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(54) **CLOSING DEVICE FOR A FOOD PRODUCT CONTAINER, MORE PARTICULARLY A DRINK
CONTAINER, COVER AND FOOD PRODUCT CONTAINER**

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Description

[0001] The invention relates to a closing device for a food product container, more particularly a drink container, comprising a wall part provided with an opening and a shield member which is displaceable between a first, closed position sealing the opening in the wall part and a second, opened position leaving the opening at least partly open, wherein the shield member is provided with a locking member securing the shield member in the first, closed position, and wherein the shield member oriented in the first, closed position can be unlocked by displacing the locking member in a direction which encloses an angle with the wall part. The invention also relates to a cover of a food product container, more particularly a drink container, with such a closing device and to a food product container of which such a cover forms part.

[0002] Liquid containers, and more particularly drink containers, are used on a large scale. Drink containers of the type also designated as "drinks can", "can package" or "tin" are applied in particular for packaging and consumption of (optionally carbonated) drinks. Soft drinks and beer are for instance packaged in large quantities in such substantially cylindrical drink containers, which are particularly known in the standard sizes of 330 ml and 500 ml. The drinks cans are however also applied in other standardized dimensions (there are for instance cans with a volume, among others, of 200 ml, 225 ml, 250 ml, 300 ml, 330 ml, 350 ml, 500 ml, "slim cans", "tall cans" and so on). The existing drink containers (at least the cylinder casing-shaped part including an integrally formed base) are generally manufactured using a stamp, whereafter a separate metal top part is then attached thereto by means of a folded seam connection. In the top part there is usually placed a tab which is surrounded by weakened portions and which can be torn loose using a ring fixed to the tab. For these cans use is made of aluminium or sheet steel as starting material, to which a coating can be applied as desired. The existing drink containers have the significant drawback that they are difficult to open and are not reclosable. There are also objections to the use of such drink containers since they are not very environmentally-friendly.

[0003] The closing device for a food container as stated in the preamble is known from the prior art. The American patent specification US 4,162,742 thus discloses such a closing device for a container, in particularly a beverage container. By displacing the locking member downwardly or upwardly the closure can be unlocked and subsequently be opened by sliding the shield member in parallel relative to the wall provided with the wall opening. The advantage of application of the known closing device is that the beverage container is reclosable, whereby the content of the can does not have to be consumed all at once but can, if desired, be consumed in portions at different times. Closing the wall opening of the beverage container by means of the shield member does somewhat enhance conservation of the content of the contain-

er, but mainly prevents the content of the container leaving or being able to leave the container in simple manner. As well as the above stated advantage, the known closing device also has drawbacks. A significant drawback of the known closing device is that only mediocre sealing of the container is realizable. The closing device cannot close the beverage container completely in liquid-tight manner, or can do so only briefly. In the closed state of the beverage container the content of the container is however still accessible to microorganisms and gas exchange can take place freely between the atmosphere surrounding the container and the local atmosphere prevailing in the container. Particularly when the drink held in the beverage container is carbonated, whereby an internal pressure will be built up in the can, the closing device will be unable to seal the can sufficiently, as a result of which the carbon dioxide can and will escape. As already generally known, a reduction in the carbon dioxide content of drink results in a - usually unwanted - change in the taste of this drink.

[0004] The present invention has for its object to provide an improved closure for a food product container whereby an improved functionality can be provided compared to the prior art liquid containers.

[0005] The invention provides for this purpose a closing device for a liquid container, more particularly a drink container, according to the preamble characterized in that the shield member connects onto the wall part via a seal. By forcing the shield member to connect onto the wall part by means of a seal an improved sealing of the closing device can be realized. Such a seal can consist of a gasket of a flexible material, preferably an elastomer. An example of such a material is EVOH. Possibly present separate first gas passage(s) can likewise be provided with a seal (valve) of the same material, and can herein be formed integrally with the gasket of the shield member. Preferably, the wall part and the seal as a two-components-system is preferably manufactured in a single process step by particular injection moulding. To further improve sealing of the closing device in the first, closed position of the shield member, the shield member and/or the control element preferably engage on the wall part via biasing means. The biasing means can herein exert a force directed toward the wall part on the shield member. By causing the shield element, provided with a seal, to engage under bias on the wall part of the closing device, a food product container can be sealed in substantially medium-tight manner. This not only prevents the possibility of the liquid and/or solid food product leaving the food product container in the first, closed position of the shield member, but also prevents gas exchange being able to take place between an atmosphere surrounding the food product container and an atmosphere prevailing in the food product container. In the case the food product is formed by a carbonated drink, the carbon dioxide will remain confined in the food product container in the closed situation, whereby it will also be possible to maintain the carbon dioxide content in the food product

container, which enhances the preservation of taste and the like. Using the closing device according to the invention it is moreover possible to prevent microorganisms being able to move, in the closed situation, from outside the food product container to a location inside the food product container. A constant composition of the food product can therefore be guaranteed with the device according to the invention in closed position, wherein the food product can also be conserved in relatively hygienic manner in the closed food product container. In the opened situation of the closing device, the shield member, and a seal applied onto the shield member, is generally situated substantially at a distance from the wall part, whereby removal of food product along the shield member and via the opening in the wall part can take place freely and preferably unimpeded. After sufficient removal of the food product, the shield member can be displaced once again to the closed position, wherein a bias will be exerted directly or indirectly on the wall part in order to realize the medium-tight sealing of the closing device, and hence of the food product container. The bias exerted on the wall by the sealing element can be adjusted in discrete or continuous manner by means of the operating element for a user. Further advantage of such a closing device is that the operations of unlocking and opening a (drinking) opening are separated such that both operations can be optimized independently of each other. It hereby becomes possible to leave clear an opening with lesser forces than according to the prior art and with simplified movements. The device according to the invention can thus be closed in locked manner, whereby undesired and unexpected changes of the relative orientation of the shield member and the wall part from the first, closed position to the second, opened position can be prevented, or at least counteracted. The closing device can thus not be opened in uncontrolled manner by for instance a (slight) external load, but only by one or more controlled operations which are performed - in an optionally specific sequence - by a user. If the user fixes the relative orientation of the shield member and wall part, further removal of the food, more particularly liquid, from the device will thus only be possible after unlocking the locking element by displacing said locking element directly or indirectly in a direction which encloses an angle with the wall part. In the first, closed position the locking member preferably exert a bias on the wall part to stably and hence reliably secure the first, closed position of the shield member. In a preferred variant the passage opening for the food product liquid can also be reclosed by sliding back the shield member, wherein it is also possible for the locking member to secure the shield member once again in the closed position. These are examples of the possible optimization of the separate functions of locking and closing. The kind of displacement of the shield member during displacement of this member between the first position and the second position can be of various nature. This displacement may incorporate for example a sliding movement, a rotating movement, or a tilting movement.

