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(54) CLOSURE DEVICE FOR CONTAINERS

(57) The present invention relates to a closure device for containers, comprising a base (1) and lips (2) made from one and the same elastically-behaving material, and an outlet opening (4), where the lips are in contact with one another in their standby position, closing said outlet opening (4), with the lips being placed on the base and projecting from said base, such that by applying pressure to the container, the base (1) bends, bulging outwards with respect to said container, so as to completely open said outlet opening (4), and by no longer applying pressure to the container, the base bends, bulging in the direction opposite the aforementioned direction, i.e., inwards with respect to the container, closing off at least the upper portion of said outlet opening. The fluid contained in the container is thereby protected against the air so as to prevent contamination/oxidation and thereby extend its life span, in addition to making it easier to be metered out.

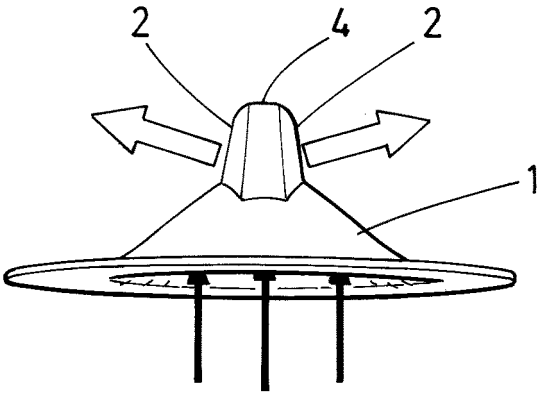

FIG.2c

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Description

[0001] The present invention relates to a closure device for containers that allows reducing and/or preventing the entry of air into the container even when the container has been opened for the first time.

Background of the Invention

[0002] Hermetically closed containers are commonly used as an element for containing beverages or foods so that they can maintain their quality and be preserved in perfect conditions until they are consumed.

[0003] A drawback with these containers is that they cannot be hermetically closed once they have been opened for the first time, such that the beverage or food inside the container must be consumed within a relative short time period, since it will otherwise spoil and cannot be consumed.

[0004] A typical example of this type of container is the so-called Tetra Brik®. In the past, when this commonly used container was opened for the first time a corner of it was cut, such that it was completely exposed to the entry of air into the container through this cut corner, so the contents of the container had to be consumed within a short time period.

[0005] To solve these drawbacks, containers of this type with an articulated closure element were conceived, such that a tab covering a port was removed to open the container for the first time, where said articulated closure element allowed closing the port.

[0006] Although this solution has allowed extending the time period for consuming the contents of the container, it has been found in practice that said time period may be insufficient, since this type of closure allows the entry of air into the container.

[0007] The inventor of the present application is the owner of patent application WO 2015/169988 A1, which describes a closure device for containers according to the preamble of claim 1, comprising a sealing element provided with an outlet, in which the walls of said outlet are in contact with one another, closing it.

[0008] The present invention tries to improve, *inter alia,* the fundamental and essential feature relative to the closure of the outlet, equipping the device with a base and lips having features such that they allow optimizing the advantage described above and expanded on throughout the present specification, maintaining the philosophy or concept of not making use of additional external elements for the actual closure of the outlet, with the subsequent advantages relating to a reduction in production costs, assembly costs, etc., and preventing problems for using it after it is opened, in summary, obtaining stronger assurances with the closure of the container with respect to those currently known and which in turn allow for easier and safer use for the end user or consumer when metering out the contents of the container.

[0009] Therefore, it is obvious that, with respect to the containers used today, there is a need to obtain a closure for containers that reduces to a greater extent, or even prevents, the entry of air into the container once it has been opened for the first time, such that the contents of the container maintain their original characteristics and/or properties for the longest amount of time possible, and it allows, for example for containers intended for the food sector, to at least extend the time period for consuming the product contained therein.

[0010] The proposed invention is therefore applicable to containers internally comprising fluids, primarily from the food sector, but even from others such as the industrial chemistry (including paints, lubricating oils), cosmetics (such as creams), pharmaceutical (such as eye drops or the like) or even agrochemical sectors, and therefore intended for different industrial sectors, which require being protected against contact with the air so as to prevent contamination/oxidation, and thereby extend their life span, in addition to being easy to meter out.

[0011] In said containers, the main body will be made of a material such that it can be deformed by applying a pressure or force from the outside on same, *inter alia* cardboard, plastic or derivatives thereof.

[0012] Furthermore, the objective of the present invention is also to include additional components for securing and sealing the base of the device, protecting the device against external agents and against piercing of the aluminum or cardboard seal that some containers include.

Description of the Invention

[0013] The closure device of the invention succeeds at solving the aforementioned drawbacks, while having other advantages that will be described below.

[0014] The closure device for containers according to the present invention comprises lips defining an outlet opening, which lips are in contact with one another in their standby position, closing said outlet opening, and said closure device is characterized in that the device also comprises a base made of an elastically-behaving material on which said lips are placed, projecting from said base, and where said lips are made of the same material as the base.

[0015] As a result of the elastic characteristics of the material of the base and the lips, once pressure is applied to the container to make the contents come out, at least the central portion of the base bends outwardly, making the lips move apart from one another, giving rise to said outlet opening.

[0016] The possibility of the elastically-behaving material of the base and of the lips being an elastomer selected from thermoplastic elastomer, thermoplastic rubber, silicone, latex, gum, rubber or combinations thereof, is contemplated.

[0017] The product will not come out of the container unless enough pressure is applied so that the base expands and an outlet path between the lips is thereby opened.

[0018] The base preferably sustains reversible deformations, in other words:

- by applying pressure to the container, the base bends, adopting the shape of an outward bulge with respect to the container, enabling the lips to move apart from one another and giving rise to the opening up of the outlet opening so that the contents of the container can flow out, and
- by reducing said pressure applied to the container, the base bends, adopting a bulging shape but in the direction opposite the aforementioned direction, i.e., inwards with respect to the container, giving rise to the inner walls of the lips coming into contact with one another in at least their upper portion, closing the outlet opening, blocking and/or reducing the entry of air in an attempt to maintain the vacuum therein.

[0019] The higher the vacuum that is established, the greater the pressure the lips will have due to the structural modification for firmer sealing of the container.

[0020] Where desirable, a detachable pull member can be placed on said lips, closing said outlet opening before the first use.

[0021] The possibility of the detachable pull member, the lips and the base being a single part, or of the pull member being a strip or sheet independent of the lips, is contemplated.

[0022] Preferably, the closure device for containers according to the present invention also comprises a frame that can be provided with tilting retaining flaps arranged above the base.

[0023] Where desirable, it may comprise a tab that allows lifting said tilting retaining flaps in order to activate them, aiding in the outward bulging of the base.

[0024] Furthermore, the closure device may comprise a support that may or may not be provided with at least one piercing flap below the base, where said support can be provided with a plurality of piercing projections capable of piercing the sealing sheet normally found in these containers, for example a sealing sheet of pre-cut cardboard, aluminum, etc., sealed onto the container before the first use, said sealing sheet being placed below the closure device.

