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(54) **CONTAINER FOR STORING TABLETS**

AUFBEWAHRUNGSBEHÄLTER FÜR TABLETTEN

RECIPIENT POUR RANGER DES COMPRIMÉS

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(73) Proprietor: **DUMA INTERNATIONAL AB
103 93 Stockholm (SE)**

(72) Inventor: **RÖNLEV, Erik
S-112 59 Stockholm (SE)**

(74) Representative: **Hopfgarten, Nils et al
Groth & Co.KB
P.O. Box 6107
102 32 Stockholm (SE)**

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Description

[0001] The present invention relates to a container for storing pills, of the type described in the preamble to claim 1.

[0002] Such containers are well known and have long been used for storing pills or tablets, particularly pills for medicinal purposes. In many cases persons who regularly take medicine have reduced mobility, particularly fine motor function, as a result of illness or old age, and it is therefore desirable to be able to open or dose such containers without unnecessarily complicated rotary manipulation. The wrap of the screw-threads on the lid and the container part should therefore be as short as possible. At the same time it is important for the lid to seal the container tightly in order to protect the contents from the surrounding air. This sealing function is achieved mainly by the threads cooperating with each other and in order to achieve satisfactory sealing it is therefore important for the wrap of the threads to be as large as possible, a wrap of several revolutions often being required. This requirement is in opposition to the need mentioned in the introduction, of being able to open the container with as little angle of rotation as possible. Conventional closures have either involved a compromise between these two demands or have been aimed at satisfying only one of them and disregarding the other.

[0003] DE-A-27 03 404 describes a lid for a container with a cylindrical portion of a container part provided with an axially external part which when the lid is fully screwed on, is in sealing contact with the lid. The lid has an inner bottom with a circular groove into which the cylindrical portion of the container is inserted when the lid is fully screwed on. The groove is limited by three deformable sealing lips.

[0004] The purpose of the present invention is to propose another solution to the above problem and provide a container which is easy to open and implies an improved effect of the sealing lid-container.

[0005] This has been achieved according to the invention by a container of the type described in the preamble to claim 1 being provided with the special features as defined in the characterizing part of the claim.

[0006] Thanks to the main sealing function being located at the outer edge of the container part in cooperation with surfaces on the bottom of the lid, the contact between them being along three circular sealing lines, a perfectly satisfactory sealing function is achieved without the sealing effect from the threads engaging in each other having to be considered. Since the sealing aspect for the threads in a container according to the invention can be entirely neglected, these can be given minimum length corresponding to that necessary to properly ensure that the lid remains on the container part and is not accidentally screwed off. It has thus been possible to make these with an extension of approximately 270° or even less.

[0007] According to the invention the bottom of the lid is provided with a circular groove to receive the container part, the sealing lines being situated close to the groove. It is advantageous to make one of the side walls of the plate cylindrical and the other conical and to provide a ridge at the bottom of the groove. Efficient sealing lines are thus achieved in a simple manner.

[0008] According to another preferred embodiment the container is provided with a plurality of threads, preferably three on each part, which further simplifies manipulation, particularly when screwing on the lid.

[0009] The invention is particularly intended for use with containers manufactured out of plastic. This further increases the sealing function since, due to the relatively great deformability of the material, the sealing lines will be somewhat extended in transverse direction and in practice form ribbon-shaped sealing surfaces.

[0010] The invention is extremely suitable for use with lids of security type where an axial force pressing the lid against the container part is required to enable the lid to be screwed off.

[0011] According to yet another preferred embodiment of the invention the lid is provided with a lightly applied strip or collar providing an indication as to whether the container has been opened or not.

[0012] The above and other advantageous embodiments of the invention are defined in the accompanying claims.

[0013] The invention will be explained in more detail in the following description of a preferred embodiment with reference to the accompanying drawings, in which

Figure 1 shows a longitudinal section through the container part of a container according to the invention,

Figure 2 is a view of the container part in Figure 1, seen from above,

Figure 3 shows a partial longitudinal section through the lid of a container according to the invention in a first position,

Figure 4 shows a corresponding section through the lid in Figure 3 in a second position,

Figure 5 shows an alternative embodiment of the lid in a section equivalent to that shown in Figure 3,

Figure 6 is a view of the lid in Figure 6 seen from above,

Figure 7 is an enlarged partial section of Figure 3.