However, it is also conceivable for a person skilled in the art that shield member is adapted to undergo a combined movement to displace the shield member between the first position and the second position. It is noted that the closing device is particularly suitable to be applied onto food product containers. These containers are adapted to contain all kind of food articles, such as for example liquid foods (beverages, oil, honey, et cetera), flavoured confetti (sprinkles), sauces, instant food products (instant soup, instant coffee, instant tea, et cetera), and dairy products (yoghurt, custard, et cetera). The cover according to the invention and the food product container are preferably adapted to be subjected to a pasteurization process step, which is in fact a heat processing of the (liquid) food product to kill pathogenic bacteria to make the food product safe to consume.

[0006] The shield member preferably engages on the opening in the wall part. A separate provision on or in the wall part hereby becomes unnecessary; use is made in simple manner of a provision which is in any case already present.

It is possible to envisage diverse variants in respect of the embodiment of the locking member. A simple variant relates to a pin pivotally connected to the shield member. Such a pivotable, preferably elastic, pin can optionally be fully integrated with the shield member. As mentioned afore the locking member is preferably adapted to co-act under bias with the wall part, more preferably with a protruding edge of the wall part, to secure the shield member in the first, closed position. In a particular preferred embodiment the locking member is initially sealed in the first, closed position thereby providing a tamper-evident closure. Tamper-evident closures are adapted to make it difficult to achieve a first time opening of the closing device according to the invention without it being detectable by subsequent users that the package seal has been breached. In a preferred embodiment the tamper-evident seal is formed by a breakable mutual connection between the locking member and another part of the closing device. The connection can for instance be formed by one or more (small) rods and/or by a hook-shaped member. The seal is more preferably visible to the user, so that the user can see at a glance whether or not the closing device has been opened at an earlier stage. In a particular preferred embodiment, the rod is initially connected to the peripheral edge of the venting opening incorporated in the operating element. The tamper-evident closure is thus visible to the user. During initial opening of the device the breakable connection(s) of the tamper-evident closure will be permanently broken, whereby the seal is thus also visibly broken.

[0007] In a preferred embodiment the shield member lies on one side of the wall part and connects to a control element which is situated at least substantially on the side of the wall part remote from the shield member. The control element and the shield member are preferably formed by separate, co-acting elements, and can be mutually connected by means of a single or multiple con-

nection which protrudes through the opening. This connection may be either a permanent connection (wherein the control element and the shield member cannot be separated once connected) or a releasable connection (wherein the control element and the shield can be disconnected after these elements have been connected). In the case a control element is present which is separated from the shield member, it is logical to integrate the locking, or at least the control thereof, with the control element. In a particular preferred embodiment the locking member is pivotally connected to the control element, for example by means of a hinge, in particular a film hinge. It is also possible to integrate the guiding of the shield member relative to the wall part with the control element. The control element and the shield member may be mutually connected by means of a snap connection. This snap connection is preferably such that both the control element and the shield member are displaceable with respect to the wall part. This snap connection is preferably also such that the control element is adapted to limit the freedom of displacement of the shield member thereby preventing the shield member to become (accidentally) detached from the wall part and the control element. More preferably, the shield member is provided with elastic lips, said lips being adapted to co-act with the opening in the wall part. The control element will substantially prevent the lips to spring, which would, or at least could result in uncoupling of the shield member with respect to the wall part.

In yet another preferred variant, the closing device is provided with at least one first gas passage which is closed in the first, closed position of the shield member and which is opened after displacing the shield member respectively the control member from the first, closed position relative to the wall part. The kind of displacement can be of various nature and can include for example a sliding or tilting movement. However, preferably the displacement is in a direction which encloses an angle with the wall part. In this manner, the first gas passage can be opened simply for example by pushing the control element in a substantially perpendicular direction towards the wall part. A separately controllable first gas passage has the advantage that, prior to displacement of the shield member, a reduction in the pressure difference can first be realized between the internal and external pressure of a (carbonated drinks) container. After reduction in the pressure difference the shield member can be displaced with relatively little resistance. Such a closing device is particularly useful for instance for sealing a carbonated drink container. In another preferred embodiment the closing device is provided with at least one second gas passage which is closed in the first, closed position of the shield member and which is open in the second, open position. This second gas passage is preferably defined by a separate opening arranged in the wall part at distance of the (drink and/or pour) opening. Particularly in the case of liquid food products, usually drinks, a venting opening defined by the second gas pas-

sage will be advantageous, particularly during removal of the drink from the drink container.

Gurgling removal of drink can thus be prevented, or at least countered.

[0008] If, in addition to being displaceable parallel to the wall part, the shield member is also displaceable to a limited extent in a direction perpendicular to the wall part, the frictional resistance between the wall part and the shield member (plus seals which may be present therebetween) can thus be decreased. However, as aforementioned the displacement of the shield member, and the control element (if present), is predetermined but may be of various nature. Both the shield member and the control element may undergo a sliding movement, tilting movement, rotational movement, or any other displacing movement. It is also conceivable to apply a combination of these movements for displacing the shield member and/or the control element. To this end, it is for example imaginable that the control element must be pushed firstly, and must be slid in a first direction subsequently, as a result of which the shield member will undergo a sliding displacement in a second direction (different from the first direction).