[0025] The possibility of the closure device further comprising a sheet or film of an oxygen barrier material that is suitable for being placed below the base and provided with at least one opening and at least one flexible flap is contemplated in order to reduce and/or prevent, when needed, the entry of oxygen from the outside through the actual base or lips.

[0026] The closure device can further comprise a closure lid that can be independent of the frame or be connected to it. In this latter case, it can be articulated or movable on the frame, such that the entire assembly of the closure device of the present invention can be covered and protected against external agents.

Brief Description of the Drawings

[0027] To better understand the preceding description, drawings in which several embodiments are schematically depicted solely by way of non-limiting example are attached hereto.

Figure 1 is an enlarged perspective view of the closure device for a container according to the present invention in the standby position.

Figure 1 a is an enlarged side perspective view of Figure 1.

Figures 2a to 2d are perspective views of the outward bulging process of the base with respect to the container, causing the outlet opening to open.

Figure 2e is an enlarged section view of the closure device according to the present invention with its base bent outwardly with respect to the container, causing the outlet opening to open.

Figures 3a to 3b are bottom perspective views of the inward bulging process of the base with respect to the container, in which it can be seen how the lower portion of the outlet opening opens and the upper portion thereof closes.

Figures 3c and 3d are top perspective views of Figures 3a and 3b, with the closure of the upper portion of the outlet opening being observed in greater detail.

Figure 3e is an enlarged section view of the closure device for a container according to the present invention, with its base being bent inwards with respect to the container, causing the upper portion of the outlet opening to close.

Figure 4 is a side perspective view of the closure device for containers according to the present invention, comprising a first embodiment of the detachable pull member.

Figure 5 is a top perspective view of the closure device for containers according to the present invention relative to a second embodiment of the detachable pull member.

Figure 6 is a perspective view of a frame according to a first embodiment, which can be used in the closure device according to the present invention.

Figure 6a is a perspective view of a second embodiment of the frame shown in Figure 6, with retaining flaps, which can be used in the closure device according to the present invention.

Figure 7 is a perspective view of a first embodiment of a support with a plurality of piercing flaps together with the projections which can be used in the closure device according to the present invention.

Figure 7a is a perspective view of a second embodiment of the support in this case with a single piercing flap together with the projections which can be used in the closure device according to the present invention.

Figure 8 is a depiction of the direction in which pressure must be applied to the lips for piercing the seal-

ing sheet that these containers normally incorporate.

Figure 9 shows a section of the closure device according to the present invention in which the pull member is removed, with the complete device including the first frame with a lid, in this case a flip-top lid, the frame with the retaining flaps and the support with the piercing flaps.

Figure 10 is a perspective view of the support with the piercing flaps, the frame and the lid.

Figure 11 is a view referring to Figure 10 but comprising the closure device arranged on the support, with the frame already being located on the base and with the lid being seen before being flipped down in order to completely close the assembly.

Figures 12 and 13 are perspective views of the closure device according to the present invention without the pull member, with the closure device and including the frame with a sliding lid protecting the lips.

Figure 14 is a perspective view of a sheet suitable for being arranged below the base of the closure device in order to reduce or prevent, when needed, the possible entry of oxygen from the outside through the actual base.

Description of a Preferred Embodiment

[0028] The closure device for containers according to the present invention comprises a base 1 which must entirely cover the outlet port of the container from either the inside or the outside thereof, and lips 2 preferably projecting from the center of the base 1 shown in Figures 1 and 1a. There can be placed on the lips 2 a pull member 3 suitable for being partially or completely removed for the first use, in view of the embodiments described in detail below (Figures 4 and 5).

[0029] Said lips 2 define an outlet opening 4 that is virtually indiscernible and extends from the lower face of the base 1 passing through the inner face to the upper face of the lips 2. The outlet opening 4 preferably surpasses the upper half of the pull member 3 without actually going through it when said pull member is present.

[0030] The outlet opening 4 extends vertically through the inside of the lips 2, preferably without reaching the inner side walls thereof.

[0031] The base 1 completely covers the outlet of the deformable container and is sealed to it either directly or by means of a support 12, which is preferably made of a material other than the material of the base. The base 1 is made of an elastic material, such as an elastomer, just like the lips 2.

[0032] The dimensions of the base 1 may vary in diameter, thickness or hardness.

[0033] The diameter or width of the base 1 will be comprised between 5 and 60 mm, according to the dimensions of the outlet of the container. Preferably it will be 25 $\pm$ 10 mm, for example, for applying the closure device in food containers.

[0034] If the base 1 is very thin, the resistance to pressure will be lower and it will allow greater bending than if it is thick, since the thickness and the hardness of the material also limit its yield point. Therefore, the thickness of the base will be comprised between 0.5 and 4 mm. It will preferably be about 1 $\pm$ 0.5 mm for applying the closure device in food containers.

[0035] Once the base 1 has been fixed to the container and with there being fluid or air inside said container, an increase in internal pressure will make it bend outwards with respect to the container. If there is negative pressure inside the container, the base 1 bends in the opposite direction, i.e., inwards with respect to the container.

[0036] The lips 2 are preferably made of the same material as the base 1 and project from it preferably from the center thereof.

[0037] The function of the lips 2 is to prevent the flow in the direction of the outlet port. When the base 1 bends inwards with respect to the container, this bending modifies the general structure of the lips 2:

If pressure is applied to the container, said pressure causes a bending of the base, which adopts an outward bulging (Figures 2a to 2e), such that the deformation of the base allows the lips 2 to completely separate from one another and the outlet opening 4 to open, allowing the contents of the container to flow out.

[0038] In contrast, if pressure is reduced or is no longer applied to the container, the base 1 bends, bulging in the direction opposite the aforementioned direction (Figures 3a to 3e), i.e., inwards with respect to the container, where the outlet opening 4 can open in the lower portion thereof due to expansion (Figure 3e), but with the pressure in the upper portion increasing due to structural deformation, the outlet opening 4 thereby being sealed and preventing the fluid from exiting, air from entering and maintaining negative pressure inside it.

[0039] The height of the lips 2 together with the elasticity of the base 1 and the length of the outlet opening 4 determine the separating distance of the lips 2 when applying pressure or vacuum. If the height is small, the sealing margin of the lips 2 is reduced due to the separation thereof when the base 1, and accordingly, the outlet opening 4, expand, and in contrast, if the height is excessive, it forces the base 1 to use material having higher elasticity to get the outlet opening 4 to opening when pressure is applied.

[0040] Therefore, the height of the lips 2 in the embodiment will be comprised between 1 and 20 mm, and the length of the outlet opening 4 will in turn be comprised between 0.9 and 19.9 mm.

[0041] In an example for applying the closure device in food containers, the height of the lips 2 is preferably 6 $\pm$ 2 mm and the length of the outlet opening 4 is preferably in the order of 5/6 of the length of the lips 2.

