die erste Öffnung (24) herum erstreckt, und wobei die zweiten und dritten Ränder (68, 42) mit jeweiligen Rückhaltelippen (70, 44) versehen sind, die angeordnet sind, um in der vorstehend genannten geschlossenen Position einrastend miteinander einzugreifen.
 5. Verschlussvorrichtung nach einem der vorhergehenden Ansprüche, wobei der Körper (12) mit einem ersten Paar von Anschlagzähnen (34, 36) versehen ist, wobei die Kappe (14) mit einem zweiten Paar von Anschlagzähnen (38, 40) versehen ist, wobei in

der vorstehend genannten geschlossenen Position ein erster Zahn (34) des ersten Paares von Anschlagzähnen (34, 36) gegen einen ersten Zahn (38) des zweiten Paares von Anschlagzähnen (38, 40) anliegt, um zu verhindern, dass die Kappe (14) sich weiter relativ zu dem Körper (12) in die Schließrichtung dreht, und wobei in der vorstehend genannten offenen Position ein zweiter Zahn (36) des ersten Paares von Anschlagzähnen (34, 36) gegen einen zweiten Zahn (40) des zweiten Paares von Anschlagzähnen (38, 40) anliegt, um zu verhindern, dass die Kappe (14) sich weiter relativ zu dem Körper (12) in die Öffnungsrichtung dreht.

6. Verschlussvorrichtung nach einem der vorhergehenden Ansprüche, wobei der Körper (12) und die Kappe (14) aus Kunststoffmaterial gefertigt sind und wobei elastische Mittel (16) als ein einzelnes Stück mit dem Körper (12) oder mit der Kappe (14) gefertigt sind.
7. Verschlussvorrichtung (10) nach Anspruch 1, die auf die Mündung eines Behälters (C) montiert ist, wobei die Mündung einen Flansch (76) umfasst, wobei der Körper (12) der Verschlussvorrichtung (10) einen unteren rohrförmigen Abschnitt (18) umfasst, der durch eine Vielzahl von Rippen (72) mit dem oberen rohrförmigen Abschnitt (20) verbunden ist, und wobei der untere rohrförmige Abschnitt (18) mit einer Vielzahl von Rückhalte­zähnen (74) versehen ist, die auf dem Flansch (76) einrastend eingreifen.

Revendications

1. Dispositif de fermeture (10) pour un récipient (C), comme une bouteille, un flacon ou objet similaire, comprenant un corps (12) destiné à être monté sur le goulot du récipient (C), un bouchon (14) qui couvre le corps (12) à son sommet et qui l'entoure latéralement et qui est monté à rotation sur le corps (12) pour tourner entre une position fermée et une position ouverte, et un moyen résilient (16) intercalé entre le corps (12) et le bouchon (14) pour appliquer sur le bouchon (14) un couple de sollicitation qui tend à le faire revenir dans la position fermée, dans lequel le corps (12) et le bouchon (14) ont respectivement une première ouverture (24) et une deuxième ouverture (62) qui, dans la position fermée, sont décalées angulairement l'une par rapport à l'autre pour empêcher le produit contenu dans le récipient (C) d'être distribué et qui, dans la position ouverte, sont alignées entre elles pour permettre au produit contenu dans le récipient (C) d'être distribué, dans lequel le corps (12) comprend une partie tubulaire supérieure (20) et une paroi de séparation (22) qui ferme le corps (12) et dans laquelle est pratiquée la première ouverture (24), et dans lequel le bouchon (14) com-

prend un manchon cylindrique (56) monté autour de la partie tubulaire supérieure (20) du corps (12) et une base (60) dans laquelle est pratiquée la deuxième ouverture (62),

caractérisé en ce que la partie tubulaire supérieure (20) du corps (12) comporte une rainure circonférentielle (26) et **en ce que** le manchon cylindrique (56) du bouchon (14) comprend une lèvre de retenue circonférentielle (28) qui fait saillie vers l'intérieur et qui s'engage dans la rainure circonférentielle (26) de manière à permettre au bouchon (14) de translater axialement, ainsi que de tourner, par rapport au corps (12).