[0009] For a controlled displacement of the shield member relative to the wall part, it is desirable that the shield member connects to the wall part via a guide running at least substantially parallel to the wall part. The guide means may be formed at least partly by an edge defining the opening of the wall part and/or one or more grooves applied to the wall part. Preferably, the guiding means comprise a one or more protruding dam elements making part of the wall part of the closing device.

[0010] Although the cover, more particularly the wall part, can be made of metal, it is particularly advantageous to manufacture the wall part at least partly from plastic. This is also the case for the shield member and an optionally present control element; these can also be advantageously manufactured from plastic. The more complex forms required for advantageous embodiment variants (such as for instance guide elements, fittings for seals, separate gas passage facilities and so on) can be manufactured easily and inexpensively from plastic, certainly in the case of production of components in larger volumes. Another major advantage of application of plastic for manufacturing the wall part (and eventually other parts of the closing device) is that a relatively solid and firm closing device can be provided which under normal circumstances will not be deformed in a substantial manner due to relatively high internal pressures within the food product container. By manufacturing the wall part (and eventually other parts of the closing device) a sealed, substantially medium-tight closing of the closing device can thus be secured. Manufacturing of the wall part out of metal, such as aluminium, will commonly result in a substantial deformation (bulging) of the wall part, as a result of which a medium-tight closing can no longer be secured. This bulging deformation of the metal wall part due to relatively high internal pressures (up to over

7 bar) is also referred to as 'doming'. Thus, to be able to prevent, counteract and to control doming, the wall part, or at least a part thereof, is preferably made of plastic. Plastic is here also understood to mean a plastic-substitute material, such as for instance a modified cellulose. Another way of characterizing this material is as a "non-metal"; the material from which the drink containers of the "drinks can" type have heretofore been manufactured for many years. It is already clear from the term "drinks can" that the prior art teaching consists of manufacturing such a drink container from metal (tin). Specific examples of plastics to be applied are: PET, PE, PEN, PPE and HDPE. It is desirable here that the plastic-containing material is substantially form-retaining, i.e. the plastic material can fulfil a supporting function.

[0011] The invention also provides a cover of a food product container, more particularly a liquid container provided with a closing device as described above, which is preferably manufactured from plastic. Preferably, a top part of the cover according to the invention is formed such that a protruding edge arranged around the drinking opening is provided with at least one portion that protrudes less than other parts of the edge. A first recessed edge part (or even interrupted part of the protruding edge) may facilitate removal (drinking or pouring) of the food product out of the food product container. Moreover, a second recessed edge part (or even interrupted part of the protruding edge) may facilitate positioning and operating of the locking member.

[0012] The invention moreover provides a food product container, more particularly a liquid container provided with such a cover. The food product container preferably comprises cylinder casing-shaped part, wherein the food product container maybe shaped as a bottle, (small) barrel, drinks can, et cetera. It is possible here for the dimensions of the food product container to fall within the standardized dimensions for drinks cans. Some important advantages of the application of plastic in the food product container according to the invention are that plastic can be relatively inexpensive, plastic (in particular when it is form-retaining) can be readily reused without having to be recycled immediately, it can be recycled in simple manner and that, depending on the application of the food product, there are options in respect of the plastic which can best be applied for this specific application. Furthermore, a plastic drink container can have a relatively low weight though high stability, a plastic drink container is not susceptible to oxidation and the plastic can function as a (thermal and electrical) insulator. It is also easier to inspect the contents of plastic drink containers by means of for instance X-radiation or other radiation. All these advantages can be realized in combination with retaining (practically) the entire infrastructure appropriate for prior art drinks cans, such as for instance filling lines, packing equipment, transport means, supply containers, cooling means, vending machines and so on.

[0013] Plastic also makes it possible however to manufacture a food product container, more particularly a liq-

uid container with a form which differs from the standard dimensions for drinks cans. The cover usually connects onto a cylinder casing with integrally formed base part. In respect of the shape of the liquid container it is possible, partly owing to the application of plastic as the basic material, to give drink containers in particular all kinds of differing forms.

[0014] When plastic is applied as construction material, the cover and the food product container can be provided with form-fittingly co-acting contact sides. In a preferred embodiment the cover connects to food product container by means of at least one of the following connections: a sealed connection, a welded connection, a snap connection, a crimp connection, a seam connection, a bayonet connection, a labyrinth connection, and a screwed connection. However, it will be clear that a person skilled in the art may apply any other suitable connection to mutually connect the cover and the food product container. For a good sealing the cover can connect to the food product container via a sealed and/or welded connection. It is also advantageous to manufacture the cover from a material similar to the material from which the food product container is manufactured. However, it is also imaginable to apply a food product container made of metal which is connected to a cover made of plastic (or vice versa). A single material (mono-material) for all components makes a product easier and cheaper to recycle. The connection between the cover and the food product container may be a permanent connection. However, it is also conceivable that this connection is a releasable connection, wherein (eventually) the food product container and/or the cover can be reused. Separate marketing of a (sealed) food product container on one side and a cover according to the invention on the other side is imaginable.

[0015] Alternatively, the liquid container can also be manufactured from a plastic-containing material of laminar construction which is provided with one or more material layers consisting of a material other than plastic. Such a material layer other than plastic can be applied in particular as an extra barrier layer to prevent for instance oxygen exchange, odour exchange between the contents of the drink container and the environment and/or the plastic. Examples of such a layer co-acting with the plastic are metal coatings, and more particularly for instance a chrome coating, EVA (ethylene vinyl acetate) and EVOH (ethylene vinyl alcohol). Such a layer can also be applied between for instance two PET layers. When two PET layers are separated by a barrier layer, the demands which can be made of the plastic situated on the outside of the drink container can differ from those made of the plastic which is situated on the inside and which comes into contact with the contents of the drink container; RPET (recycled PET) can for instance be used as plastic on the outside.