[0042] The length of the lips 2 determines the size of the outlet opening 4. The longer the length of the lips 2, the longer the outlet opening 4 can be, thus determining the size of the outlet opening when it is opened, and the

greater the flow rate, always taking the height into account so that the lips 2 do not collapse inwards.

[0043] Nevertheless, the length of the lips 2 in the embodiment will be comprised between 1/8 and 6/8 of the diameter of the base. In an example for applying the closure device in food containers, the length of the lips 2 is preferably 2/3 of the diameter of the base, i.e., in the order of 20 ± 10 mm.

[0044] The thickness of the lips 2 is directly linked to the elastic characteristics of the material. If the lips 2 are thick, they generate greater rigidity, which increases the effect of the structural modification when the base 1 is bent.

[0045] Therefore the thickness of the lips 2 in the embodiment will be comprised between 1 and 7 mm. In an example of applying the closure device in food containers, it is preferably 4 ± 1.5 mm. The inner walls of the lips 2 demarcate the outlet 4 and must be kept in continuous contact so that fluid cannot come out, where it is preferable for the entire surface of the inner walls of the lips to be in contact with one another, but where contact thereof can be limited to just the upper portion.

[0046] The outlet opening 4 may define a section in a straight line or it can be cross-shaped, asterisk-shaped, star-shaped and the like, but where the inner walls are kept in contact with one another.

[0047] As indicated, the pull member 3 is optional and is completely or partially attached to the upper face of the lips 2, always keeping the outlet opening 4 sealed. A function of said pull member 3 is to keep the outlet opening 4 sealed until it is removed, where it is furthermore an indicator and seal of guarantee, and it also provides the user with a space to apply pressure when it is needed for piercing the sealing sheet of the container, if there is one, as can be seen in Figure 8.

[0048] Said pull member 3 is at least partially removed and/or detached from the lips 2 before the first use.

[0049] In a first embodiment of the pull member according to Figure 4, the lips 2, the pull member 3 and the base 1 are a single part and comprise an elastomeric material, preferably thermoplastic elastomer, thermoplastic rubber, silicone, latex, gum, rubber or combinations thereof, i.e., materials the qualities of which allow contact with or preservation of the contents of the container, and furthermore the elasticity of which is chosen depending on the density of the contents of the container. In this example, the pull member 3 is completely removed and is not placed on the lips 2 again.

[0050] In a second embodiment of the pull member 3 according to Figure 5, the pull member 3 can be, for example, a strip or sheet that is preferably metalized. The pull member 3 is suitable for at least partially covering, on one hand, the upper face of the lips 2 and, on the other hand, one of the side faces thereof, allowing the user to completely remove it or detach it from the lips 2 by pulling on the end of the pull member 3.

[0051] In either of the two aforementioned embodiments, when the pull member 3 is removed, which pull member 3 can be taken out, torn, released or peeled off the lips 2, the outlet opening 4 becomes visible, the closure device being ready for use, waiting for pressure or a vacuum in order to perform its function.

[0052] Even with the presence or absence of the mentioned pull member 3, the closure device for containers may comprise a lid 9 which covers the lips 2 at least in the upper portion, as indicated below, and can be removed by the user right before opening it.

[0053] In a first embodiment, the frame 5 shown in Figure 6 is suitable for holding the base 1 at the upper portion.

[0054] In a second embodiment shown in Figure 6a, the mentioned frame 5 may comprise tilting flaps 7, the function of which is to limit or reduce the space in which base 1 can act. The flaps 7 are also arranged on the base 1 and have the function of preventing the contents from accidentally coming out without having applied pressure to the container. It is thereby possible, also with a tab 8, to actuate the flaps 7 and voluntarily release the outward expansion of the base 1 by pressing said tab 8 like a spring. Said flaps 7 comprise therebetween a suitable opening 11 so as to allow the lips 2 to project therethrough.

[0055] The lid 9 mentioned above can be independent of the frame 5 in order to be completely removed by being extracted by pressure or by screwing it off.

[0056] In a first embodiment, the lid 9 is attached to the first frame 5 by means of an articulation, such as the hinge, for example, shown in Figures 8 and 9 or by means of a flexible element, as can be seen in the example shown in Figures 10 and 11.

[0057] Figure 11 furthermore shows how the support 12 is arranged below the base 1, with the frame 5 arranged on it and with the lid 9 flipped down on the frame 5.

[0058] In another embodiment according to Figures 12 and 13, the lid 9 is also linked to the frame 5, but in this case it comprises means that allow it to be moved longitudinally over the lips 2 so as to allow or prohibit access to the upper face of the lips 2. To that end, the lid 9 comprises, on its outer faces, respective projections 13 and grooves 14 suitable for moving longitudinally relative to respective projections 13a and grooves 14a made in the inner walls of respective partitions 15 emerging from the frame 5.

[0059] Therefore, in any of the indicated embodiments, the frame 5 aids in attaching the closure device to the container, and the lid 9 protects the closure device from coming into unwanted contact with external agents. Said lid 9 can also be used to apply the first pressure for opening the sealing sheet of the container.

[0060] The invention may comprise the support 12 provided with at least one piercing flap 10 (Figure 7 with several flaps and Figure 7a with one flap). Said support 12 is arranged below the base 1, such that the at least one piercing flap 10 also prevents the base 1 from bending inwards too much when there is a vacuum in the container.

[0061] Furthermore, these piercing flaps 10 (Figure 7 and 7a) allow the sealing sheet of the container, whether it is said aluminum, cardboard or plastic seal, that is previously marked, microperforated or die-cut, to be pierced when pressure is applied by means of piercing projections 6 located on the lower face of the mentioned piercing flaps 10.

[0062] Once they have performed function of piercing the seal, these piercing flaps 10 also prevent the material resulting from this seal of guarantee from being able to plug up the outlet of the container, having to that end on the inner face of the support 12 at least one stop 16, preferably two, having inclined walls that allow the lower passage of the at least one piercing flap 10 but prevent it from returning to its starting or standby position, as can be seen in greater detail in Figure 7a, where it has already gone past the mentioned stops 16.

[0063] In an embodiment shown in Figure 14, the support 12 on which there is arranged a sheet 17 of an oxygen barrier material, suitable for being placed below the base 1, can be seen. In this example, the sheet 17 is provided with two openings 18 (ports or grooves) and respective flexible flaps 19 projecting laterally from said sheet 17. Therefore, in order to reduce and/or prevent the possible entry of oxygen from the outside through the actual material of the lips 2 or base 1, the flaps 19 are arranged folded between the base 1 and the sheet 17, closing off the openings 18. When the container is pressed and the base 1 experiences the outward bulging, the content flows through the openings 18, pushing the flaps 19, causing them to lift up without obstructing the outlet opening 4. In the reverse process, i.e., when the base 1 experiences inward bulging with respect to the container, the flaps 19, which are pushed by the base 1, return to their initial position closing off the openings 18.

