

(19) **DANMARK**

(10) **DK/EP 2989019 T3**



(12)

## Oversættelse af europæisk patentskrift

Patent- og  
Varemærkestyrelsen

- 
- (51) Int.Cl.: **B 65 D 51/28 (2006.01)** **B 65 D 47/14 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2017-07-17**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2017-03-22**
- (86) Europæisk ansøgning nr.: **14719728.9**
- (86) Europæisk indleveringsdag: **2014-04-23**
- (87) Den europæiske ansøgnings publiceringsdag: **2016-03-02**
- (86) International ansøgning nr.: **EP2014058242**
- (87) Internationalt publikationsnr.: **WO2014173952**
- (30) Prioritet: **2013-04-23 DE 102013207348**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
- (73) Patenthaver: **Montfort Kunststofftechnik GmbH, , 6842 Koblach, Østrig**  
**Wilfinger, Roger Franz, Sonneggweg 1, 8135 Langnau am Albis, Schweiz**
- (72) Opfinder: **WILFINGER, Roger Franz, Sonneggweg 1, CH-8135 Langnau am Albis, Schweiz**  
**KESSLER, Hannes, Pfeller 9, A-6850 Dornbirn, Østrig**  
**SCHMID, Martin, Allmeinstrasse 12, 6832 Sulz, Østrig**
- (74) Fuldmægtig i Danmark: **Larsen & Birkeholm A/S Skandinavisk Patentbureau, Banegårdspladsen 1, 1570 København V, Danmark**
- (54) Benævnelse: **Beholderlukke**
- (56) Fremdragne publikationer:  
**US-A- 5 605 240**  
**US-A1- 2006 151 418**  
**US-A1- 2007 280 042**  
**US-A1- 2010 282 624**



## Container closure

## Description

5 The invention relates to a container closure having a lower closure part and a cap and also a mouthpiece and means for piercing a closure film, wherein a tamper-evident band is provided which ensures that the closure film can be pierced by the means only when the tamper-evident band has been removed, according to the features of the preamble of Patent Claim 1.

10

Container closures of this kind which are attached to, in particular screwed onto, containers are known in principle. The container is filled with a medium and the container closure is then arranged on the container, wherein the container closure ensures that the medium in the container is arranged in a sealed-off manner in  
15 respect of the external environment of the container. Particularly in the food sector, it is necessary for reasons of hygiene for it to be guaranteed that the container is sealed by means of a closure film in respect of its external environment. This closure film is only to be pierced, broken through, cut through or the like when a tamper-evident band of the container closure has been  
20 removed. Using this tamper-evident band, the container supplier is therefore able to ensure that the medium located in the container is safely housed in said container before the closure film is pierced, wherein the medium can only be removed from the container after the piercing of the closure film and then also exposed to the external environment of the container.

25

A container closure of this kind is known from EP 0 214 095 A2. This state of the art discloses a plastic closure for direct or indirect attachment to a container neck sealed directly or indirectly by a piercable membrane or film, wherein the closure exhibits a part with a pouring opening and a part closing the pouring opening,  
30 wherein at least part of the closure is held by securing means in respect of the upper edge of the container neck in an upper tamper-evident position and can only be moved into a deeper position of use after the securing means have been taken away or broken off and wherein on one of the parts, means for cutting through or

for indirectly or directly piercing the membrane or film closing the container neck are arranged.

This requires the container or, to be more precise, the neck thereof, to be sealed using the closure film and the container closure only to be screwed on or fitted thereafter. Depending on the intended use, this may be disadvantageous, as it is not always possible to seal the container neck with the closure film after it has been filled with the medium. However, the design of the different container closures in EP 0 214 095 A2 require the container neck always to be sealed using the closure film and moved axially or radially in the direction of the container to pierce the closure film of the container closure, so that the closure film can be pierced once the tamper-evident band has been removed. In addition, it is still necessary for the user to move, in particular to pivot, a cap of the container closure, in order to reach the access opening (mouthpiece).

15

US 2007/0280042 A1 discloses a container closure according to the preamble of Claim 1.

The problem addressed by the invention is therefore that of providing a container closure which not only avoids the disadvantages described above, but is also easy to produce and use.

20

This problem is solved by the features of Patent Claim 1.

It is provided according to the invention that the tamper-evident band is arranged between the lower closure part and the cap.