[0016] Opening of the food product container according to the invention may be realised with the successive process steps of: A) displacing the locking member in a

first direction of movement, which first direction of movement encloses an angle with the wall part, thereby releasing the locking against mutual displacement of the shield member and the wall part in a second direction of movement, which second direction of movement is substantially parallel to the wall part, and B) mutually displacing the shield member and the wall part in the second direction of movement. When the shield member is displaced in the second direction of movement, the distance between the wall part and the shield member can also increase. During process step A) a first gas passage can simultaneously also be created between the interior of the liquid container and the environment. For the advantages of these methods reference is made to the advantages of the closing device and the drink container according to the present invention already described above.

[0017] The invention will be further elucidated on the basis of the non-limitative exemplary embodiments shown in the following figures. Herein:

figure 1 shows a perspective schematic view of a known closing device,
 figure 2A shows a schematic cross-section through the closing device of figure 1 in a closed, locked position,
 figure 2B shows a schematic cross-section through the closing device of figure 2A in a closed, unlocked position,
 figure 2C shows a schematic cross-section through the closing device of figures 2A and 2B in an opened position,
 figure 3 shows a schematic cross-section through an alternative embodiment variant of the closing device in a closed, locked position,
 figure 4A shows a schematic cross-section through a second alternative embodiment variant of the closing device in a closed, locked position,
 figure 4B shows a schematic cross-section through the closing device of figure 4A in a closed, unlocked position,
 figure 5A shows a schematic cross-section through a third alternative embodiment variant of the closing device according to the present invention in a closed, locked position,
 figure 5B shows a schematic cross-section through the closing device of figure 5A in an opened position,
 figure 6 shows a schematic cross-section through an embodiment of the closing device according to the present invention provided with a control element,
 figure 7A is a perspective view of a drink container according to the invention,
 figure 7B is a perspective view of the drink container shown in figure 7A in exploded state,
 figure 8A is a perspective view of a cut-away part of the drink container of figures 7A and 7B in a closed position,
 figure 8B is a perspective view of the cut-away part

of the drink container shown in figure 8A in an opened position,
 figure 9 is a perspective view of a detailed view of a cross-section through the drink container shown in figures 7A-8B,
 figure 10 is a perspective detail view of a folded-open operating member as this forms part of the drink container shown in figures 7A-9,
 figure 11 is a perspective view of the drink container shown in figures 7A-10 in a situation exploded into two parts,
 figure 12 is a perspective view of another drink container provided with a cover according to the invention,
 figure 13 is an exploded view of the drink container and the cover shown in figure 12, figure 14A is a perspective view of a detailed view of a cross-section through the drink container shown in figure 12 in a closed, locked state,
 figure 14B is a perspective view of a detailed view of a cross-section through the drink container shown in figure 12 in a closed, unlocked state,
 figure 14C is a perspective view of a detailed view of a cross-section through the drink container shown in figure 12 in a de-aerating state,
 figure 14D is a perspective view of a detailed view of a cross-section through the drink container shown in figure 12 in an open state,
 figure 15 is a perspective view of a control element and a locking member connected to the control element as used in the drink container as shown in figures 12-14D,
 figure 16 is a perspective bottom view of a part of a cover as used in the drink container as shown in figures 12-14D,
 figure 17 is a perspective bottom view of the part of the cover as shown in figure 16, wherein an opening of the cover part is covered by a shield member,
 figure 18 is a perspective top view of the cover part and the shield member as shown in figure 17,
 figure 19 is perspective view of the cover as shown in figure 12 in a partially disassembled state, and
 figure 20 is a perspective view of an assembly of a drink container provided with another cover according to the invention.

[0018] Figure 1 shows a known closing device 1 with a wall part 2 in which is located a recess 3. Recess 3 is closable by a shield member 4 which is slidable relative to wall part 2 and which is provided for this purpose with opposite guides 5 which engage on edge parts of recess 3. In the shown position shield member 4 leaves a part of recess 3 clear such that for instance drink (not shown) can flow through recess 3. In order to secure shield member 4 in a position sealing the recess 3, shield member 4 is provided with a lock 6, the operation of which will be further described with reference to figures 2A-2C.

[0019] Figure 2A shows closing device 1 in a closed

position. Shield member 4 here completely covers the opening 3 in wall part 2. Because a pin 7, situated on the side directed toward wall part 2 and forming part of lock 6, engages on an edge of opening 3 formed by wall part 2, the shield member cannot be freely displaced relative to wall part 2 (pin 7 locks against sliding of the shield member in one direction). By now exerting a pressure on lock 6 in direction P_1 as shown in figure 2B, pin 7 can be lifted such that it no longer engages on the edge of opening 3 formed by wall part 2. This has the result that, as shown in figure 2C, shield member 4 can be displaced as according to arrow P_2 such that shield member 4 leaves the opening 3 partly clear.

[0020] Figure 3 shows an alternative embodiment of a closing device 10, with a shield member 11 which engages on an edge 14 of a recess 15 in wall part 12 by means of a pin 13 arranged on the side directed toward a wall part 12. By exerting a tensile force as according to arrow P_3 on a grip 16 forming part of shield member 11, the engagement of pin 13 on edge 14 can be released, for instance through deformation of shield member 11 as a result of the tensile force exerted. Shield member 11 can then be displaced relative to wall part 12.

[0021] Figure 4A shows yet another closing device 20 with a shield element 21 of which a locking pin 22 forms part. Pin 22 engages on an edge 23 of a recess 24 in a wall part 25. As shown in figure 4B, locking pin 22 can be displaced such that it no longer engages on edge 23; the locking is hereby released and shield element 21 can slide relative to wall part 25. Recess 24 can hereby be left partially clear.

[0022] Figure 5A shows a closing device 30 with a shield member 31, a locking pin 32 of which protrudes such that this locking pin 32 engages on an edge 33 of an opening 34 in a wall 35 of for instance a drink container (not shown). Through deformation of shield member 31, see figure 5B, locking pin 32 can be bent away from edge 33 such that shield member 31 can now slide over a limited distance relative to wall 35.