2. Dispositif de fermeture selon la revendication 1, dans lequel la hauteur de la rainure circonférentielle (26) et la position verticale de la lèvre de retenue circonférentielle (28) sont prévues pour permettre un déplacement axial donné du bouchon (14) par rapport au corps (12).
3. Dispositif de fermeture selon la revendication 1 ou 2, dans lequel le bouchon (14) forme un premier rebord (66) faisant saillie vers le bas et s'étendant autour de la deuxième ouverture (62) et dans lequel le corps (12) comporte une cavité (46) configurée pour se mettre en prise, dans ladite position fermée, avec le premier rebord (66).
4. Dispositif de fermeture selon l'une quelconque des revendications précédentes, dans lequel le bouchon (14) comprend un deuxième rebord (68) faisant saillie vers le bas, dans lequel le corps (12) comprend un troisième rebord (42) faisant saillie vers le haut et s'étendant autour de la première ouverture (24), et dans lequel les deuxième et troisième rebords (68, 42) sont pourvus de lèvres de retenue respectives (70, 44) agencées pour s'engager par pression l'une avec l'autre dans ladite position fermée.
5. Dispositif de fermeture selon l'une quelconque des revendications précédentes, dans lequel le corps (12) est pourvu d'une première paire de dents d'arrêt (34, 36), dans lequel le bouchon (14) est pourvu d'une deuxième paire de dents d'arrêt (38, 40), dans lequel dans ladite position fermée une première dent (34) de la première paire de dents d'arrêt (34, 36) est en appui contre une première dent (38) de la deuxième paire de dents d'arrêt (38, 40) pour empêcher le bouchon (14) de tourner davantage par rapport au corps (12) dans la direction de fermeture, et dans lequel dans ladite position ouverte une deuxième dent (36) de la première paire de dents d'arrêt (34, 36) est en appui contre une deuxième dent (40) de la deuxième paire de dents d'arrêt (38, 40) pour empêcher le bouchon (14) de tourner davantage par rapport au corps (12) dans la direction

d'ouverture.

6. Dispositif de fermeture selon l'une quelconque des revendications précédentes, dans lequel le corps (12) et le bouchon (14) sont faits d'une matière plastique et dans lequel ledit moyen résilient (16) est formé d'un seul tenant avec le corps (12) ou avec le bouchon (14).
7. Dispositif de fermeture (10) selon la revendication 1, monté sur le goulot d'un récipient (C), ledit goulot comprenant une bride (76), dans lequel le corps (12) du dispositif de fermeture (10) comprend une partie tubulaire inférieure (18) connectée à la partie tubulaire supérieure (20) par une pluralité de nervures (72), et dans lequel la partie tubulaire inférieure (18) est pourvue d'une pluralité de dents de retenue (74) engagées par pression sur la bride (76).