[0064] The preferred dimensions of the sheet 17 coincide with those of the base, where it may vary by ± 2 mm, and the oxygen barrier material of the mentioned sheet 17 may in turn be selected from a metalized and plasticized plastic, thermoplastic polymer, water soluble synthetic polymer or plastic film having reduce thickness with a high degree of impermeability and a high degree of leaktightness.

[0065] Despite having referred to a specific embodiment of the invention, it is obvious for a person skilled in the art that the closure device that has been described is susceptible to a number of variations and modifications, and that all the mentioned details can be replaced with other technically equivalent details without departing from the scope of protection defined by the attached claims.

Claims

1. Closure device for containers, comprising lips (2) and an outlet opening (4), which lips (2) are in contact with one another in their standby position, closing said outlet opening (4), **characterized in that** the device also comprises a base (1) made of an elastically-behaving material on which said lips (2) are placed, projecting from said base (1), and where said lips (2) are made of the same material as the base (1), such that by applying pressure to the container, the base (1) bends, bulging outwards with respect to said container so as to completely open said outlet opening (4), and by no longer applying pressure to the container, the base (1) bends, bulging in the direction opposite the aforementioned direction, i.e., inwards with respect to the container, closing off at least the upper portion of said outlet opening (4).

2. Closure device for containers according to claim 1, wherein placed on said lips (2) there is an at least partially removable and/or detachable pull member (3) closing said outlet opening (4) before the first use.

3. Closure device for containers according to claim 2, wherein the pull member (3) is a metalized strip or sheet at least partially covering, on one hand, the upper face of the lips (2) and, on the other hand, one of the side faces of said lips (2).

4. Closure device for containers according to claim 2, wherein said lips (2), the base (1) and the removable pull member (3) are made from a single part.

5. Closure device for containers according to any of the preceding claims, wherein said device also comprises a frame (5) arranged on the base (1), fixing the same.

6. Closure device for containers according to claim 5, wherein the frame (5) is provided with tilting flaps (7) with an opening (11) between said tilting flaps (7) so as to allow the lips (2) to project therethrough.

7. Closure device for containers according to claim 6, wherein said frame (5) also comprises a tab (8) for lifting up said tilting flaps (7).

8. Closure device for containers according to any of claims 5 to 7, wherein said frame (5) also comprises a closure lid (9).

9. Closure device for containers according to claim 8, wherein the lid (9) comprises means suitable for allowing longitudinal movement of said lid (9) over the lips (2).

10. Closure device for containers according to claim 9, wherein said movement means consist of projections (13) and grooves (14) made on the outer faces of the lid (9) and respective projections (13a) and grooves (14a) made in the inner walls of respective partitions (15) emerging from the frame (5).

11. Closure device for containers according to any of the preceding claims, wherein said device also comprises a support (12) with at least one piercing flap (10) placed below the base (1) at least partially limiting the bulging of the base (1) inwards with respect to the container and comprising a plurality of piercing projections (6).

12. Closure device for containers according to claim 11, wherein the support (12) comprises on its inner face at least one stop (16) having inclined walls such that they allow the lower passage of the at least one piercing flap (10) and prevent it from returning to its initial position.

13. Closure device for containers according to any of the preceding claims, wherein the lips (2) have a height comprised between 1 to 20 mm.

14. Closure device for containers according to any of the preceding claims, wherein the outlet opening (4) has a length comprised between 0.9 to 19.9 mm.

15. Closure device for containers according to any of the preceding claims, wherein the elastically-behaving material of the base (1) and of the lips (2) is an elastomer selected from thermoplastic elastomer, thermoplastic rubber, silicone, latex, gum, rubber or combinations thereof.

16. Closure device for containers according to any of the preceding claims, wherein said device comprises a sheet (17) below the base (1), said sheet (17) being provided with at least one opening (18) and at least one flexible flap (19).