[0023] Closing device 40 shown in figure 6 is provided with a shield member 41 and a control element 42 connected to shield member 41. Shield member 41 and control element 42 are situated on opposite sides of a wall part 43, in which a recess 44 is left clear. Between shield member 41 and wall part 43 is placed a gasket 45 for preventing leakage in the closed position of closing device 40.

[0024] Figure 7A shows a drink container 50 with a cylindrical lower part 51 which is manufactured from plastic and to which connects a plastic cover 52. Placed in cover 52 is a closing device 53 slidable relative to a cover surface 52. The cover is provided with a protruding edge 54 with a locally lowered portion 55. This lowered portion 55 of edge 54 makes it easier to pour liquid (drink) from the drink container, and more particularly makes it easier to drink from drink container 50.

[0025] In figure 7B drink container 50 is exploded into a number of components. Cover 52 is separated from a

shield member 56 which, in the assembled state of drink container 50, lies against the underside of cover 52 via a seal 57 (gasket) manufactured from a flexible material. Also separated is a control element 58 which connects to shield member 56 in the assembled state. Shield member 56 and control element 58 are herein located on the opposite sides of a wall part 59 which forms part of cover 52. Arranged in wall part 59 is a first opening 60 for the passage of drink, as well as a second opening 61 for reduction in the pressure difference in drink container 50 before the first opening 60 is left clear.

[0026] Figure 8A shows a cross-section through the upper part of drink container 50. Shield member 56 is connected to control element 58 by means of a form-fitting coupling 62 such that wall part 59 is engaged on both sides. Control element 58 comprises a pivotable blocking member 63, the operation of which will be further elucidated in the following figure. Control element 58 is also provided with a protrusion 64, with which the second opening 61 can be left at least partially clear by pressing in control element 59. The clear second opening 61 provides for a reduction in the pressure difference between the inside of drink container 50 and the outside. Pressing in of control element 59 also results in the pivotable blocking member 63 being operated such that the way is cleared for sliding of the assembly of control element 58 and shield member 56. Sliding of the assembly is simplified by the reduction in the pressure difference. After sliding of the assembly the first opening 60 is left partially clear such that liquid can be removed from the drink container (see figure 8B). Figures 8A and 8B also show the form-fitting coupling 65 ("snap closure") between the plastic cover 52 and the cylindrical lower part 51 (this can however also have a form other than cylindrical).

[0027] Figure 9 shows an enlarged view of a part of control element 58 and shield member 56. By displacing control element 58 downward the pivotable blocking member 63 is rotated such that it will become detached from a bearing 66 in wall part 59. During the downward displacement of control element 58 the protrusion 64 will also press a plug 67 out of the second opening 61 in the wall part. It is noted that plug 67 can be manufactured as a single component with gasket 57.

[0028] Figure 10 shows control element 58 in a folded-open position. The pivotable blocking member 63 is clearly visible. Protrusion 64, which will protrude through an opening 68 arranged for the purpose, can also be seen. Finally, figure 11 shows drink container 50 in a situation where cover 52 is detached from drink can 51. After filling of drink can 51 with for instance drink, cover 52 can be snapped fixedly thereon.

[0029] Figure 12 is a perspective view of another drink container 69 provided with a cover 70 according to the invention. The cover 70 is releasably connected to the drink container 69 by means of a threaded connection (clearly shown in figure 13 and 14A-14C). As shown in figure 1 the drink container 69 and the cover 70 are provided with form-fittingly co-acting contact sides. A joint

71 formed by the assembly of the drink container 69 and the cover 70 may be provided with a tamper-evident seal (not shown), for example formed by a sealing strip or band. In the embodiment shown both the drink container 69 and the cover 70 are made of plastic. The drink container 69 presently shown forms a drink can. However, it will be clear that the design of the drink container 69 can be of various nature.

[0030] Figure 13 is an exploded view of the drink container 69 and the cover 70 shown in figure 12. The drink container 69 comprises a neck 72, said neck 72 being provided with an external screw thread 73. The external screw thread 73 is adapted to co-act with an internal screw thread of the cover (shown in figures 14A-14D). The cover 70 comprises a wall part 74 provided with a drink opening 75 via which drink can be removed from the drink container 69. The cover 70 further comprises a shield member 76, which (in an assembled state of the cover 70) is slidably coupled to the wall part 74 for covering respectively releasing the drink opening 75. The shield member 76 is positioned within the drink container 69. The cover 70 further comprises a control element 77 and a locking member 78 pivotally connected to the control element 77 by means of a film hinge 79. The control element 77 is adapted to be coupled to the shield member 76 for displacing the latter. The locking member 78 is adapted to co-act with a protruding inner edge 80 of the wall part 74 to be able lock the shield member 76 in a closed position. The construction of the cover 70 is shown in more detail in the following figures.

[0031] Figure 14A is a perspective view of a detailed view of a cross-section through the drink container 69 and the cover 70 shown in figure 12 in a closed, locked state. In this figure 14A it is clearly shown that the external screw thread 73 of the drink container 69 co-acts with an internal screw thread 81 of the cover 70. A bottom part of the cover 70 is provided with a sealing layer 82. This sealing layer 82 secures a substantially medium-tight connection between the wall part 74 of the cover 70 and the drink container 69. Moreover, the sealing layer 82 secures a substantially medium-tight connection between the shield member 76 (in closed state) and the wall part 74. The sealing layer 82 and the wall part 74 (and any other plastic part of the cover 70 rigidly coupled to the wall part 74) as a two-components-system is preferably manufactured in a single process step by particular injection moulding. The sealing layer 82 is provided with a sealing pin 83 which is (displaceably) led through a separate de-aeration opening 84 made in the wall part 74. The sealing pin 83 is provided with a sealing flange 85 thereby closing the de-aeration opening 84. The functioning of this de-aeration step is shown in figure 14C. In figure 14A, it is shown that the shield member 76 is provided with a protruding clamp element 86. The clamp element 86 co-acts with two driving plates 87a, 87b making part of the control element 77 thereby enabling movement of the shield member 76 by means of the control element 77. The control element 77 comprises a base