[0014] The container part 1 in Figure 1 is a jar for pills and is manufactured from HD polythene. It has an upper cylindrical portion provided with three threads 3, 4, 5, each with an angle of wrap of 270° and a pitch of ap-

proximately 1:10. In the embodiment shown the lower part of the container in which the pills are stored is also cylindrical but could have any shape. Between the cylindrical portion 2 provided with threads 3, 4, 5, and the lower part of the container 1 is a cylindrical neck portion 6, provided with four bosses 7. These can be seen most clearly in Figure 2 and their function will be described later on.

[0015] Figure 3 shows the lid 8, 9 of the container part 1 shown in Figures 1 and 2. The lid consists of an inner part 8 and an outer part 9 and is made of polypropylene. The inner part 8 is provided with three threads 10, 11, 12 on its cylindrical part, each having an angle of wrap and pitch corresponding to the threads on the container part 1 so that they can be screwed into each other. The lid is of security type, constructed so that the lid parts 8, 9 must be pressed together axially for the inner part 8 to accompany the outer part 9 when this is turned in opening direction. Figure 3 shows the lid in this compressed position.

[0016] When the lid parts 8, 9 are not compressed they assume the position shown in Figure 4 in relation to each other. In this position the outer part 9 will only cause the inner part 8 to turn in closing direction, whereas the outer part 9 will rotate freely about the inner part if turned in opening direction. Connecting members 13 and 14 on the two parts only permit turning resulting in opening when the lid parts are compressed.

[0017] The side of the inner part 8 facing the container part is provided with a strip or collar 15 secured with the aid of a number of tongues 17. These tongues are thin and can be broken with relatively little force. Four bosses 16 are arranged on the inner side of the collar. When the lid 8, 9 is screwed onto the container part 1 the collar 15 is located around the neck portion 6 of the container part 1. The bosses on the collar 15 and the bosses 7 on the neck portion of the container 1 are arranged to hook into each other when the lid is turned in opening direction. When turning continues past this position, where the ring 15 is retained by the cooperating bosses 7 and 16, the tongues are torn off so that the collar 15 is separated from the inner part 8 of the lid and assumes a position resting around the neck portion 6 of the container part. This tearing of the collar 15 from the inner part 8 of the lid occurs the first time the lid 8, 9 is removed from the container part 1. The fact that it is separated from the lid thus serves the function of indicating that the container has been opened.

[0018] As can be seen in Figures 4 and 5, the cylindrical outer surface of the outer part 9 is shaped with peaks 18 and valleys 19 in a wave pattern in peripheral direction in order to facilitate turning.

[0019] In the embodiment according to Figures 6 and 7 the outer part 9 of the lid is provided on its upper side with gripping means 20 which for some people offers an alternative that facilitates turning. The gripping means 20 is in the form of a ring standing up from the lid and having diametrically opposed slits 21. The lid can be

opened with the aid of these by pressing the container against the edge of a slab-shaped object, e.g. the edge of a table. With the edge of the table engaged in the slits 21, the container is easily opened by turning the container part 1 while the lid is prevented from turning by the edge of the table.

[0020] As can be seen in Figure 3 the inner part 8 of the lid is provided at the bottom with an annular holder in which a container 22 with desiccant material 23 can be applied.

[0021] The inner part 8 of the lid is also provided with an annular flange 25 and an annular groove 26. When the lid 8, 9 is screwed onto the container part 1, the outer edge 27 of the cylindrical portion 2 of the container part extends into the annular groove 26 and seals against the adjacent surfaces thereof.

[0022] Figure 7, which is an enlargement of a section through the portion around the flange 25 and groove 26, shows how the outer edge 27 of the container part co-operates sealingly with the inner lid 8.

[0023] The annular groove 26 is limited in radial direction on its inner side by the outer cylindrical surface of the flange 25 and on its outer side by a conical surface 29, half the top angle of which is approximately 25°. The bottom 30 of the groove is substantially flat and is provided substantially centrally with an annular ridge 31 having triangular cross section. The depth of the groove is approximately 5 mm and its breadth is approximately the same. The ridge has a height of approximately 0.3 mm and a top angle of approximately 60°.