FIG 1

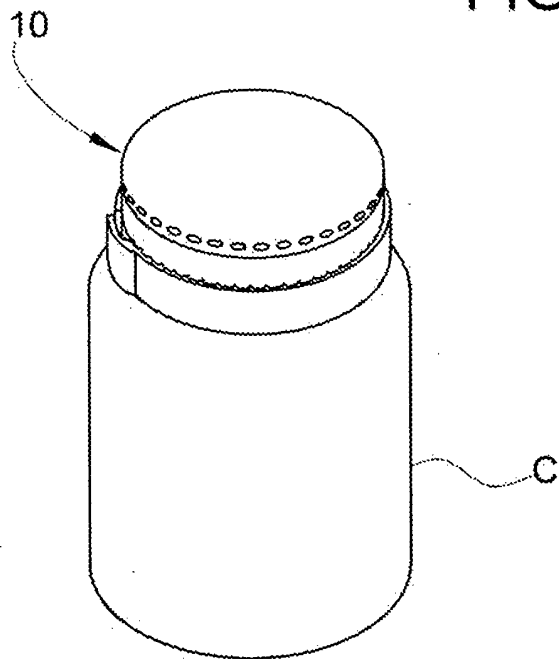


FIG 2

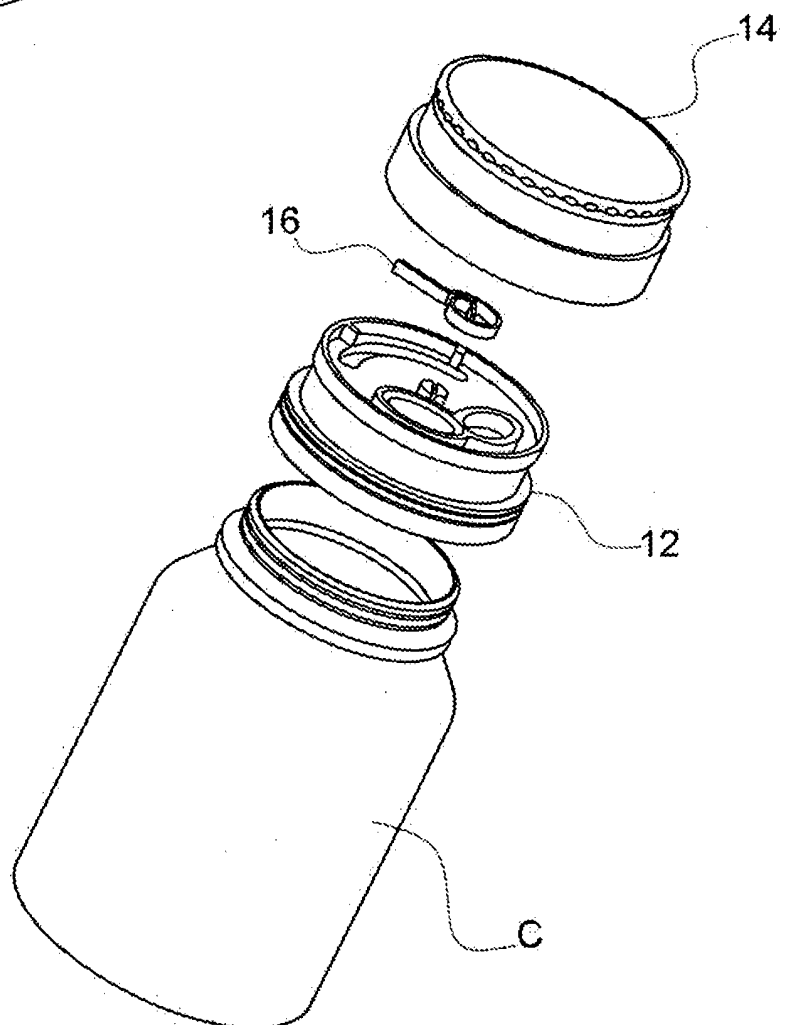


FIG 3

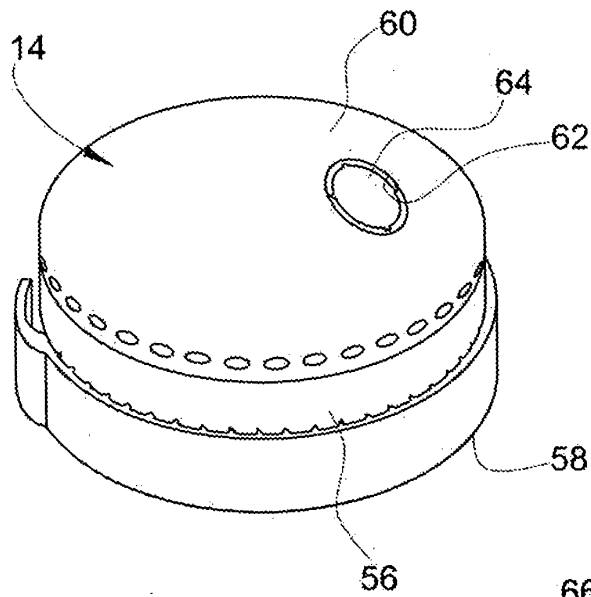


FIG 4

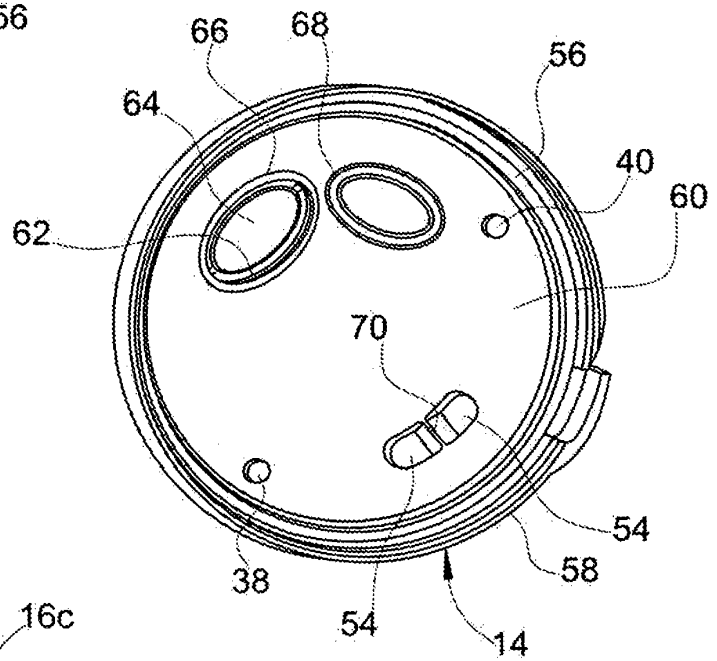