structure 88, and a top structure 89 pivotally connected to the base structure 88. As shown in figure 14A the driving plates 87a, 87b make part of the base structure 88. The top structure 89 is connected to the locking 78 by means of the film hinge 79. The top structure 89 is provided with a protruding pin 90, said pin 90 being adapted to co-act with the sealing pin 83 positioned in the de-aeration opening 84. Downward displacement of the top structure 89 towards the base structure 88 is not possible in the shown state due to the locking function of the locking element 78. The cover 70 is provided with a protruding peripheral edge 91 thereby facilitating transport and storage of the cover 70 (eventually with the drink container 69 attached thereto). Parts of the peripheral edge 89 neighbouring the drink opening 75 and the locking element 78 are protruding less than other parts of the edge 89. In this manner, both drinking from the cover 70 and operation of the locking member 79 can be facilitated significantly.

[0032] The opening of the cover 70 to allow drinking will be explained in the figures 14B-14D. Firstly, the locking element 78 is hinged upwardly with respect to the wall part 74 and the control element 77 to unlock the control element 77, and hence the shield member 76 coupled thereto (figure 14B). To this end, the locking element 78 can be pulled upwardly. Subsequently, the drink container 69 can be de-aerated via the de-aeration opening 84. To this end, the top structure 89 is pushed towards the base structure 88 thereby causing the protruding pin 90 of the top structure 89 to displace the sealing pin 83 in a downward direction, as a result of which a reduction in the pressure difference can first be realized between the internal and external pressure of the (carbonated) drinks container 69 (figure 14C). After reduction in the pressure difference the shield member 76 can be displaced with relatively little resistance. After de-aeration of the drink container 69 via the de-aeration opening 84, the control element 77 can be displaced easily by pushing the control element 77 with a single finger in direction of the locking element 78. To facilitate movement of the control element 77 an upper side of the control element 77 is provided with a profile 92. During this displacement the shield member 76 will also be displaced thereby opening the drink opening 75 in the wall part 74 (figure 14D). Both the control element 77 and the shield member 76 are guided during said displacement by means of first and second guiding means 93, 94 respectively as shown in figure 14D. The first guiding means 93 are oriented horizontally to realize a horizontal displacement of the control element 77. The second guiding means 94 are oriented inclined as a result of which the shield member 76 will undergo both a horizontal displacement and a vertical displacement, wherein the mutual distance between the wall part 74 and the shield member 76 will be increased during opening of the cover 70.

[0033] Figure 15 is a perspective view of the control element 77 and the locking member 78 connected to the control element 77 as used in the drink container 69 as

shown in figures 12-14D. As mentioned above an upper side of the control element 77 is provided with a profile 92. The profile 92 comprises multiple protruding ribs 95 to allow improved contact with the control element 77 by a person. In this figure it has been shown clearly that the locking element 78 is connected to the control element 77 by means of the film hinge 79 on one side, and by means of multiple breakable connections 96 on the other side as to provide an initial seal. By pulling the locking member 78 in an upward direction the breakable connections 96 will be broken (permanently) and the control element 77 will be unlocked.

[0034] Figure 16 is a perspective bottom view of a part of a cover 77 as used in the drink container 69 as shown in figures 12-14C. In particular the internal screw thread 81 of the cover 77 is clearly shown. Besides, the (one-piece) seal layer 82 is shown in this figure. In figure 17 it is clearly shown that the wall opening 75 in the wall part 74 is completely covered by the shield member 76 as to provide a substantially medium-tight closure of the cover 70. To this end, the shield member 76 engages under bias onto the wall part 74.

[0035] Figure 18 is a perspective top view of a part of the cover part 70 and the shield member 76 as shown in figure 17. The protruding clamp element 86 is designed in a profiled manner to improve clamping of this element 86 by the driving plates 87a, 87b. As can be seen in this figure the shield member 76 is further provided with flexible lips 97 to (slidably) connect the shield member 76 to the cover 70. During displacement of the control element 77, the control element 77 will continuously push the lips 97 outwardly thereby securing the position of the shield member 76. The wall part 74 is provided with four hook-shaped dam elements 98 to guide the control element 77 during displacement. The two dam elements 98 positioned in the centre are open, and hence provided with a venting opening 99. This venting opening 99 is closed in the closed state of the cover 70, though will be opened during displacement of the control element 77. The venting openings 99 are in particular advantageous to prevent gurgling during drinking by a consumer.

[0036] Figure 19 is perspective view of the cover 70 as shown in figure 12 in a partially disassembled state. In the shown state the top structure 89 is pivoted with respect to the base structure 88 to enhance the view of the construction. In this figure it is shown that the base structure 88 is provide with multiple open tracks 100 for enclose the dam elements 98 respectively. Moreover, the base structure 88 is provided with two apertures 101 for receiving two connection lips 102 making part of the top structure 89 to mutually connect the base structure 88 and the top structure 89.

[0037] Figure 20 is a perspective view of an assembly 103 of a drink container 104 provided with another cover 105 according to the invention. The cover 105 is constructively similar to the cover 70 shown in figure 19 for example, with the difference that the cover 105 shown in figure 20 is provided with a (belt) clip 106 to facilitate

carrying the assembly 103 by a person. In an alternative embodiment (not shown) it is also conceivable to provide a handle to facilitate carrying the assembly.

[0038] It should be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. Use of the verb "comprise" and its conjugations does not exclude the presence of elements or steps other than those stated in a claim. The article "a" or "an" preceding an element does not exclude the presence of a plurality of such elements..

