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## Description

### Field of the Invention

**[0001]** This invention relates to a receptacle closure. More especially the invention relates to a closure for a receptacle that contains a carbonated liquid.

### Background of the Invention

**[0002]** Carbonated drinks or liquids are generally supplied in containers with screw top closure or corks or cans with a ring-pull. All such mechanisms suffer from, sometimes violent, liquid emission when the container is first opened at the instant when gas is expelled to release the pressure within the container.

**[0003]** In the case of soft fizzy drinks, a person opening the bottle is often prepared for some of the liquid to spray out, particularly if gas has built up through the bottle being shaken, and all they would do is try to mitigate the amount of spray by making very small incremental turns of the lid to slowly release the pressure by very small amounts. Spray of liquid though remains a common problem.

**[0004]** Moreover, as the amount of gas expelled at the point of opening is not controlled, the liquid is often found to be flat when drunk.

**[0005]** In the case of carbonated alcoholic drinks, such as for example Champagne or Prosecco™, the use of corks are favoured.

**[0006]** The present invention seeks to alleviate the problems associated with the spray of liquid on opening of container, by providing a mechanism within the closure to release the pressure within the container prior the closure being removed.

**[0007]** Reference to carbonated includes liquids that are gaseous, aerated or otherwise sparkling or fizzy. The liquids are generally for human consumption (although may not necessarily be) and may be alcoholic or soft (non-alcoholic).

**[0008]** GB 2 276 153A discloses a cap for a pressurized container, according to the preamble of claim 1.

### Summary of the Invention

**[0009]** A first aspect of the invention provides a closure for a receptacle containing carbonated liquid, the closure including activation means to release a selected amount of fluid from container into a defined chamber within the closure on activation thereby to reduce the pressure within the receptacle prior to removal of the closure.

**[0010]** Preferably the activation means comprises a button that is depressed for activation.

### Brief Description of the Drawings

**[0011]** The invention will now be described, by way of non-limiting example, to accompanying drawings, in which:

Figure 1 is an exploded view from above of a closure constructed in accordance with the invention;

Figure 2 is an exploded view from below of the closure of figure 1;

Figure 3 is a plan view of the closure;

Figure 4 is a side cross-section of the closure taken through B-B of figure 3;

Figure 5 is a side cross-section of the closure taken through C-C of figure 3;

Figure 6 is a side cross-section of the closure illustrating the disc being depressed;

Figures 7(a) and 7(b) show alternative versions of disc stem;

Figure 8 is a top perspective view of the closure; and

Figure 9 is a side view of the closure.

### Detailed Description of Preferred Embodiments

**[0012]** Embodiments herein describe closures for receptacles containing carbonated or sparkling drinks, for example champagne.

**[0013]** The closure is removable, and in some embodiments is secured to the receptacle by means of a helical screw thread arrangement, with the screw threads being respectively on an outer surface of the closure and the interior surface of the receptacle. This allows the closure to be unscrewed by a user to reduce the chances of liquid being spilled and also to allow the gradual and controlled release of gas, e.g. in the case of carbonated or sparkling drinks. The fact that the engagement means, i.e. the screw threads, are internal to the bowl avoids contact with a user's mouth which might otherwise cause irritation or skin damage. The outer surface of the bowl can therefore be smooth.

**[0014]** Figure 1 illustrates a closure in exploded view for use with a wine or champagne glass for example, although the glass can take any form and can be made of any material or combination thereof. For ease of explanation, the term 'wine glass' will be used throughout.

**[0015]** The closure comprises four main parts. These parts consist of a main housing 1, a compressor disc 2, a bottom movable part 3 and a lid 4. A washer seal 5 is provided between the main housing 1 and bottom part 3. The parts are made from silicon. They could, however be made from any material suitable for use as a closure for a glass or bottle. They could, for example, be made from a plastic material. The glass may too be made from any suitable material, preferably the glass is made from a plastic material to complement the closure.

**[0016]** The main housing 1 is generally circular with a

base and upstanding walls. As can be seen in figure 1, the housing 1 has a central stem 6 with a through-bore 7. Flanges 8 extend from the stem 6 to the inner wall 9 of the main housing 1. The flanges 8 provide surfaces that a user can grip to rotate the main housing 1 to remove the closure. The flanges 8 also provide walls to define discrete internal chambers within the main housing 1 of the closure.

**[0017]** Referring now to figure 2, the bottom of the housing 1 includes circular recesses 10 extending around the bore aperture 7.

**[0018]** As can be best seen in figure 4, the side walls of the main housing 1 are provided with an external screw thread 11. The screw thread 11 is designed to engage with a complimentary screw thread located on the inside of the wine glass. The sides of the main housing 1 extend further out to a flanged perimeter 12 which extends beyond and overhangs the screw thread 11. In use, the walls of the wine glass extend into and between the perimeter 12 and the threaded wall 11 of the main housing 1.