FIG 5

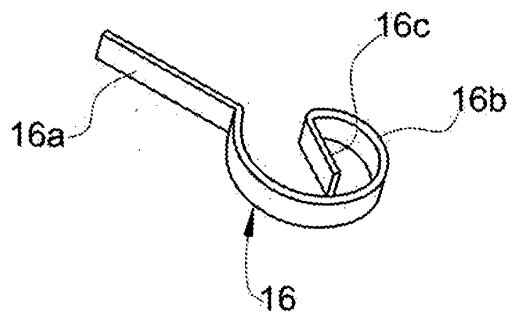


FIG 6

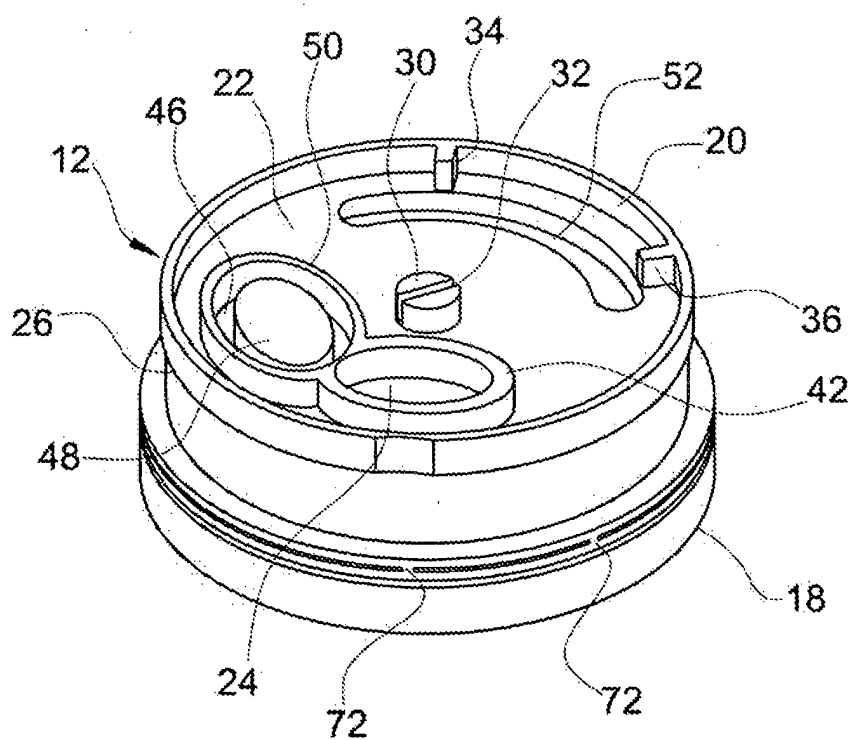


FIG 7

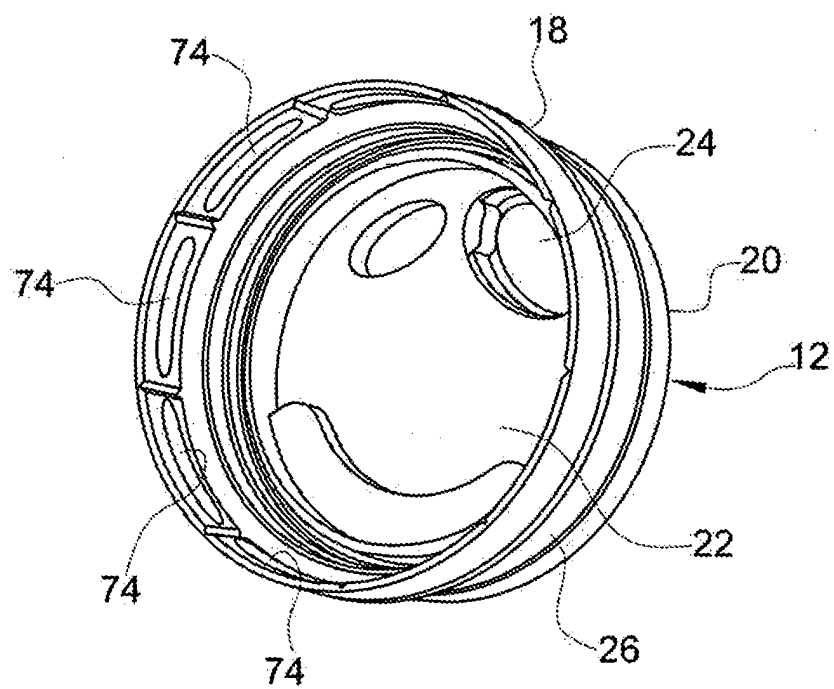


FIG 8