[0024] When the lid 8 is fully screwed onto the cylindrical portion 2 of the container part, active sealing occurs along three active sealing lines A, B, C running annularly between the lid part 8 and the outer edge 27 of the cylindrical portion 2. The threads permit screwing until the screwing motion is stopped by contact along these lines. The groove is so dimensioned that contact occurs substantially simultaneously along the lines A and B. The contact force at the line A provides an efficient seal against the corresponding corner of the edge 27 which is thus slightly deformed. Due to the conical shape of the surface 27 the contact force at A acquires a radial component which presses the outer end of the annular portion 2 inwards to abut the inner surface 28 of the flange 25 so that an efficient sealing line with a contact force arises in the area C. The flat surface of the edge 27 will be pressed against the ridge 31 and its point will be slightly deformed, whereupon an efficient sealing line is also achieved in the area B.

[0025] Thanks to these three contact lines A, B, C, where contact under pressure occurs along all three, efficient sealing is obtained which eliminates the need for the screw-threads to be given any sealing function. The figure also shows a fourth sealing line D between the conical surface 29 and the corner of a section of the cylindrical portion 2 having slightly larger diameter than at its outer edge. Sealing along this line D is less efficient, however, and is deemed passive since the true contact

force in axial direction occurs along the lines A and B, this force preventing further penetration of the cylindrical portion 2 into the groove 26. Any contact occurring along the line D must therefore be rather light.

[0026] The embodiments described above are only intended as examples to explain the inventive concept and shall not, therefore, be attributed any limiting significance. The invention can be modified in various ways and is limited only by the protective scope defined in the main claim.

[0027] It should be particularly emphasised that it is not limited to use with a lid of security type but may also be used for simple screw-on lids.

Claims

1. A container for storing pills or tablets, comprising a container part (1) with an opening and a lid (8, 9) to close the opening, said opening being surrounded by a cylindrical portion (2) of the container part (1), said portion (2) being provided externally with at least one screw-thread (3, 4, 5) and said lid (8, 9) having a cylindrical portion provided internally with at least one thread (10, 11, 12) arranged to cooperate with threads (3, 4, 5) provided on the cylindrical portion (2) of said container part (1) to enable the lid (8, 9) to be screwed on and off the container part (1), each of said threads (3, 4, 5; 10, 11, 12) having an angle of wrap of $270^\circ \pm 45^\circ$, said lid (8, 9) having an inner bottom with a circular groove (26) into which an axially external part of the cylindrical portion (2) of the container part (1) is inserted when the lid (8, 9) is fully screwed on, to be in sealing contact with the lid (8, 9) along at least three circular sealing lines (A, B, C), said groove (26) being defined by one cylindrical side wall (28) formed by an annular flange (25) extending axially from said inner bottom of said lid (8, 9), one side wall (29) formed by an inner wall portion of said lid (8, 9) and surrounding said cylindrical side wall, and by a substantially flat bottom (30) extending between these walls, said bottom (30) being provided with a ridge (31), a flat surface of an outer edge (27) of said external part of said cylindrical portion (2) being pressed against said ridge (31) **characterized in that** said side wall (29) formed by an inner wall portion of said side wall (29) is conical and **in that** the point of the ridge (31) is slightly deformed when said lid (8, 9) is fully screwed onto said cylindrical portion (2) of said container part (1).

2. The container as claimed in claim 1, **characterized in that** said ridge (31) has triangular cross section, one point thereof facing towards the container part (1).

3. The container as claimed in claims 1 or 2, **characterized in that** said three sealing lines (A, B, C) are so disposed that a first line (A) runs along said conical side wall (29), a second one (B) along the part of said ridge (31) facing towards the container part, and a third one (C) along said cylindrical wall (28).

4. The container as claimed in any of claims 1-3, **characterized in that** said angle of wrap is $270^\circ \pm 30^\circ$.

5. The container as claimed in claim 4, **characterized in that** said angle of wrap is approximately 270° .

6. The container as claimed in any of claims 1-5, **characterized in that** said cylindrical portion (2) of the container part (1), and said cylindrical portion of the lid (8, 9) are each provided with a plurality of threads (3, 4, 5; 10, 11, 12).

7. The container as claimed in claim 6, **characterized in that** the number of threads on each cylindrical portion is three.

8. The container as claimed in any of claims 1-7, **characterized in that** the material in the container part (1) and/or the lid (8, 9) is a plastic.

9. The container as claimed in any of claims 1-8, **characterized in that** the cylindrical portion of the lid (8, 9) is provided with uneven parts (18, 19).