25

This makes it possible, once the container has been filled with any medium, for the container closure to be arranged with its lower closure part on the container, wherein the medium located in the container is sealed off in respect of external influences by means of the closure film. In this case, the closure film can be attached in a sealing manner to the container neck, more accurately to the encircling upper edge of the container neck. A preferred case, however, is that the

30

closure film is an integral part of the container closure, in particular of the lower closure part, and when the container closure is fitted to the container neck, the container opening is closed.

- 5 It should be seen as a further advantage that when the tamper-evident band is removed, a movement of the cap relative to the lower closure part is made possible at the same time. This relative movement can be seen in that the cap is completely removed from the lower closure part and can also be replaced thereon.
- 10 In order to guarantee a relative movement of the cap in respect of the lower closure part, according to the invention the encircling lower edge of the cap and the upper encircling edge of the lower closure part are connected in a loss-proof manner via at least one crosspiece. The at least one crosspiece guarantees that the cap remains on the lower closure part, but is arranged movably relative thereto on
- 15 said lower closure part. The relative movability may be a pivoting, but also an axial movement of the cap in respect of the lower closure part.

By means of the at least one crosspiece which is designed in the form of a film hinge according to the invention, both an axial movement of the cap in the

20 direction of the lower closure part and a pivoting of the cap away from the lower closure part is realized. Above all with the axial movement of the cap in the direction of the lower closure part, the means for piercing the closure film are advantageously activated, so that the usability of the container closure is thereby improved overall. This is because this container closure enables the means of

25 piercing the closure film by activating (pressing) the cap to be activated through removal of the tamper-evident band, wherein it is simultaneously guaranteed that following this activation the cap remains on the lower closure part and opens up the mouthpiece for extraction of the medium or closes it in a sealing manner.

- 30 The embodiment in which the encircling lower edge of the cap and the upper encircling edge of the lower closure part are connected to one another via at least one crosspiece is preferable. Alternative one-piece or multi-part designs are also conceivable, however. In other words, "connected" does not mean one-piece. The

cap may, for example, also be fixed via a ring or the like to the lower closure part.

As a development of the invention, the closure film is fitted to the lower encircling edge of the lower closure part and closes a space of the container closure which can be filled with a medium.

On the one hand, it is generally conceivable for the closure film to close the opening of the container. In addition or alternatively, it is conceivable for the closure film to be an integral part of the container closure, so that following the fitting of the container closure to the container using this closure film, the opening of the container is closed in a sealing manner in respect of external influences. In this case, it is also advantageously taken into account that the container closure itself forms a space that can be filled with a medium. As a rule, the medium in the container is another medium which is located in the space in the container closure. Depending on the intended use or medium, it is not impossible, however, for both media to be the same. Water is referred to as a non-limiting example of media of this kind which is located in the container, wherein the medium in the fillable space in the container closure may be a die, an active agent or the like.

It is important to point out at this stage that before the tamper-evident band is removed and the means for piercing the closure film activated, the two media are separated from one another by a single closure film (either fitted to the container or fitted to the container closure) or two closure films (one fitted to the container and the other fitted to the container closure).

Once the container has been filled with the one medium and the space in the container closure filled with the other medium, the container closure is fitted to the container, so that the two media do not come into contact with one another and are also arranged in a sealing manner in respect of the external environment. Moreover, it is ensured that the means for piercing the at least one closure film can be left unactivated until the tamper-evident band has been removed. Only following removal of the tamper-evident band is it possible for the means for

piercing the closure film to be activated, so that the two hitherto separate media can mix with one another.

A further special application is that a container can be carried by a user empty  
5 and unclosed and filled by the user with any medium (water, for example). Only after this is the container closure filled with the other medium fitted to the filled container, the tamper-evident band removed and the means for piercing the closure film of the container closure released by activating the cap. In this way, the water with which the container is filled can be mixed with the medium in the  
10 container closure, active substances for example, and then extracted (drunk) via the mouthpiece of the container closure. The container closure in this case is characterized by the advantage that a user can only carry one container, but several container closures with the same or different media. This means that a full container does not always have to be carried around, but it can also be filled while  
15 out and about with an easily available medium (in particular water) and the water mixed with the corresponding medium in the container closure, so that a substantial weight saving is thereby achieved for the user. Moreover, not only is there a weight saving, but the usability is increased, as only the tamper-evident band has to be removed and it is then possible to activate the means for piercing  
20 the closure film through an axial movement of the cap and, at the same time, to make the extraction opening (in particular the mouthpiece) accessible or close it through a movement, in this case a pivoting, of the cap.