Claims

1. Closing device (1, 10, 20, 30, 40, 53) for a food product container (50, 69, 104), more particularly a drink container (50, 69, 104), comprising:

- a wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) provided with an opening (3, 15, 24, 34, 44, 60, 75), and

- a shield member (4, 11, 21, 41, 56, 76) which is displaceable between a first, closed position sealing the opening (3, 15, 24, 34, 44, 60, 75) in the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) and a second, opened position leaving the opening (3, 15, 24, 34, 44, 60, 75) at least partly open,

wherein the shield member (4, 11, 21, 41, 56, 76) is provided with a locking member (6, 7, 13, 22, 32, 78, 83, 85) securing the shield member (4, 11, 21, 41, 56, 76) in the first, closed position, and wherein the shield member (4, 11, 21, 41, 56, 76) oriented in the first, closed position can be unlocked by displacing the locking member (6, 7, 13, 22, 32, 78, 83, 85) in a direction which encloses an angle with the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74),

characterized in that the shield member (4, 11, 21, 41, 56, 76) connects onto the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) via a seal (45, 57, 82).

2. Closing device (1, 10, 20, 30, 40, 53) as claimed in claim 1, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) engages on the opening (3, 15, 24, 34, 44, 60, 75) in the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74).
3. Closing device (1, 10, 20, 30, 40, 53) as claimed in claim 1 or 2, **characterized in that** the locking member (6, 7, 13, 22, 32, 78, 83, 85) is formed by a pin (7, 13, 22, 32, 83, 85) pivotally connected to the shield member (4, 11, 21, 41, 56, 76).
4. Closing device (1, 10, 20, 30, 40, 53) as claimed in

any of the foregoing claims, **characterized in that** the locking member (6, 7, 13, 22, 32, 78, 83, 85) is initially sealed in the first, closed position thereby providing a tamper-evident closure.

5. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) lies on one side of the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) and connects to a control element (42, 58, 77) which is situated at least substantially on the side of the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) remote from the shield member (4, 11, 21, 41, 56, 76). 5
6. Closing device (1, 10, 20, 30, 40, 53) as claimed in claim 5, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) and the control element (42, 58, 77) are formed by separate, co-acting elements. 10
7. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the locking member (6, 7, 13, 22, 32, 78, 83, 85) is pivotally connected to the control element (42, 58, 77). 15
8. Closing device (1, 10, 20, 30, 40, 53) as claimed in one of claims 5-7, **characterized in that** the closing device (1, 10, 20, 30, 40, 53) is provided with at least one first gas passage (61, 68, 84) which is closed in the first, closed position of the shield member (4, 11, 21, 41, 56, 76) and which is opened after displacing the control element (42, 58, 77) from the first initial position of the control element (42, 58, 77) relative to the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74). 20
9. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the closing device (1, 10, 20, 30, 40, 53) is provided with at least one second gas passage (99) which is closed in the first, closed position of the shield member (4, 11, 21, 41, 56, 76) and which is open in the second, open position. 25
10. Closing device (1, 10, 20, 30, 40, 53) as claimed in claim 8 or 9, **characterized in that** each gas passage (61, 68, 84, 99) is defined by a separate opening (3, 15, 24, 34, 44, 60, 75) arranged in the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74). 30
11. Closing device (1, 10, 20, 30, 40, 53) as claimed in one of claims 8-10, **characterized in that** at least one gas passage (61, 68, 84, 99) is provided with a valve which forms part of the seal (45, 57, 82). 35
12. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) engages on the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) via 40

biasing means, which biasing means exert a force directed toward the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) on the shield member (4, 11, 21, 41, 56, 76).

13. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) is displaceable in a direction perpendicular to the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74). 45
14. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) connects to the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) via a guide (5, 93, 94) running at least substantially parallel to the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74). 50
15. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the wall part (2, 12, 25, 31, 35, 43, 52, 59, 74) is manufactured at least partly from plastic. 55
16. Closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims, **characterized in that** the shield member (4, 11, 21, 41, 56, 76) is manufactured at least partly from plastic. 60
17. Cover (52, 70, 105) of a food, more particularly a liquid container (50, 69, 104) provided with a closing device (1, 10, 20, 30, 40, 53) as claimed in any of the foregoing claims. 65
18. Cover (52, 70, 105) as claimed in claim 17, **characterized in that** the cover (52, 70, 105) is manufactured from plastic. 70
19. Food product container (50, 69, 104), more particularly a liquid container (50, 69, 104) provided with at least one cover (52, 70, 105) as claimed in claim 17 or 18. 75
20. Food product container (50, 69, 104) as claimed in claim 19, **characterized in that** the dimensions of the food product container (50, 69, 104) fall within the standardized dimensions for drinks cans. 80
21. Food product container (50, 69, 104) as claimed in claim 19, **characterized in that** the form of the food product container (50, 69, 104) differs from the standardized dimensions for drinks cans. 85
22. Food product container (50, 69, 104) as claimed in any of the claims 19-21, **characterized in that** the top part is formed such that a protruding edge (54, 91) arranged around the drinking opening (3, 15, 24, 34, 44, 60, 75) is provided with at least one portion that protrudes less than the other part of the edge 90

(54, 91).

23. Food product container (50, 69, 104) as claimed in any of the claims 19-22, **characterized in that** the cover (52, 70, 105) and the food product container (50, 69, 104) are provided with form-fittingly co-acting contact sides (62, 65, 73; 81).
24. Food product container (50, 69, 104) as claimed in any of the claims 19-23, **characterized in that** the cover (52, 70, 105) connects to food product container (50, 69, 104) by means of at least one of the following connections (62, 65, 73, 81): a sealed connection, a welded connection, a snap connection (62, 65), a crimp connection, a seam connection, a bayonet connection, a labyrinth connection, and a screwed connection (73, 81).
25. Food product container (50, 69, 104) as claimed in any of the claims 19-24, **characterized in that** the cover (52, 70, 105) is manufactured from a material similar to the material from which the food product container (50, 69, 104) is manufactured at least partly.
26. Food product container (50, 69, 104) as claimed in any of the claims 16-21, **characterized in that** the food product container (50, 69, 104) is manufactured from a plastic-containing material of laminar construction which is provided with one or more material layers consisting of a material other than plastic.