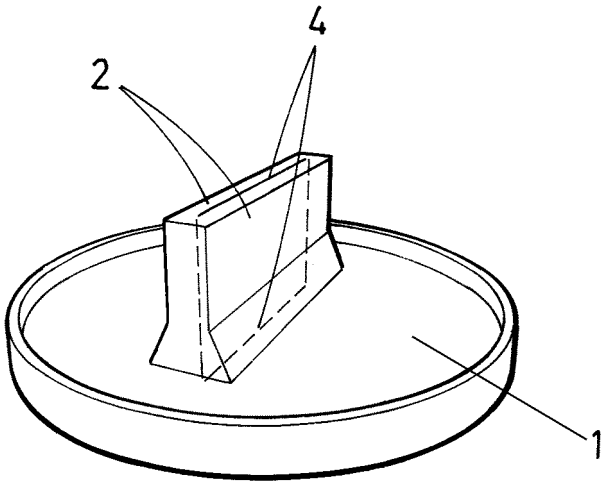

FIG.1

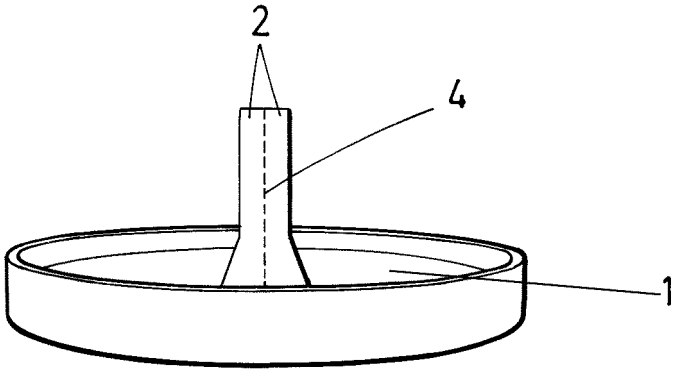

FIG.1a

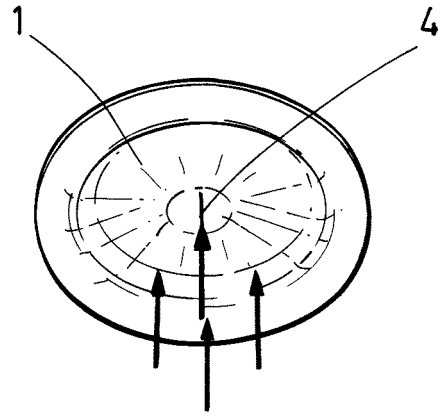

FIG.2a

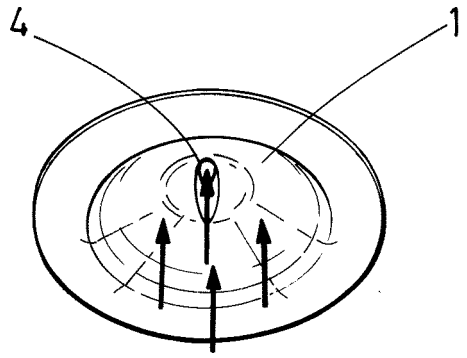

FIG.2b

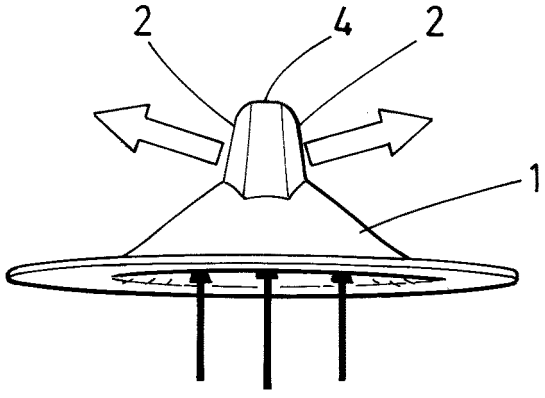

FIG.2c

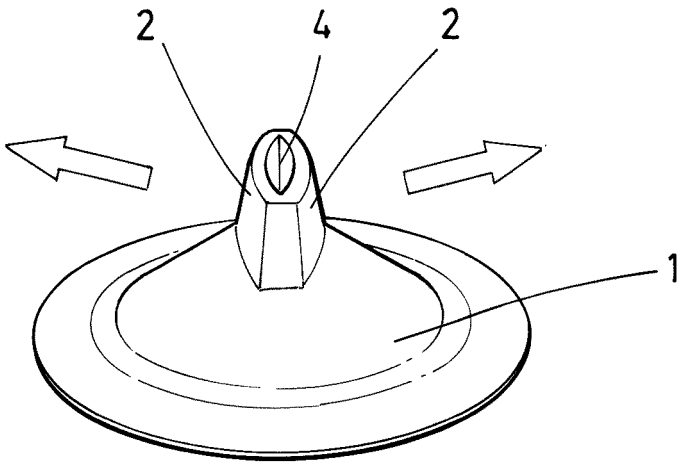

FIG.2d

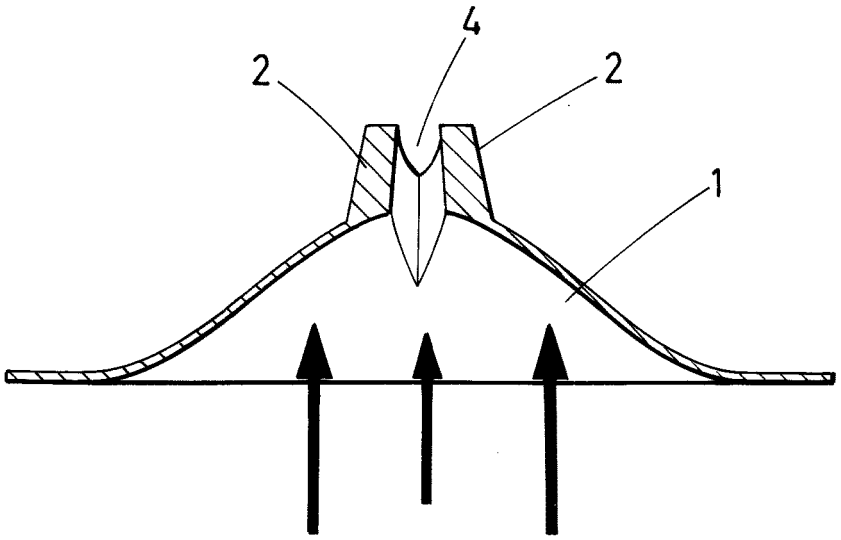

FIG.2e

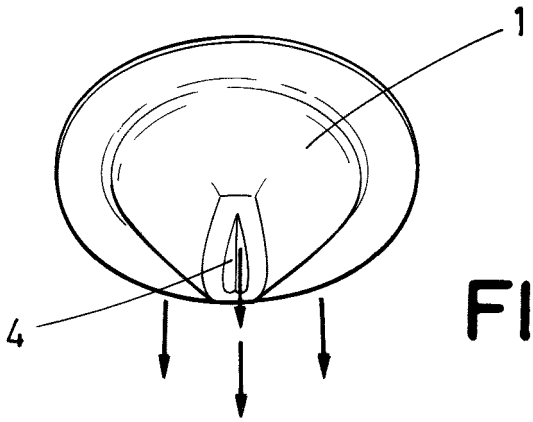

FIG.3a

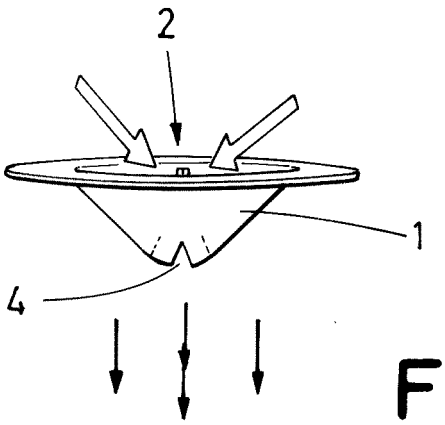

FIG.3b

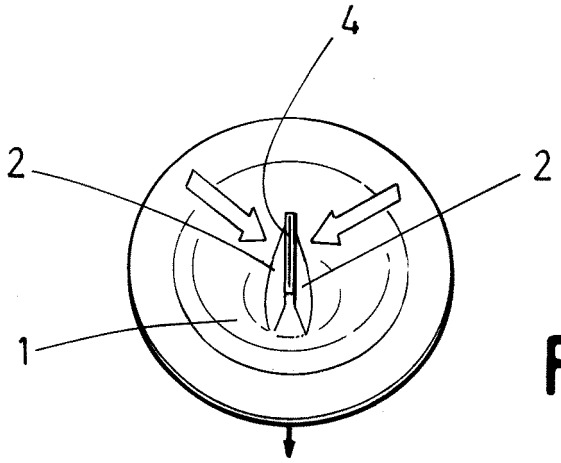

FIG.3c

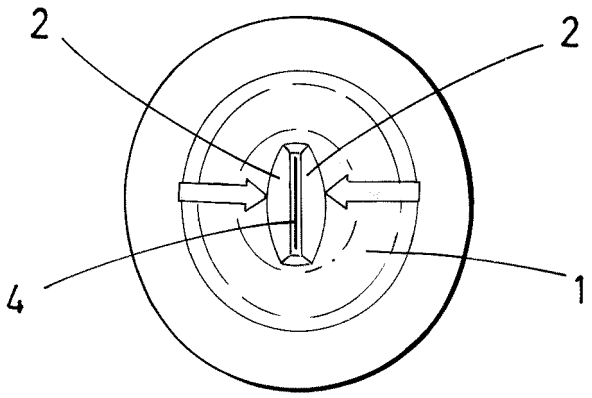

FIG. 3d

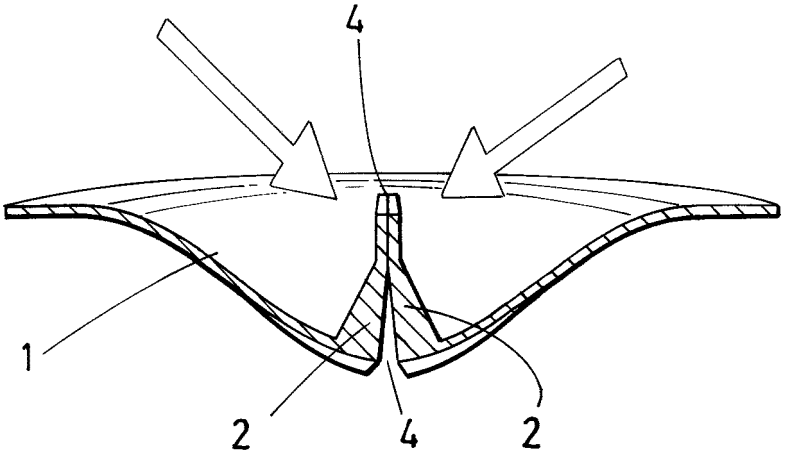

FIG. 3e

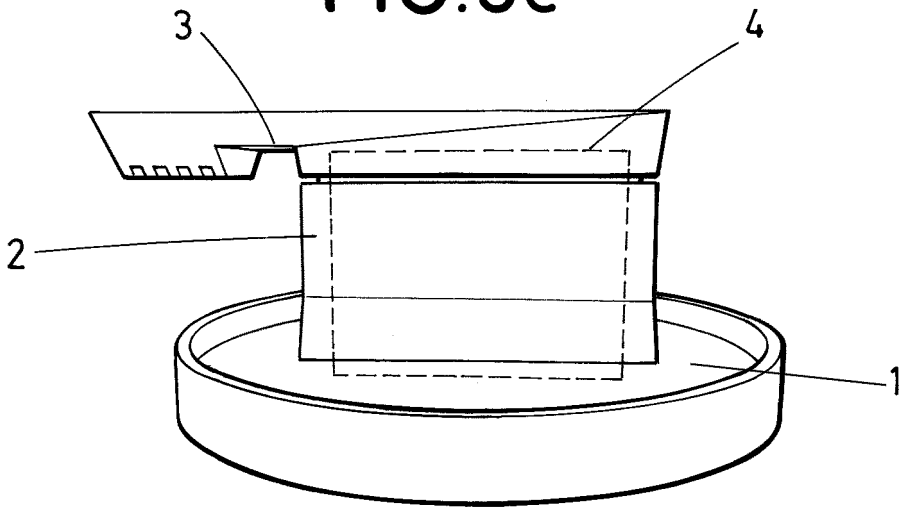

FIG. 4

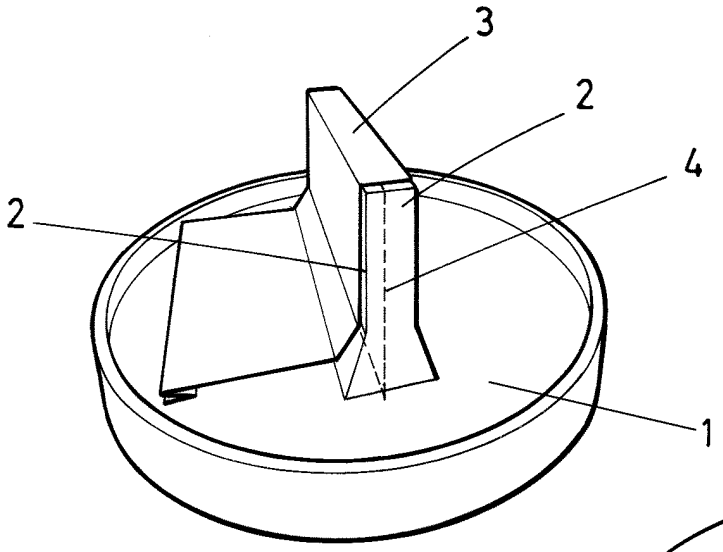

FIG.5

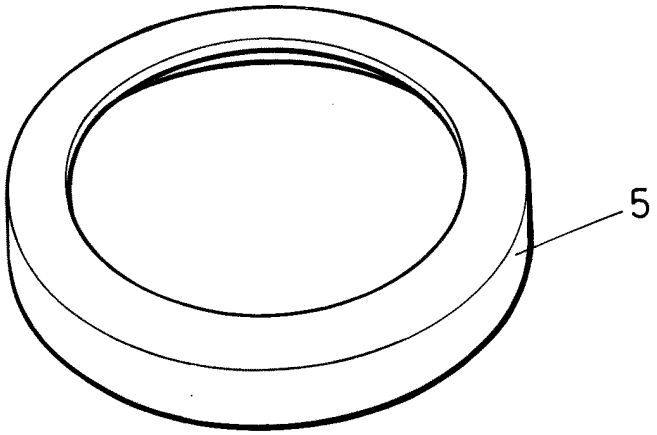

FIG.6

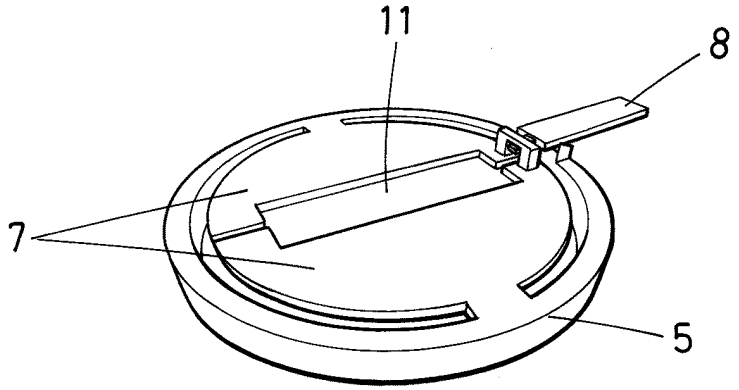

FIG.6a

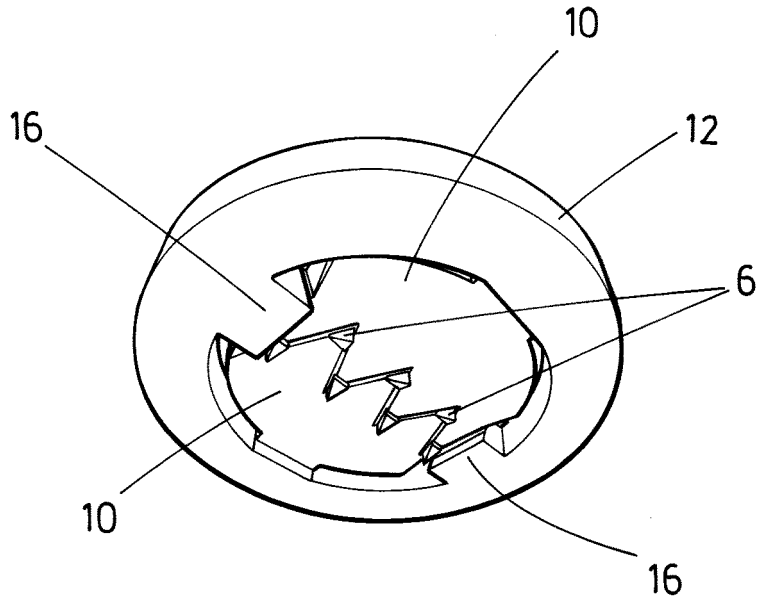

FIG.7

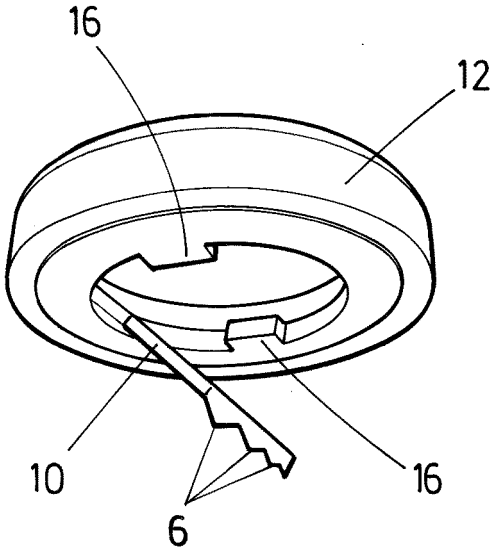

FIG.7a

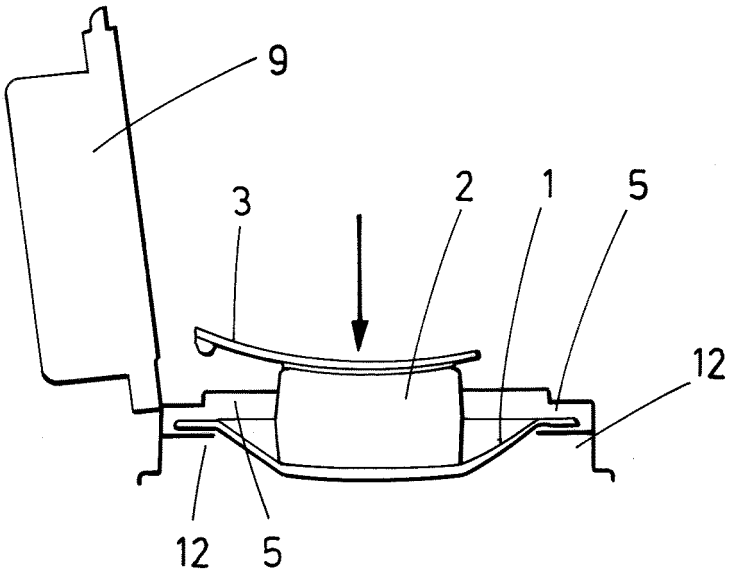

FIG.8

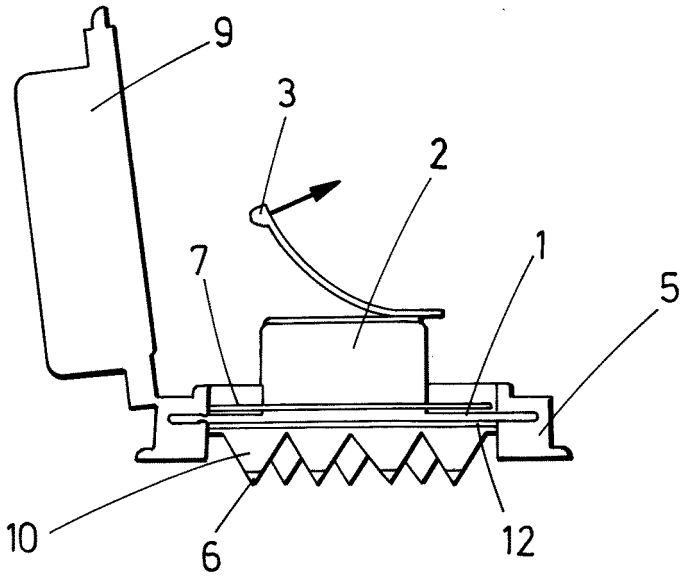

FIG.9

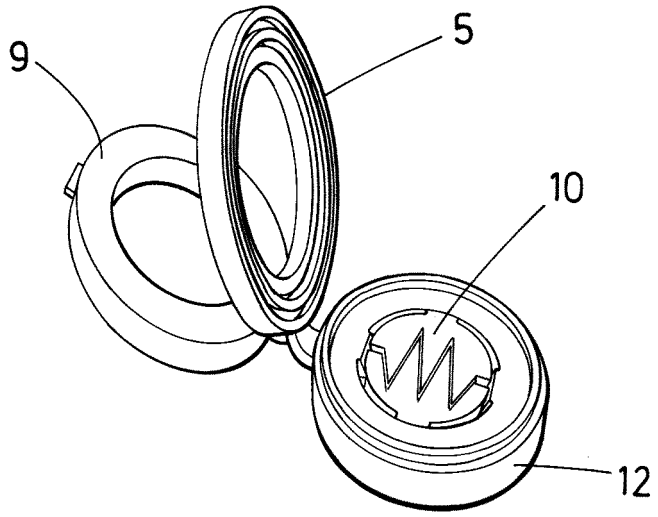

FIG.10

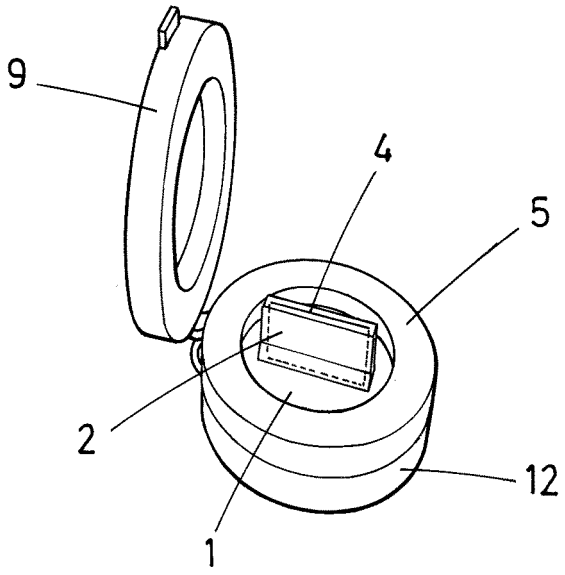

FIG.11

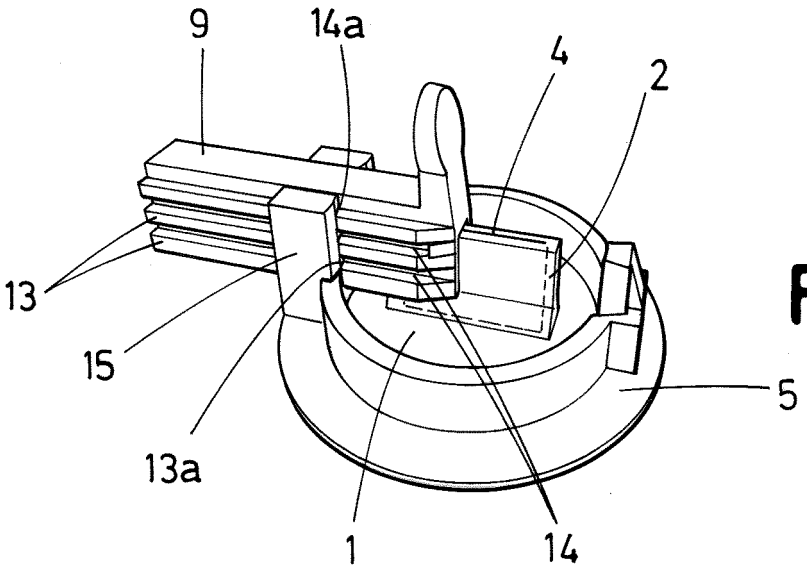

FIG.12

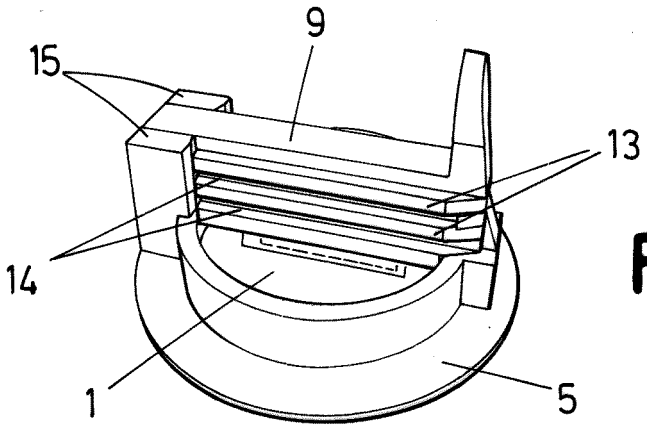