As a development of the invention, means for piercing the closure film are  
25 designed in the form of a piercing spike which is mounted in an axially displaceable manner in the mouthpiece. This embodiment as a piercing spike has the advantage that it is correspondingly configured at its one end, so that the closure film is pierced quickly, easily and reliably following the axial displacement. Moreover, the axial displaceable arrangement of the piercing spike  
30 in the mouthpiece has the advantage that the extraction opening in the mouthpiece is opened up or closed by the piercing spike. Consequently, the axial displacement of the piercing spike in the mouthpiece in the one direction means that the opening in the mouthpiece is opened up and the medium extracted.

Activation of the piercing spike in the other direction causes the closure of the extraction opening. The cap can then be fixed on the lower closure part in a sealing manner, for example by clamping or latching. In this way, the mouthpiece is hygienically sealed from external influences. In another variant, the piercing  
5 spike is no longer pushed back.

As a development of the invention, the space between the encircling lower edge of the cap and the upper encircling cap of the lower closure part is at least half the size or greater than the movement path covered by the means, in particular the  
10 piercing spike, for piercing the closure film. The advantage of this is that prior to removal of the tamper-evident band, the means, in particular the piercing spike, are mounted in the container closure in such a manner that a piercing of the closure film when pressure is exerted on the cap is not yet possible. Only when the tamper-evident band is removed can the cap act on the means, in particular the  
15 piercing spike, through the application of pressure, so that in this way the closure film is reliably pierced to such an extent that the medium located in the space of the container closure can mix with the medium located in the container (or vice versa). It is thereby ensured that the distance is at least twice as great. At the same time, this means that the axial movement path of the cap in the direction of  
20 the lower closure part is likewise at least half as great, preferably exactly as great as the height of the tamper-evident band. The axial movement path of the cap in the direction of the lower closure part may, however, also be greater. In this case, it is guaranteed that the cap can be fixed on the lower closure part. This may, for example, be realized by a clamping overlap of the encircling lower edge of the cap and the upper encircling edge of the lower closure part. It is also conceivable  
25 that these two edges facing one another have latching means which are detachable, in order to pivot the cap relative to the lower closure part.

As a development of the invention, the lower closure part and the cap and also the  
30 tamper-evident band and the at least one crosspiece are formed in one piece. These parts are produced in one piece, for example using plastic injection-moulding. The advantage of this is that hygiene requirements can thereby be observed, in particular when the container closure has the fillable space which can



be filled with a medium and closed using the closure film. This means that the medium located in the space is then only accessible when the tamper-evident band has been removed.

- 5 As an alternative to this, on the one hand the lower closure part and the mouthpiece or, on the other hand the cap and also the at least one crosspiece may, in particular, be formed in one piece to simplify production thereof.

10 An exemplary embodiment of a container closure according to the invention is described in the following and explained with the help of the figures.

Figures 1 and 2 show the fundamental design of the container closure, wherein the application thereof is explained with the help of Figures 3 to 8.

- 15 It should be pointed out that the container closure described in the following can be regarded as an independent element which can be fitted to, in particular screwed onto, any container which is empty or full or provided with a closure film or not.

- 20 Figures 1 and 2 show, depicted in detail, a container closure 1 which has a cap 2 and also a mouthpiece 3 with an extraction opening for the medium. The means for piercing a closure film, in this case in the form of a piercing spike 4, are arranged in the mouthpiece 3. Furthermore, the container closure 1 has a lower closure part 5 with which the container closure 1 is fitted to the corresponding  
25 part of the container. Furthermore, a tamper-evident band 6 is present which can be removed and is located in a manner according to the invention between the lower closure part 5 and the cap 2. This means that in this state, the encircling lower edge of the cap 2 is held at a distance from the upper encircling edge of the lower closure part 5 by the tamper-evident band 6.

30

The lower closure part 5, either alone or along with the lower part of the mouthpiece 3, forms a fillable space which can be filled with a medium. Once this has happened, this space is sealed in respect of the outside environment by a

closure film. It is also conceivable for this fillable space not to be formed by the lower part of the mouthpiece 3 along with the lower closure part 5, but for only the lower part of the mouthpiece 3 to form this space that can be filled with the medium. In this case, the part of the lower part of the mouthpiece 3 pointing in the direction of the container is sealed by the closure film. In this case, the piercing spike 4 is located in a position closing the opening of the mouthpiece 3. It is thereby guaranteed that the space filled with the medium is closed in a sealing manner in respect of the outside environment, both by the piercing spike 4 and also by the closure film.