**[0019]** The compression disc 2 of the closure comprises a generally disc-shaped body 13 which has a downwardly extending central stem 14. When assembled, the stem 14 of the compression disc 2 extends into and through the central bore 7 of the main housing 1. The stem 14 may have side mouldings for strength. Examples of stems with reinforced mouldings are shown in figure 7.

**[0020]** When assembled the compression disc 2 sits within recesses formed in the side walls of the main housing 1.

**[0021]** The disc-shaped body 13 is flexible and, as the outer periphery of the disc body 13 only rests in recesses of the side walls, the central part of the body 13 is able to be depressed manually by a user, into the space below it. The disc body has a radial line of reduced thickness 15 which provides further flexibility to the central part of the disc 13.

**[0022]** Depression of the central part of the disc 13 causes the stem 14 to lower slightly within the bore 7 by a controlled amount.

**[0023]** The movable part 3 comprises a generally cylindrical shaped body 16 with a base and side walls. The internal surface of the body 16 includes an upstanding central stem 17 with an opening 18 into which the end of the disc stem 14 can be received. When assembled the side walls of the body 16 extend into the recesses 10 formed in the bottom surface of the housing 1 and the stem 17 extends up through the bore 7 to connect with the disc stem 14.

**[0024]** The washer seal 5 fits around the stem 17 against the internal surface of the base.

**[0025]** Lowering of the disc stem 14 within the bore 7 caused by depression of the central part of the disc body 13 causes lowering of the bottom part by a pre-determined and controlled amount. The distance moved by the bottom part is very small. The bottom part remains within the confines of the housing 1 as can be seen in figure 5. The lowering distance is though, enough to in-

crease the area of the internal chamber 18 of the closure to allow a small amount of gas to be expelled from the wine glass into the chamber 18 to release the pressure within the wine glass. The bottom part does not move sufficiently downward to affect the liquid level which would otherwise cause an upward force on the liquid.

**[0026]** Importantly, depression of the disc 13 causes a release of pressure within the wine glass prior the closure being removed. The closure can subsequently be removed by rotating the housing 1 in respect of the glass but by this time the pressure has already been reduced within the glass and so avoiding spray of liquid.

**[0027]** Furthermore, the initial expulsion of gas is controlled such that liquid remains carbonated and does not become flat.

**[0028]** The lid 4, in use, overlays the disc body 13 to protect it from accidental depression. As can be seen in figure 5 the lid 4 is pivotable about the housing 1 to allow access to the disc body 13. The lid 4 may be entirely removable.

**[0029]** As can be seen in figure 8, the lid 4 has recesses 19 cut into the edge to provide grips to lift the lid 4 from the housing 1.

**[0030]** The base of the bottom part 3 may be made from a hydrophobic membrane rather than silicon. Similarly, hydrophobic seals may be provided between each closure part.

## Claims

1. A closure for a receptacle containing carbonated liquid, the closure including activation means, wherein:

- the closure comprises a first part forming a main housing (1) and a second part (3) movable in relation to the main housing; and
- the activation means comprises a depressible section formed on the closure that is depressed manually for activation wherein the depressible section is on the top surface of the main housing and depression of the section causes the second part to move with respect to the first part to provide or increase a gap (18) within the closure into which gas from the receptacle can be expelled thereby to reduce the pressure in the receptacle; and
- the main housing comprises a central stem (6) with a through-bore (7); and wherein the depressible section is formed as a compression disc (2) having a disc-shaped body (13) including a downwardly extending central stem (14) which, when the closure is assembled, extends into the through-bore of the main housing,

characterised in that said disc-shaped body (13) has a radial line of reduced thickness (15) which provides flexibility to the central part of said disc-shaped

body (13).

2. A closure according to claim 1, further comprising a removable lid (4) section which, when in place, extends over the depressible section. 5
3. A closure according to claim 1 or claim 2, wherein the side walls of the main housing are provided with an external screw thread (11) to engage with a complementary screw thread formed on the inner surface of a wall of the receptacle. 10
4. A closure according to any one of claims 1 to 3, wherein the main housing further comprises radial flanges (8) that extend between the central stem and the through-bore. 15
5. A closure according to any one of claims 1 to 4, wherein the compression disc sits within a recess formed within the main housing 20
6. A closure according to any one of claims 1 to 5, wherein the second part of the closure comprises a main body with base and side walls, and has an up-standing central stem (17) having an opening into which a distal end of the disc stem is received when the closure is assembled so to downwardly move the second part of the closure with respect to the main housing when the compression disc is depressed. 25 30