FIG.13

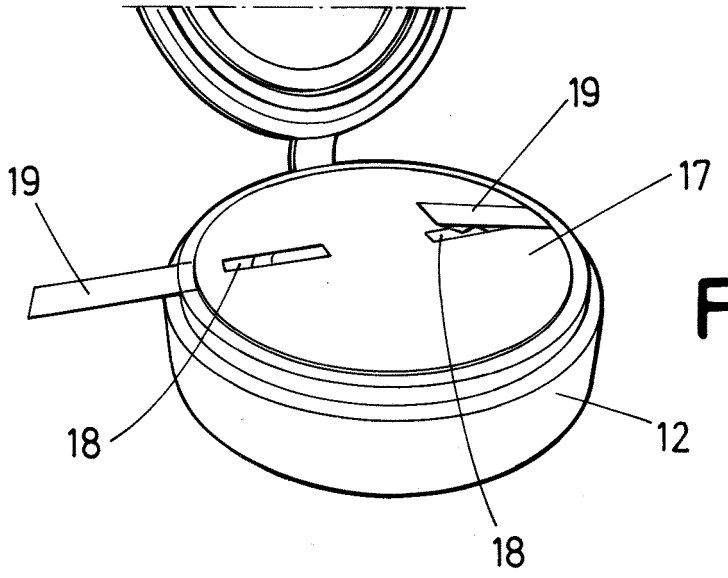

FIG.14

INFORME DE BÚSQUEDA INTERNACIONAL

Solicitud internacional Nº

PCT/ES2017/070765

A. CLASIFICACIÓN DEL OBJETO DE LA SOLICITUD

INV. B65D47/20 B65D43/20 B65D51/22 B65D55/06

De acuerdo con la Clasificación Internacional de Patentes (CIP) o según la clasificación nacional y CIP.

B. SECTORES COMPRENDIDOS POR LA BÚSQUEDA

Documentación mínima buscada (sistema de clasificación seguido de los símbolos de clasificación)

B65D F16K

Otra documentación consultada, además de la documentación mínima, en la medida en que tales documentos formen parte de los sectores comprendidos por la búsqueda

Bases de datos electrónicas consultadas durante la búsqueda internacional (nombre de la base de datos y, si es posible, términos de búsqueda utilizados) EPO-Internal, WPI Data

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría*	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones Nº
X Y	FR 996 998 A (KUNZD) 31 Diciembre 1951 (1951-12-31) página 1, columnas 1, 1, párrafo 2; figuras -----	1,5,8, 13-16 2,4
Y A	US 2 428 261 A (BORIS BOGOSLOWSKY) 30 Septiembre 1947 (1947-09-30) página 4, líneas 32-45; figuras 3-4 -----	2 1,5,8-10