10

With the help of Figures 3 to 8, the design and function of the container closure 1 according to the invention is further explained.

Figure 3 shows the initial position of a completed container closure 1, before the tamper-evident band 6 has been removed. It can be seen here that the piercing spike 4 projects beyond the upper end region of the mouthpiece 3 by a certain amount. Since the tamper-evident band 6 has not yet been removed, it is not possible to move the cap 2 axially in the direction of the lower closure part 5. This means that the piercing spike 4 remains in such a position in the mouthpiece 3 on account of its structure that the opening thereof is closed by the piercing spike 4. Moreover, in the lower region of the lower closure part 5 which is fitted to an upper part of a container 7 shown in principle, the fillable space is closed using a closure film which is not shown.

Figure 4 shows the state of the container closure 1 once the tamper-evident band 6 has been removed. The tamper-evident band 6 is designed in such a manner that it is separated ("ripped") from the cap 2 and/or the lower closure part 5 complete as a one-piece part. It is important for a crosspiece 8 to remain after the tamper-evident band 6 has been removed, said crosspiece connecting the lower closure part 5 to the cap 2, so that the cap 2 remains an integral part of the container closure 1 in a loss-proof manner. The crosspiece 8 may be an independent constituent of the container closure 1 or also a constituent of the tamper-evident band 6, wherein it still connects the cap 2 to the lower closure part 5 following

removal of the tamper-evident band 6.

Figure 5 shows that pressure can be applied to the cap 2 in the pressing direction 9. By exerting pressure in the pressing direction 9, the cap 2 can be moved axially in the direction of the lower closure part 5 by the path X as a maximum. This is possible, as by removing the tamper-evident band 6, a distance Y between the lower edge of the cap 2 and the upper edge of the lower closure part 5 has been freed. In this case it is necessary, however, for the crosspiece 8 also to be configured in such a manner that when pressure is applied to the cap 2 in the pressing direction 9, for its part it allows a deformation which enables the cap 2 to move in the axial direction.

In this case, an important embodiment and function of the at least one crosspiece 8 is still to be referred to. This crosspiece 8, designed in the form of a film hinge, must ensure, on the one hand, that the cap 2 is arranged in a loss-proof manner on the lower closure part 5. At the same time, it must guarantee that when pressure is applied in the pressing direction 9, the cap 2 can be moved axially (or possibly also deviating slightly from the axial movement direction) in the direction of the lower closure part 5. Moreover, as is still to be explained, the cap 2 should be fixed with its lower edge on the upper edge of the closure part 5. The at least one crosspiece 8 and, in an advantageous manner, the lower edge of the cap 2 and/or the upper edge of the lower closure part 5 must therefore be adjusted to one another in such a manner that the cap 2 can not only be fixed to the lower closure part 5 in a clamping or latching manner, for example, but that the cap 2 is also guided in a centred manner in the direction of the lower closure part 5 or further guided in a centred manner in the direction of the lower closure part 5, if the lower edge of the cap 2 has already reached the upper edge of the lower closure part 5. In this way, it is advantageously possible for an off-centre axial movement of the cap 2 relative to the lower closure part 5 initially to be allowed. Only when the cap 2 has reached the lower closure part 5 and further pressure has been applied, can the cap 2 be permanently fixed to the lower closure part 5 in a detachable manner by clamping or latching.

Figure 6 shows this latter state in which, due to the embodiment, the at least one crosspiece 8 was moved and deformed in such a manner that it is thereby possible for the cap 2 to come into abutment with the lower closure part 5 detachably but fixedly. Moreover, this means that during the movement of the cap 2 from its position according to Figure 5 to its position according to Figure 6 relative to the lower closure part 5, the piercing spike 4 has been moved from its initial position into its functional position. This means that the piercing spike 4 has pierced the closure film with its correspondingly configured end region, which closure film has closed the encircling lower opening of the lower closure part. This is very clearly identifiable in Figure 6, in that the lower part of the piercing spike 4 has been moved in the direction of the container 7 and now projects therein.