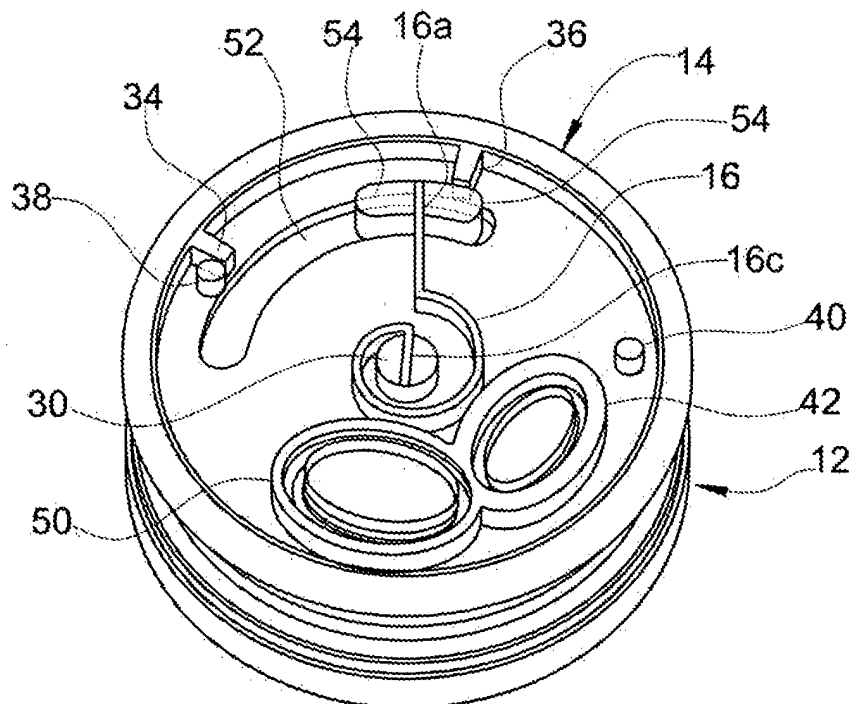


FIG 9

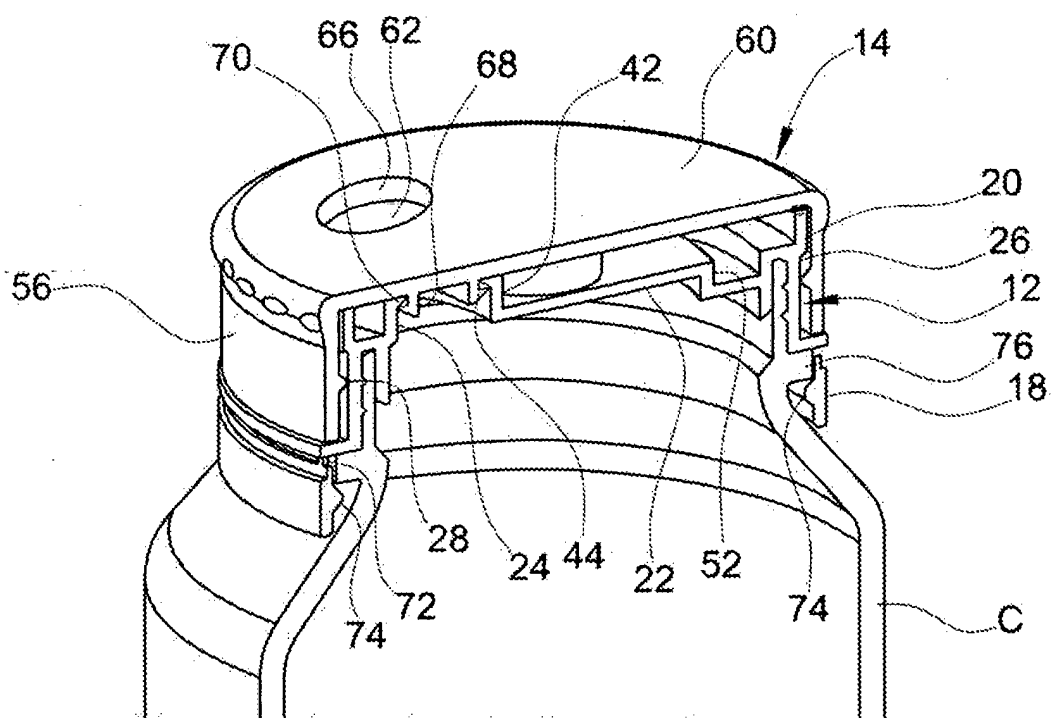


FIG 10

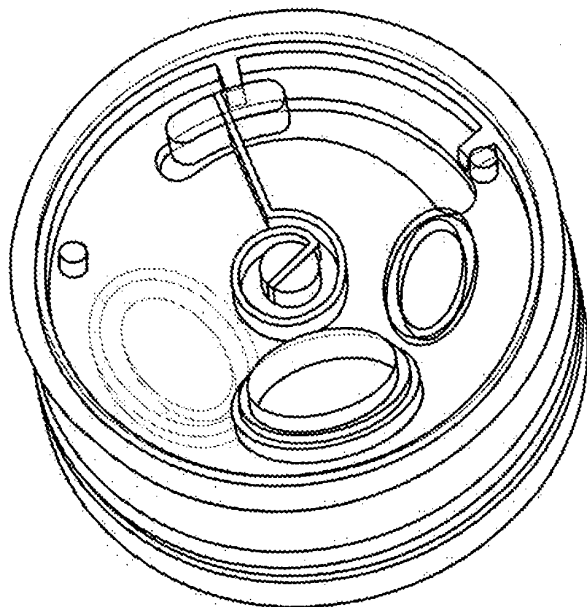


FIG 11

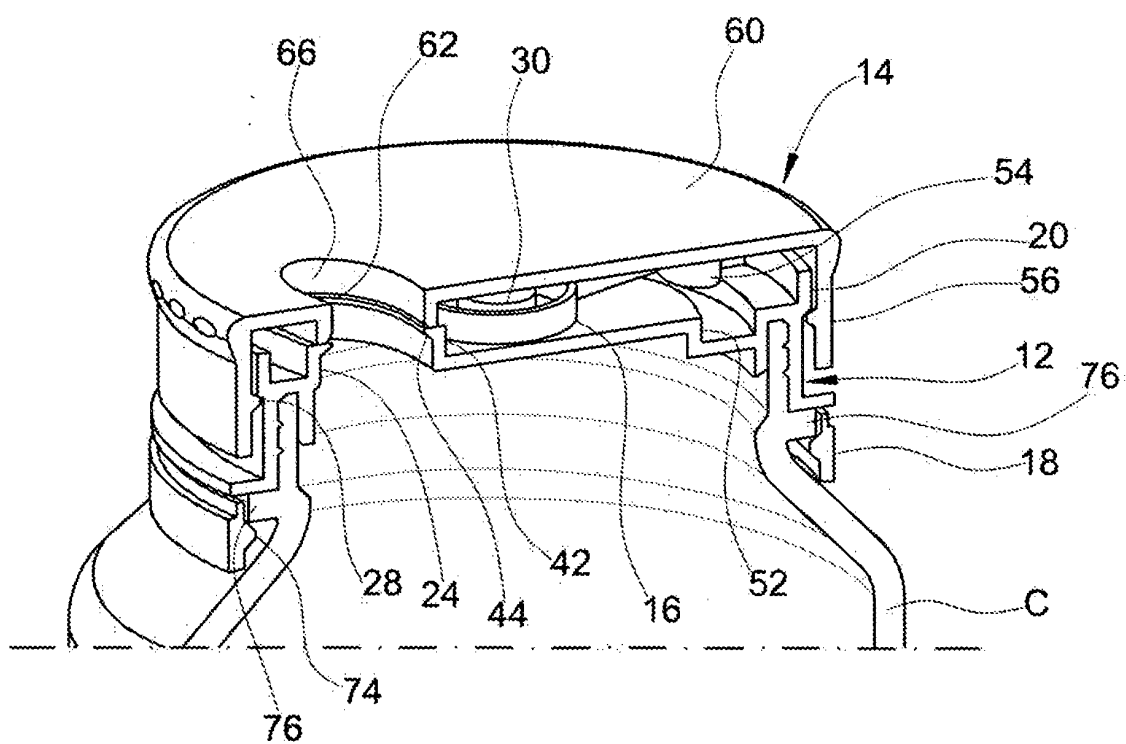