#### Patentansprüche

1. Verschluss für einen Behälter, der eine kohlenstoffhaltige Flüssigkeit enthält, wobei der Verschluss ein Aktivierungsmittel enthält, wobei: 35
  - der Verschluss einen ersten Teil umfasst, der ein Hauptgehäuse (1) bildet, und einen zweiten Teil (3), der in Bezug auf das Hauptgehäuse beweglich ist; und 40
  - das Aktivierungsmittel einen am Verschluss ausgebildeten niederdrückbaren Abschnitt umfasst, der zur Aktivierung manuell niedergedrückt wird, wobei sich der niederdrückbare Abschnitt auf der Oberseite des Hauptgehäuses befindet und das Niederdrücken des Abschnitts bewirkt, dass sich der zweite Teil in Bezug auf den ersten Teil bewegt, um einen Spalt (18) innerhalb des Verschlusses zu schaffen oder zu vergrößern, in den Gas aus dem Behälter ausgestoßen werden kann, um dadurch den Druck im Behälter zu verringern; und
  - das Hauptgehäuse einen zentralen Schaft (6) mit einer Durchgangsbohrung (7) umfasst; und 50
  - wobei der niederdrückbare Abschnitt als eine Druckscheibe (2) mit einem scheibenförmigen 55

Körper (13) ausgebildet ist, der einen sich nach unten erstreckenden zentralen Schaft (14) einschließt, der sich in die Durchgangsbohrung des Hauptgehäuses erstreckt, wenn der Verschluss montiert ist,

**dadurch gekennzeichnet, dass** der scheibenförmige Körper (13) eine radiale Linie mit reduzierter Dicke (15) aufweist, die dem zentralen Teil des scheibenförmigen Körpers (13) Flexibilität verleiht.

2. Verschluss nach Anspruch 1, der ferner einen abnehmbaren Deckelabschnitt (4) umfasst, der sich, wenn er angebracht ist, über den eindrückbaren Abschnitt erstreckt.
3. Verschluss nach Anspruch 1 oder Anspruch 2, wobei die Seitenwände des Hauptgehäuses mit einem äußeren Schraubgewinde (11) versehen sind, um in ein komplementäres Schraubgewinde einzugreifen, das an der Innenfläche einer Wand des Behälters ausgebildet ist.
4. Verschluss nach einem der Ansprüche 1 bis 3, wobei das Hauptgehäuse ferner radiale Flansche (8) umfasst, die sich zwischen dem zentralen Schaft und der Durchgangsbohrung erstrecken.
5. Verschluss nach einem der Ansprüche 1 bis 4, wobei die Druckscheibe in einer im Hauptgehäuse ausgebildeten Aussparung sitzt.
6. Verschluss nach einem der Ansprüche 1 bis 5, wobei der zweite Teil des Verschlusses einen Hauptkörper mit einer Basis und Seitenwänden umfasst und einen aufrecht stehenden zentralen Schaft (17) mit einer Öffnung aufweist, in die ein distales Ende des Scheibenschafts aufgenommen wird, wenn der Verschluss montiert ist, um den zweiten Teil des Verschlusses in Bezug auf das Hauptgehäuse nach unten zu bewegen, wenn die Druckscheibe niedergedrückt wird.

#### Revendications

1. Fermeture pour un réceptacle contenant un liquide gazeux, la fermeture comprenant des moyens d'activation, dans laquelle:
  - la fermeture comprend une première partie formant un logement principal (1) et une seconde partie (3) pouvant bouger par rapport au logement principal; et
  - les moyens d'activation comprennent une section pouvant être enfoncée formée sur la fermeture qui est enfoncée manuellement pour activation, dans laquelle la section pouvant être en-

foncée se trouve sur la surface supérieure du logement principal et l'enfoncement de la section amène la seconde partie à bouger par rapport à la première partie pour produire ou agrandir un espace (18) à l'intérieur de la fermeture dans lequel un gaz provenant du réceptacle peut être propulsé pour ainsi réduire la pression dans le réceptacle; et

- le logement principal comprend une tige centrale (6) ayant un alésage (7); et

dans laquelle la section pouvant être enfoncée est formée en tant que disque de compression (2) ayant un corps en forme de disque (13) comprenant une tige centrale s'étendant vers le bas (14) qui, lorsque la fermeture est assemblée, s'étend dans l'alésage du logement principal,

**caractérisée en ce que** ledit corps en forme de disque (13) possède une ligne radiale d'épaisseur réduite (15) qui donne une flexibilité à la partie centrale dudit corps en forme de disque (13).

2. Fermeture selon la revendication 1, comprenant en outre une section de couvercle amovible (4) qui, lorsqu'elle est en place, s'étend par-dessus la section pouvant être enfoncée.
3. Fermeture selon la revendication 1 ou la revendication 2, dans laquelle les parois latérales du logement principal sont munies d'un filetage externe (11) destiné à venir en prise avec un filetage complémentaire formé sur la surface interne d'une paroi du réceptacle.
4. Fermeture selon l'une quelconque des revendications 1 à 3, dans laquelle le logement principal comprend en outre des brides radiales (8) qui s'étendent entre la tige centrale et l'alésage.
5. Fermeture selon l'une quelconque des revendications 1 à 4, dans laquelle le disque de compression est placé à l'intérieur d'un évidement qui est formé à l'intérieur du logement principal.
6. Fermeture selon l'une quelconque des revendications 1 à 5, dans laquelle la seconde partie de la fermeture comprend un corps principal ayant une base et des parois latérales, et possède une tige centrale verticale (17) ayant une ouverture dans laquelle une extrémité distale de la tige du disque est reçue lorsque la fermeture est assemblée de façon à déplacer vers le bas la seconde partie de la fermeture par rapport au logement principal lorsque le disque de compression est enfoncé.