10. The container as claimed in any of claims 1-9, **characterized in that** the lid (8, 9) comprises an outer part (9) and in inner part (8), the thread(s) (10, 11, 12) of the lid being provided on the inside of a cylindrical portion of said inner part (8), and **in that** the lid parts (8, 9) are so inter-connected that when the outer part (9) is turned in a direction corresponding to unscrewing the lid (8, 9) a force which axially compresses the lid parts (8, 9) is required for the inner part (8) to be caused to turn, whereas a lack of such force will result in the lid parts (8, 9) rotating freely in relation to each other in said direction.

11. The container as claimed in any of claims 1-10, **characterized in that** the lid (8, 9) comprises a collar (15) arranged at the end of the lid (8, 9) facing the container part, said collar (15) being so lightly secured to the lid (8, 9) that a relatively slight parting force between the lid (8, 9) and the collar (15) will result in these parts being separated from each other.

12. The container as claimed in claim 11, **characterized in that** said collar (15) is provided internally with bosses (16) arranged to cooperate with bosses (7) on the outer side of the container part (1), the engagement of said cooperating bosses (7, 16) restricting the relative angle of rotation between the

collar (15) and the container part (1).

Patentansprüche

1. Behälter zum Aufbewahren von Pillen oder Tabletten, umfassend ein Behälterteil (1) mit einer Öffnung und einem Deckel (8,9) zum Schließen der Öffnung, wobei die Öffnung durch einen zylindrischen Abschnitt (3) des Behälterteils (1) umgeben ist, der Abschnitt (2) außen mit mindestens einem Schraubengewindegang (3, 4, 5) ausgestattet ist und der Deckel (8, 9) einen zylindrischen Abschnitt besitzt, der innen mit mindestens einem Gewindegang (10, 11, 12) ausgestattet ist, der derart angeordnet ist, um mit an dem zylindrischen Abschnitt (2) des Behälterteils (1) vorgesehenen Gewindegängen (3, 4, 5) zusammenzuwirken, um zu ermöglichen, dass der Deckel (8, 9) auf das Behälterteil (1) auf und von diesem abgeschraubt werden kann, wobei jeder der drei Gewindegänge (3, 4, 5; 10, 11, 12) einen Drehwinkel von $270^\circ \pm 45^\circ$ besitzt, wobei der Deckel (8, 9) einen inneren Boden mit einer kreisförmigen Nut (26) besitzt, in welche ein axial äußerer Teil des zylindrischen Abschnitts (2) des Behälterteils (1) eingefügt ist, wenn der Deckel (8, 9) vollständig aufgeschraubt ist, um in abdichtendem Kontakt mit dem Deckel (8, 9) entlang von mindestens drei kreisförmig abdichtenden Linien (A, B, C) zu sein, wobei die Nut (26) durch eine zylindrische Seitenwand (28), die durch einen ringförmigen Flansch (25) gebildet ist, der sich axial von dem inneren Boden des Deckels (8, 9) erstreckt, eine Seitenwand (29), die durch einen inneren Wandabschnitt des Deckels (8, 9) gebildet ist und die zylindrische Seitenwand umgibt, und durch einen im Wesentlichen ebenen Boden (30), der sich zwischen diesen Wänden erstreckt, definiert ist, wobei der Boden (30) mit einer Rippe (31) ausgestattet ist, wobei eine ebene Oberfläche des äußeren Randes (27) des äußeren Teils des zylindrischen Abschnitts (2) gegen die Rippe (31) gedrückt ist, **dadurch gekennzeichnet, dass** die durch einen inneren Wandabschnitt der Seitenwand (29) gebildete Seitenwand (29) konisch ist und dass die Spitze der Rippe (31) leicht verformt wird, wenn der Deckel (8, 9) vollständig auf den zylindrischen Abschnitt (2) des Behälterteils (1) aufgeschraubt ist.
2. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** die Rippe (31) einen dreieckigen Querschnitt besitzt, wobei eine Spitze davon dem Behälterteil (1) zugewandt ist.
3. Behälter nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die drei abdichtenden Linien (A, B, C) derart vorgesehen sind, dass eine erste Linie (A) entlang der konischen Seitenwand (29) verläuft, eine zweite (B) entlang des Teils der Rippe (31) verläuft, der dem Behälterteil zugewandt ist, und eine dritte (C) entlang der zylindrischen Wand (28) verläuft.
4. Behälter nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** der Drehwinkel $270^\circ \pm 30^\circ$ ist.
5. Behälter nach Anspruch 4, **dadurch gekennzeichnet, dass** der Drehwinkel näherungsweise 270° ist.
6. Behälter nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** der zylindrische Abschnitt (3) des Behälters (1) und der zylindrische Abschnitt des Deckels jeweils mit einer Mehrzahl von Gewindegängen (3, 4, 5; 10, 11, 12) ausgestattet sind.
7. Behälter nach Anspruch 6, **dadurch gekennzeichnet, dass** die Anzahl von Gewindegängen an jedem zylindrischen Abschnitt drei ist.
8. Behälter nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** das Material des Behälterteils (1) und/oder des Deckels (8, 9) ein Kunststoff ist.
9. Behälter nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** der zylindrische Abschnitt des Deckels (8, 9) mit unglatten Teilen (18, 19) ausgestattet ist.
10. Behälter nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** der Deckel (8, 9) ein äußeres Teil (9) und ein inneres Teil (8) aufweist, wobei der Gewindegang (die Gewindegänge) (10, 11, 12) des Deckels auf der Innenseite eines zylindrischen Abschnitts an dem inneren Teil (8) vorgesehen ist (sind), und dass die Deckelteile (8, 9) derart miteinander verbunden sind, dass wenn das äußere Teil (9) in einer Richtung entsprechend einem Aufschrauben des Deckels (8, 9) gedreht wird, eine die Deckelteile (8, 9) axial zusammendrückende Kraft erforderlich ist, um das innere Teil (8) zu veranlassen, sich zu drehen, während ein Fehlen einer derartigen Kraft dazu führen wird, dass die Deckelteile (8, 9) frei in Bezug zueinander in der Richtung rotieren.
11. Behälter nach einem der Ansprüche 1 bis 10, **dadurch gekennzeichnet, dass** der Deckel (8, 9) einen Kragen (15) aufweist, der an dem Ende des Deckels (8, 9) angeordnet ist, welches dem Behälterteil zugewandt ist, wobei der Kragen (15) so leicht an dem Deckel (8, 9) gesichert ist, dass eine relativ leichte Trennkraft zwischen dem Deckel (8, 9) und dem Kragen (15) dazu führen wird, dass die-