FIG 12

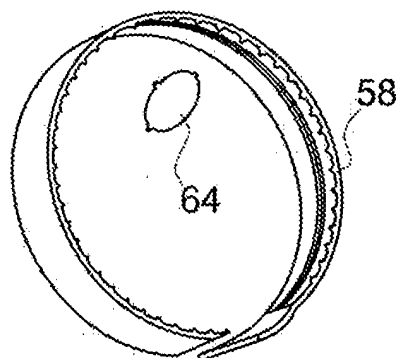


FIG 13

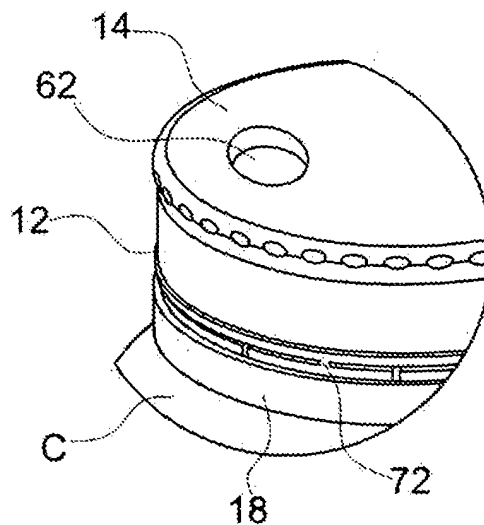


FIG 14

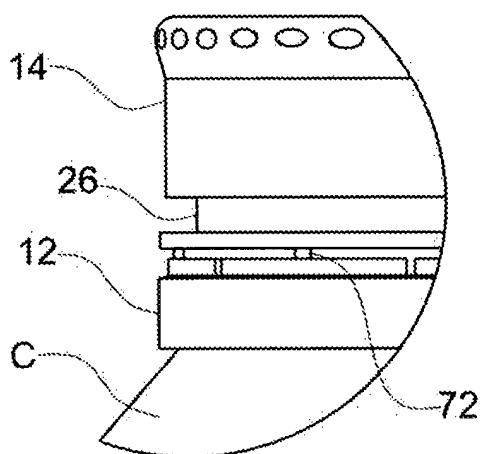


FIG 15