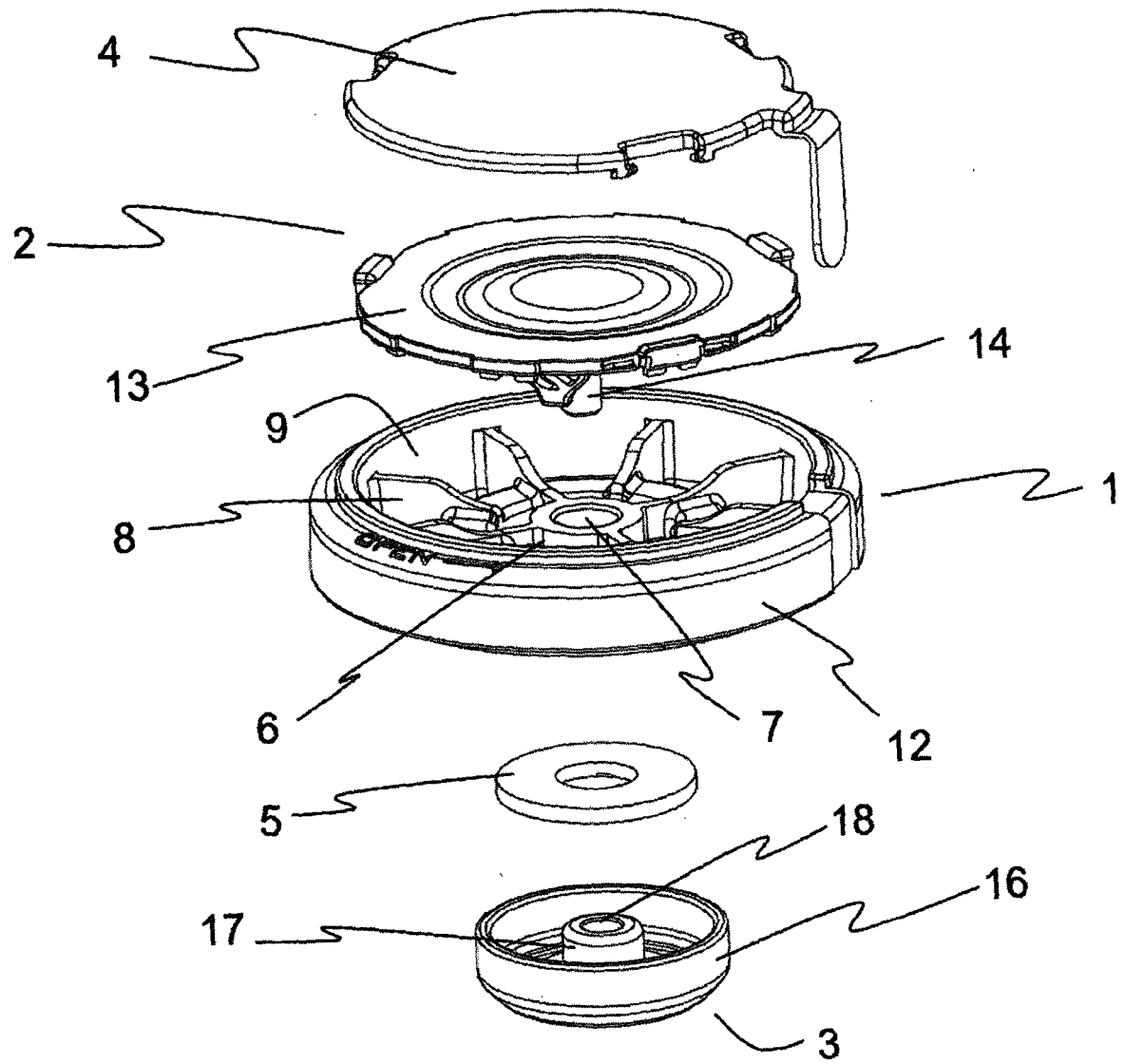


Fig. 1

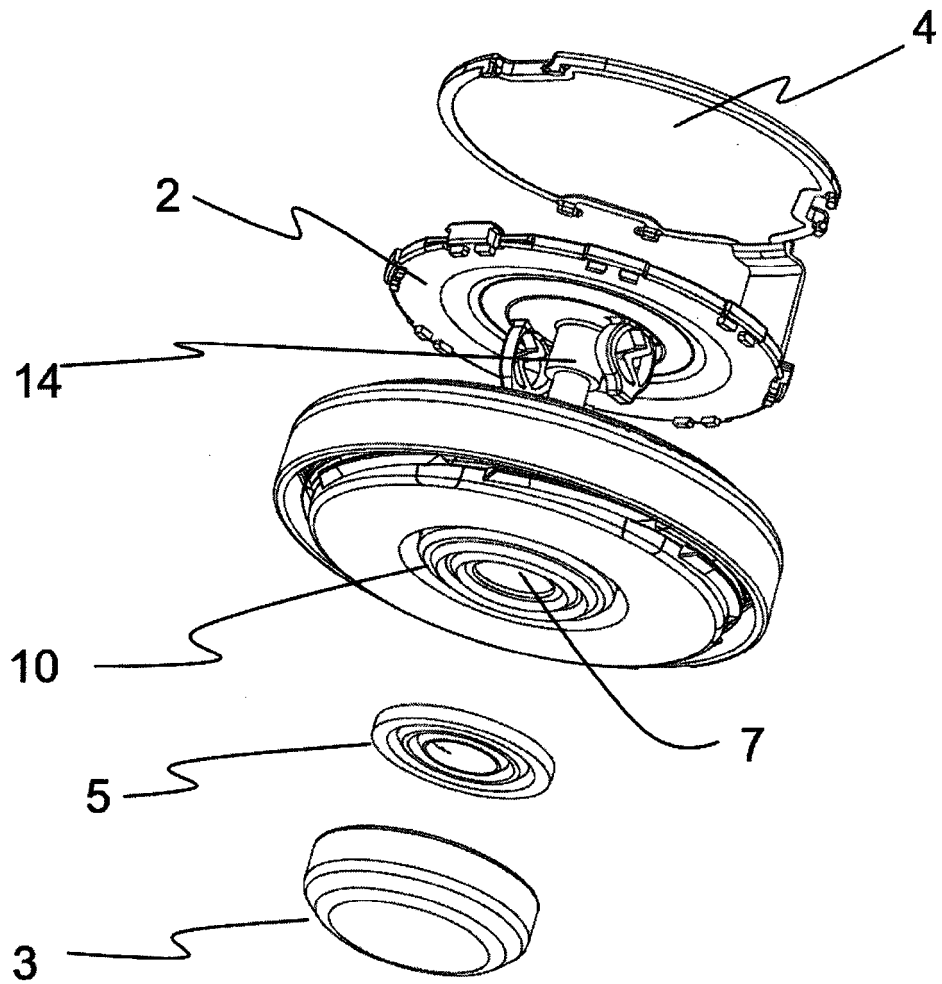