In this position, it is now possible for the medium in the container 7 and the medium in the container closure 1, in particular in the lower closure part 5, to be able to mix with one another. This is made possible in a particularly advantageous manner by the geometry of the piercing spike 4 in its one end region (depicted in Figure 6). This geometry means that an opening of this kind is introduced into the closure film which makes it possible with the help of the media used for said media to mix in the desired manner.

20

In the state of the container closure 1 shown in Figure 6, it is possible for the media to be able to mix. However, it is not yet possible for the mixed medium to be extracted from the container 7 via the container closure 1.

25 This is only made possible by the pivoting of the cap 2 in the pivoting direction 10. In other words, the edges of the cap 2 and lower closure part 5 facing one another or else the overlapping regions thereof are lifted from one another but at the same time it is ensured that the cap 2 remains loss-proof on the lower closure part 5 via the at least one crosspiece 8. This makes the mouthpiece 3 accessible, which means that the medium located in the container 7 can be extracted (for example poured out or drunk). The piercing spike 4 and the mouthpiece 3 are embodied and adjusted to one another for this purpose, such that by pushing in the piercing spike 4 from its position shown in Figure 5 into the position shown in

30

the following figures, an opening in the mouthpiece 3 for extracting the medium is opened up.

Following extraction, in particular following the incomplete extraction of the medium from the container 7, the container closure 1 according to Figure 8 may be closed again, in that the cap 2 is moved against the pivoting direction 10 according to Figure 7 back into its position according to Figure 6. In this way, both in Figure 6 and also in Figure 8, the inside of the upper end region of the cap 2 and the upper side of the mouthpiece 3 and also the position of the cap 2 in respect of the lower closure part 5 are adjusted to one another in such a manner that the upper side of the mouthpiece 3 comes tightly into abutment with the inside of the upper side of the cap 2. It is thereby effectively avoided that the medium in the internal space which is formed by the axial inner surfaces of the cap 2 and of the axial surface of the mouthpiece 3 can move. In this case, apart from the described adjustment of the cap 2 in respect of the mouthpiece 3 and the lower closure part 5, an additional seal between the upper side of the mouthpiece 3 and the planar inner surface of the cap 2 can also be envisaged.

Based on the embodiment and mode of operation of the container closure 1 described in the sequence in Figures 3 to 8, the advantageous embodiment, easy usability and also the opening and reclosing thereof is very clearly evident.

List of reference numbers

1. Container closure
2. Cap
- 5 3. Mouthpiece
4. Piercing spike
5. Lower closure part
6. Tamper-evident band
7. Container
- 10 8. Crosspiece
9. Pressing direction
10. Pivoting direction

## BEHOLDERLUKKE

## Patentkrav

1. Beholderlukke (1) med en lukkeunderdel (5) og en kappe (2) samt et mundstykke (3) og midler (4) til at bryde gennem en lukkefolie, idet der er tilvejebragt en  
5 afrivningsslip (6), som sikrer, at lukkefolien først kan blive gennembrudt af midlerne, når afrivningsslippet (6) er blevet fjernet, og idet afrivningsslippet (6) er anbragt mellem lukkeunderdelen (5) og kappen (2), kendetegnet ved, at den omløbende nederste kant på kappen (2) og den øverste omløbende kant på lukkeunderdelen (5) er forbundet med hinanden via i det mindste et mellemstykke  
10 (8), og at det i det mindste ene mellemstykke (8) er udformet som filmhængsel.
2. Beholderlukke (1) ifølge krav 1, kendetegnet ved, at lukkefolien er placeret på den nederste omløbende kant på lukkeunderdelen (5) og lukker et rum, der kan påfyldes med et medie, på beholderlukkets (1).
3. Beholderlukke (1) ifølge et af de foregående krav, kendetegnet ved, at midlerne  
15 til gennembrydning af lukkefolien er udformet som stifter (4), som er lejret i mundstykket (3), så de kan forskydes aksialt.
4. Beholderlukke (1) ifølge et af de foregående krav, kendetegnet ved, at afstanden (Y), som fremkommer ved at fjerne afrivningsslippet (6), mellem den omløbende nederste kant på kappen (2) og den øverste omløbende kant på lukkeunderdelen (5)  
20 er i det mindste halvt så stor eller større end midlernes, navnlig stifternes (4), bevægelsesvej (X) til at bryde gennem lukkefolien.
5. Beholderlukke (1) ifølge krav 4, kendetegnet ved, at afstanden (X) er lig med afstanden (Y).
6. Beholderlukke (1) ifølge et af de foregående krav, kendetegnet ved, at  
25 lukkeunderdelen (5) og kappen (2) samt afrivningsslippet (6) og det i det mindste ene mellemstykke (8) er udformet i et stykke.
7. Beholderlukke (1) ifølge et af de foregående krav, kendetegnet ved, at lukkeunderdelen (5) og mundstykket (3) er udformet i et stykke.
8. Beholderlukke (1) ifølge et af de foregående krav, kendetegnet ved, at kappen  
30 (2) samt afrivningsslippet (6) og det i det mindste ene mellemstykke (8) er udformet i et stykke.