se Teile voneinander getrennt werden.

12. Behälter nach Anspruch 11, **dadurch gekennzeichnet, dass** der Kragen (15) innen mit Vorsprüngen (16) ausgestattet ist, die derart angeordnet sind, um mit Vorsprüngen (7) auf der äußeren Seite des Behälterteils (1) zusammenzuwirken, wobei ein Eingriff der zusammenwirkenden Vorsprünge (7, 16) den Relativwinkel der Rotation zwischen dem Kragen (15) und dem Behälterteil (1) begrenzt.

Revendications

1. Récipient pour ranger des pilules ou comprimés, comprenant une partie de récipient (1) avec une ouverture et un couvercle (8,9) pour fermer l'ouverture, ladite ouverture étant entourée d'une portion cylindrique (2) de la partie de récipient, ladite portion (2) étant munie extérieurement d'au moins un filetage (2,4,5) et ledit couvercle (8,9) ayant une portion cylindrique dotée intérieurement d'au moins un filetage (10,11,12) agencé pour coopérer avec des filets (3,4,5) prévus sur la portion cylindrique (2) de ladite partie de récipient (1) pour permettre le vissage et le dévissage du couvercle (8,9) sur et de la partie de récipient (1), chacun des filets (3,4,5; 10,11,12) ayant un angle d'enroulement de $270 \pm 45^\circ$, ledit couvercle (8,9) ayant un fond intérieur avec une gorge circulaire (26) dans laquelle est insérée une partie axialement extérieure de la portion cylindrique (2) de la partie de récipient (1) lorsque le couvercle (8,9) est entièrement vissé, pour être en contact hermétique avec le couvercle (8,9) le long d'au moins trois lignes hermétiques circulaires (A,B,C), ladite gorge (26) étant définie par une paroi latérale cylindrique (28) formée par une collerette annulaire (25) s'étendant axialement à partir dudit fond intérieur de ladite lèvre (8,9), une paroi latérale (29) formée par une portion de paroi intérieure dudit couvercle (8,9) et entourant ladite paroi latérale cylindrique, et par un fond sensiblement plat (30) s'étendant entre ces parois, ledit fond (30) étant muni d'une nervure (31), une surface plate d'un bord extérieur (27) de ladite partie extérieure de ladite portion cylindrique (2) étant pressée contre ladite nervure (31), **caractérisé en ce que** ladite paroi latérale (29) formée par une portion de paroi intérieure de ladite paroi latérale (29) est conique et **en ce que** le point de la nervure (31) est légèrement déformé lorsque ledit couvercle (8,9) est entièrement vissé sur ladite portion cylindrique (2) de ladite partie de récipient (1).
2. Récipient selon la revendication 1, **caractérisé en ce que** ladite nervure (31) présente une section transversale triangulaire, dont un de ses points est en regard de la partie de récipient (1).