Fig. 2

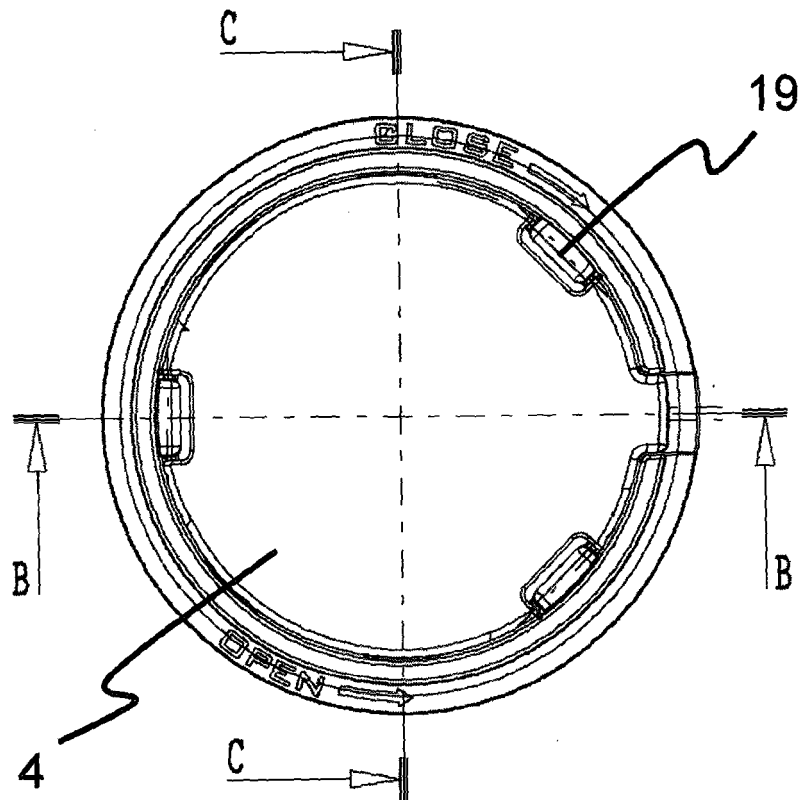


Fig. 3

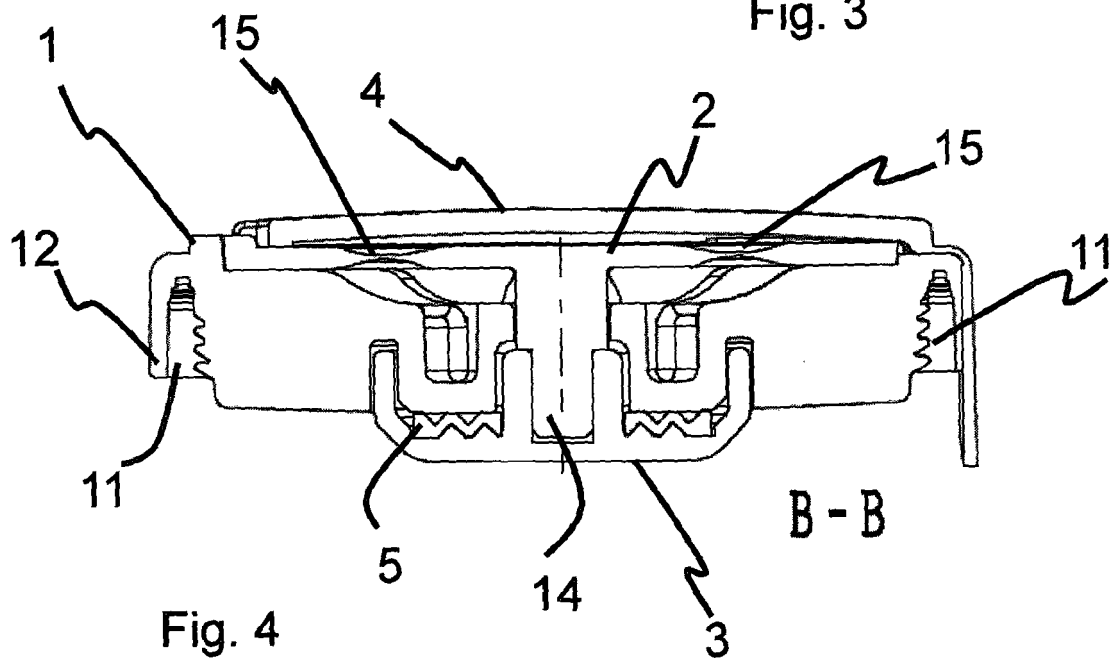