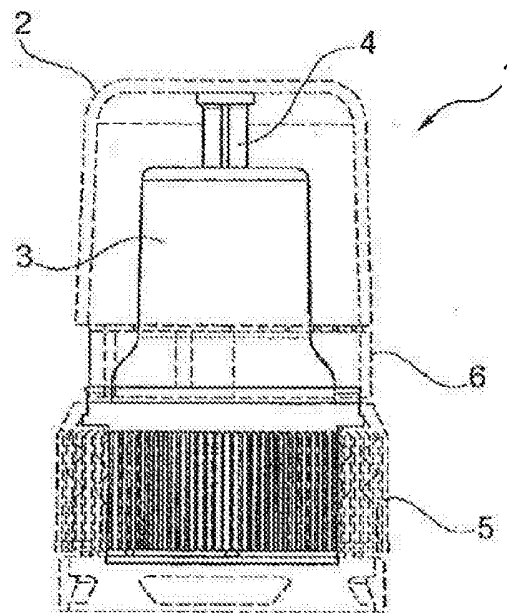


Fig. 1

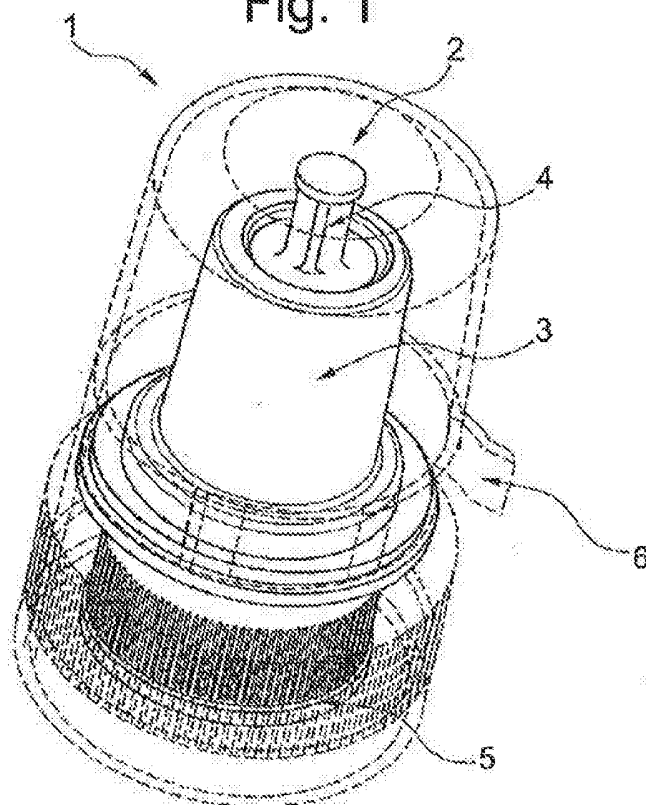


Fig. 2



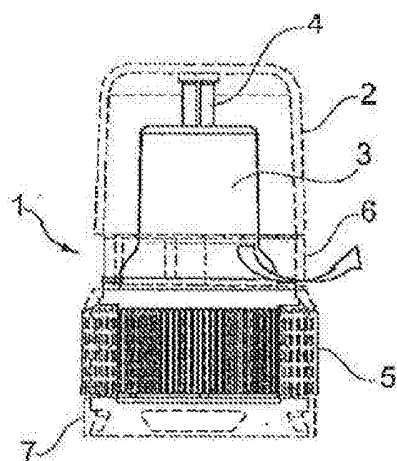


Fig. 3

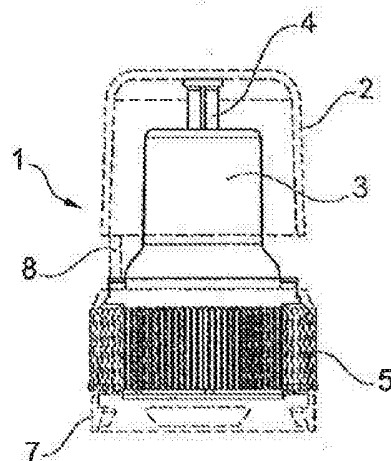


Fig. 4