Y A	US 4 917 267 A (LAVERDURE ROLAND J A [US]) 17 Abril 1990 (1990-04-17) columna 7, líneas 35-47; figuras ----- US 3 610 477 A (HERZIG ALBERT M) 5 Octubre 1971 (1971-10-05) figuras -----	2,4 2
	-/--	

[X] En la continuación del Recuadro C se relacionan otros documentos [X] Los documentos de familias de patentes se indican en el Anexo

* Categorías especiales de documentos citados:

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"E" solicitud de patente o patente anterior pero publicada en la fecha de presentación internacional o en fecha posterior.

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"O" documento que se refiere a una divulgación oral, a una utilización, a una exposición o a cualquier otro medio.

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"Y" documento particularmente relevante; la invención reivindicada no puede considerarse que implique una actividad inventiva cuando el documento se asocia a otro u otros documentos de la misma naturaleza, cuya combinación resulta evidente para un experto en la materia.

"&" documento que forma parte de la misma familia de patentes.

Fecha en que se ha concluido efectivamente la búsqueda internacional.	Fecha de expedición del informe de búsqueda internacional
05 Marzo 2018	09/03/2018
Nombre y dirección postal de la Administración encargada de la búsqueda internacional European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016 Nº de fax	Funcionario autorizado Fournier, Jacques Nº de teléfono

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INFORME DE BÚSQUEDA INTERNACIONAL

Solicitud internacional Nº

PCT/ES2017/070765

C (continuación). DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría*	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones Nº
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A	US 4 776 495 A (VIGNOT ERIC [FR]) 11 Octubre 1988 (1988-10-11) figuras 5, 6	1
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Formulario PCT/ISA/210 (continuación de la segunda hoja) (Enero 2015)

INFORME DE BÚSQUEDA INTERNACIONAL

Información relativa a miembros de familias de patentes

Solicitud internacional Nº
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Formulario PCT/ISA/210 (anexo_familia de patentes) (Enero 2015)

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Patent documents cited in the description

- WO 2015169988 A1 **[0007]**