Fig. 4



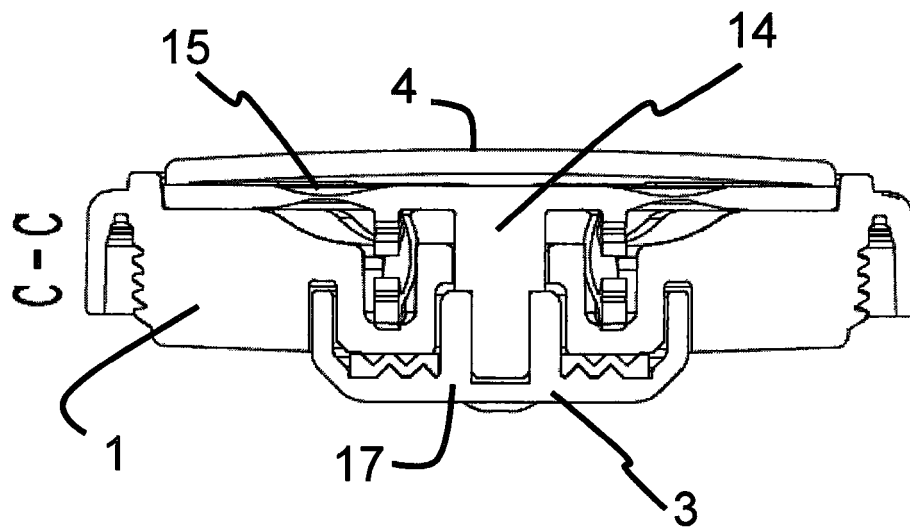


Fig. 5

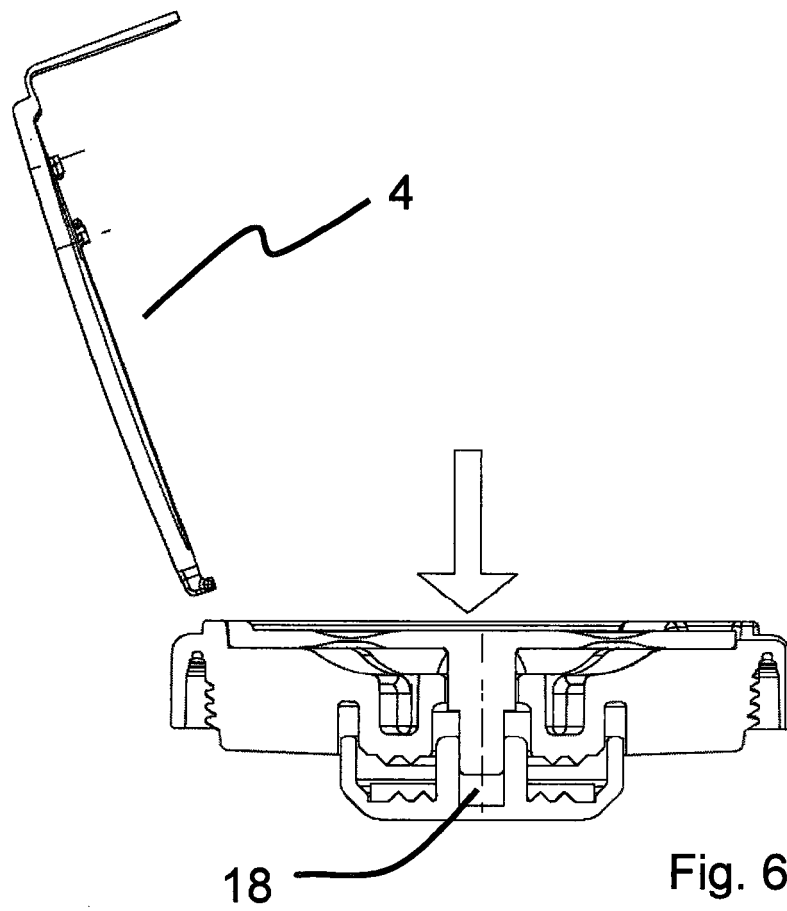