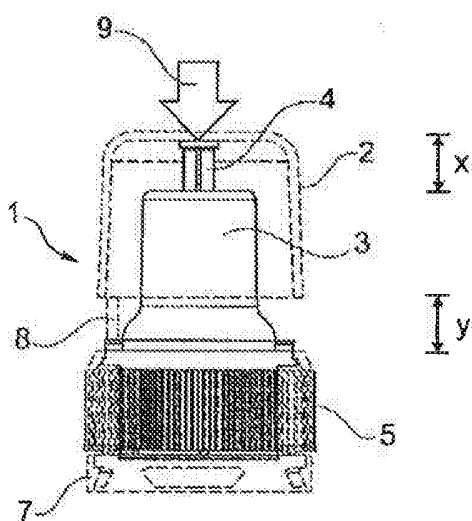


Fig. 5

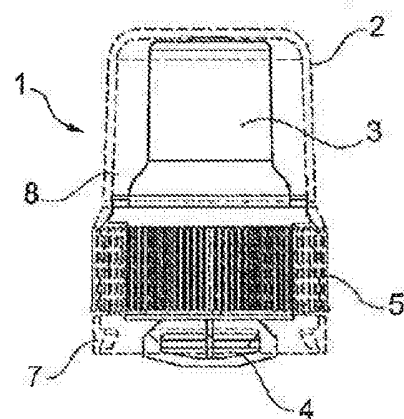


Fig. 6

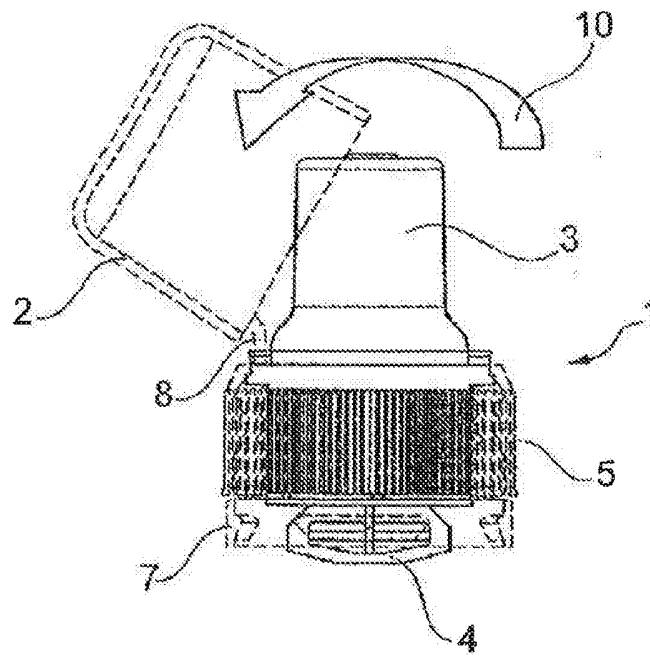


Fig. 7

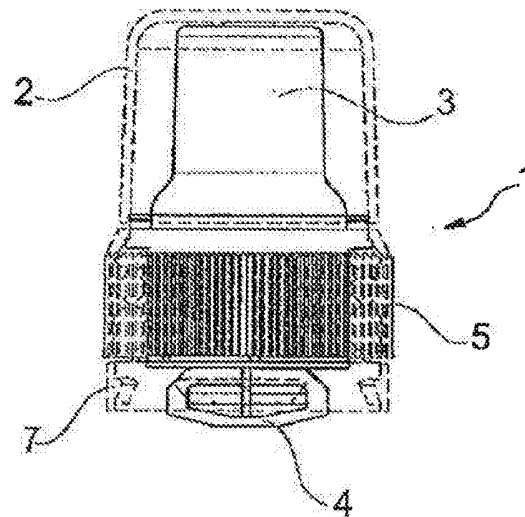


Fig. 8