3. Récipient selon les revendications 1 ou 2, **caractérisé en ce que** lesdites trois lignes hermétiques (A,B,C) sont disposées de telle sorte qu'une première ligne (A) s'étend le long de ladite paroi latérale conique (29), une seconde ligne (B) s'étend le long de la partie de ladite nervure (31) en regard de la partie de récipient, et une troisième ligne (C) s'étend le long de ladite paroi cylindrique (28).
4. Récipient selon l'une quelconque des revendications 1-3, **caractérisé en ce que** ledit angle d'enroulement est de $270^\circ \pm 30^\circ$.
5. Récipient selon l'une quelconque des revendications 1-3, **caractérisé en ce que** ledit angle d'enroulement est d'environ 270° .
6. Récipient selon l'une quelconque des revendications 1-5, **caractérisé en ce que** ladite portion cylindrique (2) de la partie de récipient (1), et ladite portion cylindrique du couvercle (8,9) sont chacune dotée d'une pluralité de filets (3,4,5; 10,11,12).
7. Récipient selon la revendication 6, **caractérisé en ce que** le nombre de filets sur chaque portion cylindrique est de trois.
8. Récipient selon l'une quelconque des revendications précédentes 1-7, **caractérisé en ce que** le matériau dans la partie de récipient (1) et/ou du couvercle (8,9) est un plastique.
9. Récipient selon l'une quelconque des revendications 1-8, **caractérisé en ce que** la portion cylindrique du couvercle (8,9) est munie de parties inégales (18,19).
10. Récipient selon l'une quelconque des revendications 1-9, **caractérisé en ce que** le couvercle (8,9) comprend une partie extérieure (9) et une partie intérieure (8), les filets du couvercle étant disposés sur l'intérieur d'une portion cylindrique de ladite partie intérieure (8) et **en ce que** les parties de couvercle (8,9) sont interconnectés de telle sorte que lorsque la partie extérieure (9) est tournée dans une direction correspondant au dévissage du couvercle (8,9) une force comprimant axialement les parties de couvercle (8,9) est nécessaire pour que la partie intérieure (8) soit mise en rotation, tandis qu'une absence de cette force aura pour effet que les parties de couvercle (8,9) entreront librement en rotation l'une par rapport à l'autre dans ladite direction.

11. Récipient selon l'une quelconque des revendications 1-10,

caractérisé en ce que le couvercle (8,9) comprend un collier (15) disposé à l'extrémité du couvercle (8,9) en regard de la partie de récipient, ledit collier (15) étant fixé sur le couvercle (8,9) d'une manière si légère qu'une force de séparation relativement faible entre le couvercle (8,9) et le collier (15) permettra la séparation de ces pièces.

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12. Récipient selon la revendication 11, **caractérisé en ce que** ledit collier (15) est doté intérieurement de bossages (16) agencés pour coopérer avec les bossages (7) sur le côté extérieur de la partie de récipient (1), l'engagement desdits bossages coopérants (7,16) limitant l'angle relatif de rotation entre le collier (15) et la partie de récipient (1).