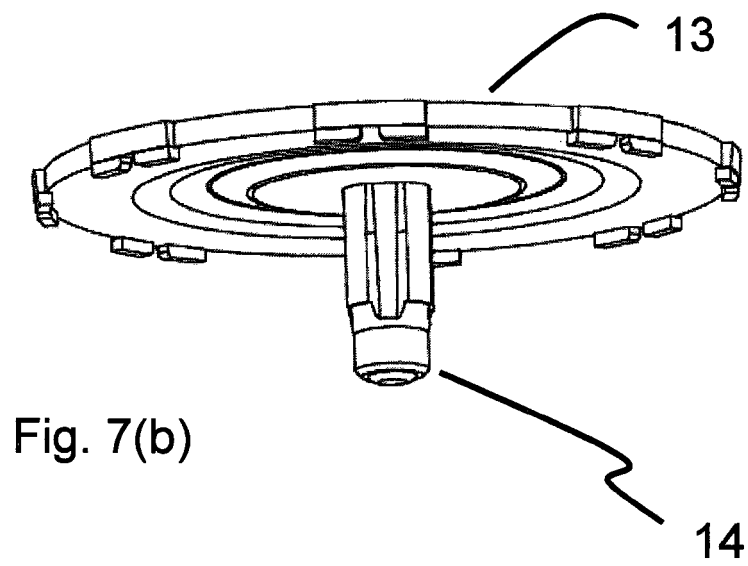
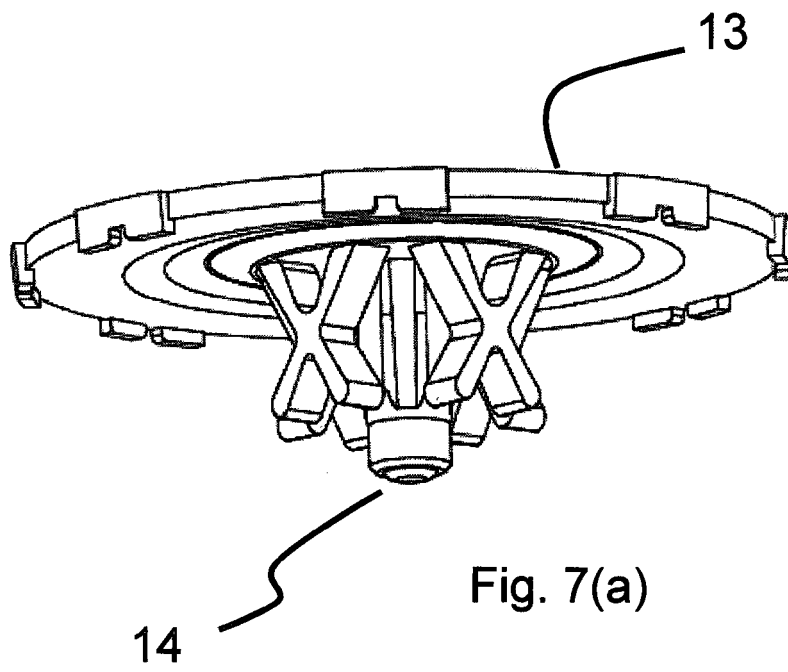