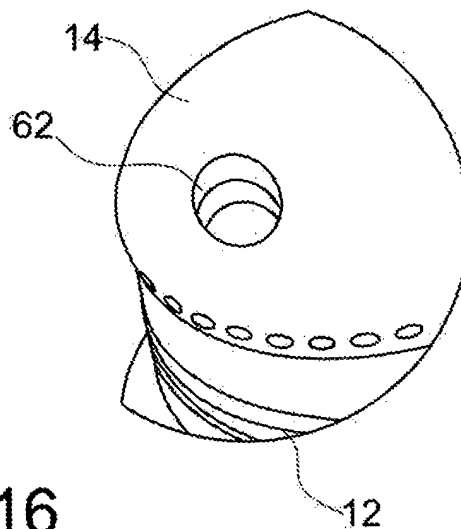
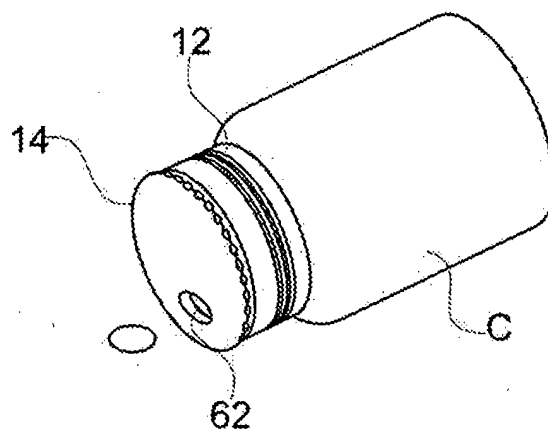


FIG 16



REFERENCES CITED IN THE DESCRIPTION

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