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Fig. 1

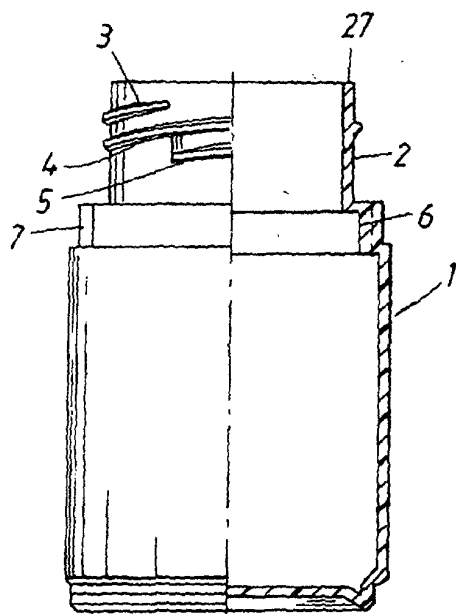


Fig. 3

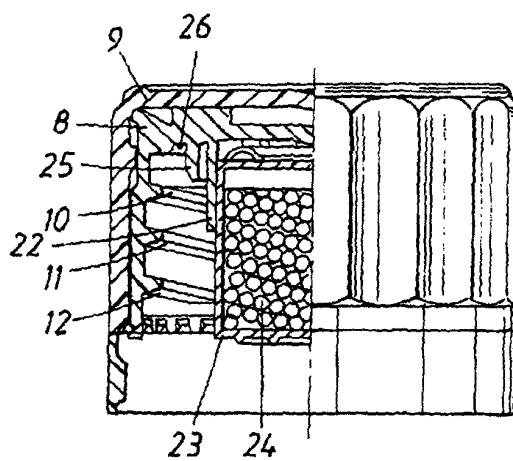


Fig. 4

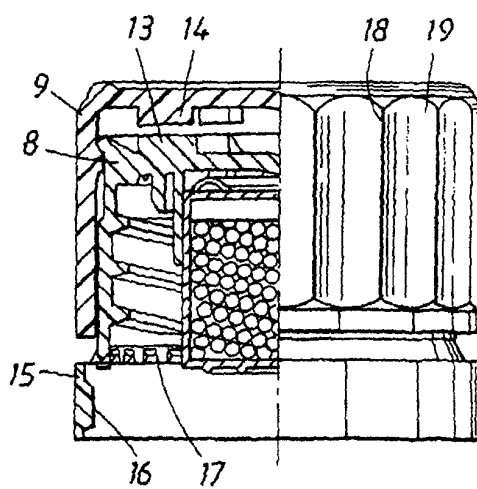


Fig. 2

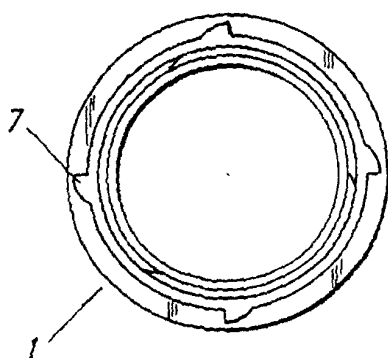


Fig. 5

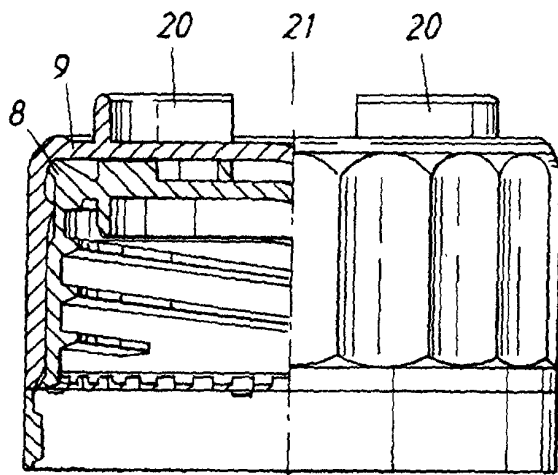


Fig. 6

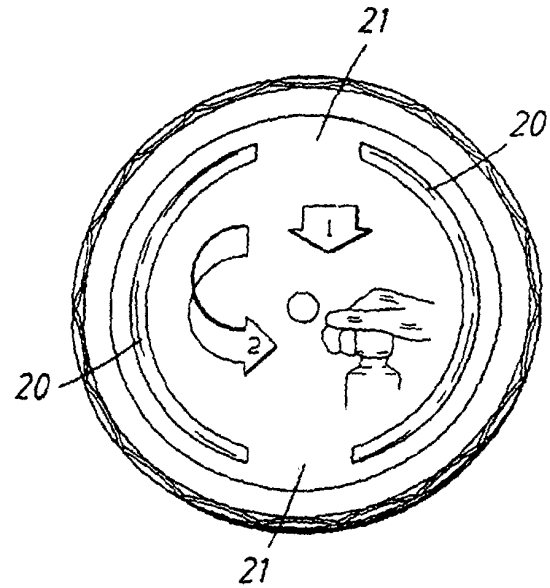


Fig. 7