Fig. 6



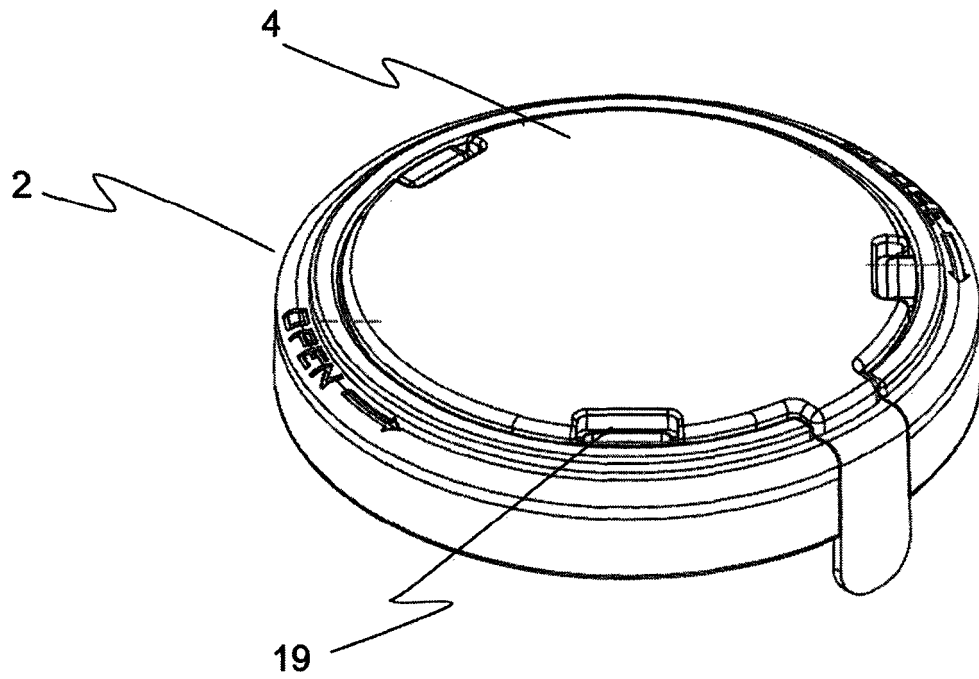


Fig. 8

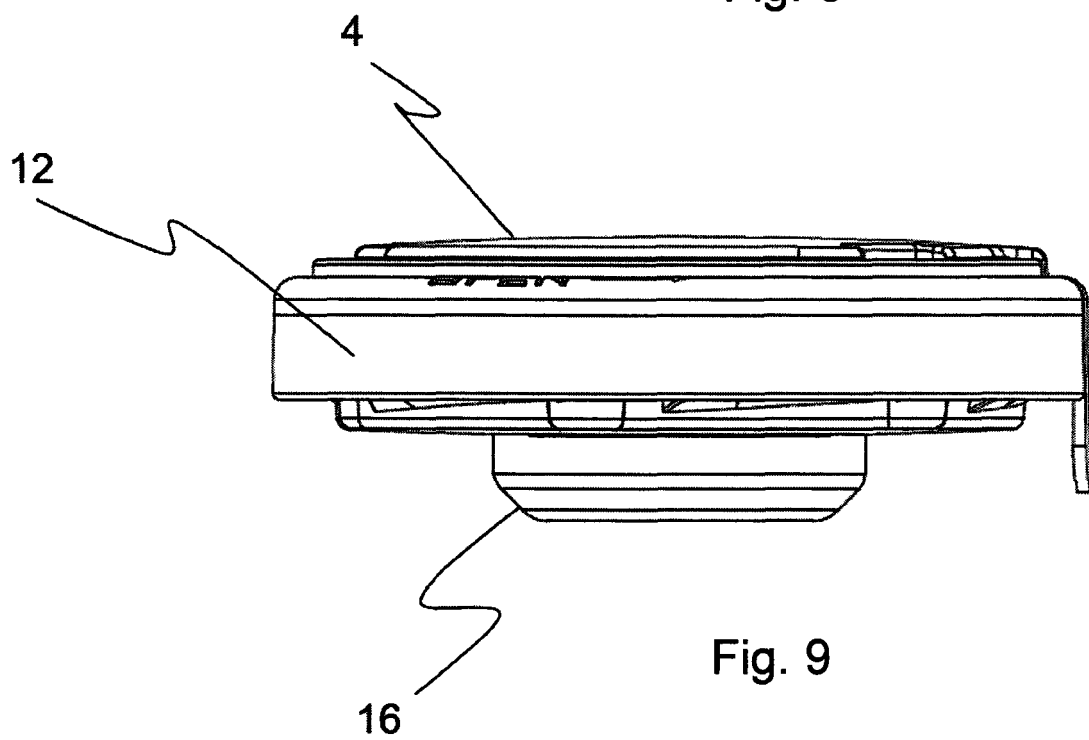


Fig. 9

**REFERENCES CITED IN THE DESCRIPTION**

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