Patentansprüche

1. Schließvorrichtung (1, 10, 20, 30, 40, 53) für einen Lebensmittelbehälter (50, 69, 104), insbesondere einen Getränkebehälter (50, 69, 104), umfassend:
- einem Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74), das mit einer Öffnung (3, 15, 24, 34, 44, 60, 75) versehen ist, und
 - einem Abdeckelement (4, 11, 21, 41, 56, 76), das zwischen einer ersten, geschlossenen Stellung, in der die Öffnung (3, 15, 24, 34, 44, 60, 75) im Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) abdichtet ist, und einer zweiten, geöffneten Stellung, in der die Öffnung (3, 15, 24, 34, 44, 60, 75) wenigstens teilweise offen ist, verstellt werden kann,

wobei das Abdeckelement (4, 11, 21, 41, 56, 76) mit einem Verriegelungselement (6, 7, 13, 22, 32, 78, 83, 85) entriegelt werden kann, welches das Abdeckelement (4, 11, 21, 41, 56, 76) in der ersten, geschlossenen Stellung fixiert, und wobei dieses Abdeckelement (4, 11, 21, 41, 56, 76), wenn es sich in der ersten, geschlossenen Stellung befindet, durch

Verstellen des Verriegelungselements (6, 7, 13, 22, 32, 78, 83, 85) in eine Richtung, die einen Winkel mit dem Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) einschließt,

dadurch gekennzeichnet, dass das Verriegelungselement (4, 11, 21, 41, 56, 76) am Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) mittels einer Versiegelung (45, 57, 82) befestigt ist.

2. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Abdeckelement (4, 11, 21, 41, 56, 76) die Öffnung (3, 15, 24, 34, 44, 60, 75) im Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) bedeckt.
3. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das Verriegelungselement (6, 7, 13, 22, 32, 78, 83, 85) aus einem Stift (7, 13, 22, 32, 83, 85) besteht, der mit dem Abdeckelement (4, 11, 21, 41, 56, 76) gelenkig verbunden ist.
4. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Verriegelungselement (6, 7, 13, 22, 32, 78, 83, 85) zunächst in der ersten, geschlossenen Stellung versiegelt ist, so dass es einen Originalitätsverschluss bildet.
5. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sich das Abdeckelement (4, 11, 21, 41, 56, 76) auf einer Seite des Wandteils (2, 12, 25, 31, 35, 43, 52, 59, 74) befindet und an einem Auslöseelement (42, 58, 77) befestigt ist, das sich wenigstens zum größten Teil auf dieser Seite des Wandteils (2, 12, 25, 31, 35, 43, 52, 59, 74) gegenüber dem Abdeckelement (4, 11, 21, 41, 56, 76) befindet.
6. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach Anspruch 5, **dadurch gekennzeichnet, dass** das Abdeckelement (4, 11, 21, 41, 56, 76) und das Auslöseelement (42, 58, 77) aus zusammenwirkenden Einzelementen bestehen.
7. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Verriegelungselement (6, 7, 13, 22, 32, 78, 83, 85) gelenkig mit dem Auslöseelement (42, 58, 77) verbunden ist.
8. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der Ansprüche 5 bis 7, **dadurch gekennzeichnet, dass** diese Schließvorrichtung (1, 10, 20, 30, 40, 53) mit wenigstens einem ersten Luftschlitz (61, 68, 84) versehen ist, der in der ersten, geschlossenen Stellung des Abdeckelements (4, 11, 21, 41, 56, 76) ge-

geschlossen ist, und der nach Verstellen des Auslöseelements (42, 58, 77) aus dieser Ausgangsstellung des Auslöseelements (42, 58, 77) in Richtung des Wandteils (2, 12, 25, 31, 35, 43, 52, 59, 74) geöffnet wird.

9. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** diese Schließvorrichtung (1, 10, 20, 30, 40, 53) über wenigstens einen weiteren Luftschlitz (99) verfügt, der in der ersten, geschlossenen Stellung des Abdeckelements (4, 11, 21, 41, 56, 76) geschlossen und in der zweiten, geöffneten Stellung des Abdeckelements (4, 11, 21, 41, 56, 76) offen ist.
10. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach Anspruch 8 oder 9, **dadurch gekennzeichnet, dass** jeder dieser Luftschlitze (61, 68, 84, 99) aus einer separaten Öffnung (3, 15, 24, 34, 44, 60, 75) besteht, die im Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) angebracht ist.
11. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der Ansprüche 8 bis 10, **dadurch gekennzeichnet, dass** wenigstens ein Luftschlitz (61, 68, 84, 99) ein Ventil besitzt, das Teil der Versiegelung (45, 57, 82) ist.
12. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Abdeckelement (4, 11, 21, 41, 56, 76) über eine Druckvorrichtung auf dem Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) aufliegt, welche in Richtung des Wandteils (2, 12, 25, 31, 35, 43, 52, 59, 74) einen Druck auf das Abdeckelement (4, 11, 21, 41, 56, 76) ausübt.
13. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Abdeckelement (4, 11, 21, 41, 56, 76) in senkrechter Richtung zum Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) verstellbar ist.
14. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Abdeckelement (4, 11, 21, 41, 56, 76) mit dem Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) über eine Führung (5, 93, 94) verbunden ist, die wenigstens zum größten Teil parallel zu diesem Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) verläuft.
15. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Wandteil (2, 12, 25, 31, 35, 43, 52, 59, 74) wenigstens teilweise aus Kunststoff hergestellt ist.
16. Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem

der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Abdeckelement (4, 11, 21, 41, 56, 76) wenigstens teilweise aus Kunststoff hergestellt ist.

17. Deckel (52, 70, 105) für einen Lebensmittelbehälter, insbesondere für einen Getränkebehälter (50, 69, 104), ausgestattet mit einer Schließvorrichtung (1, 10, 20, 30, 40, 53) nach einem der vorhergehenden Ansprüche.
18. Deckel (52, 70, 105) nach Anspruch 17, **dadurch gekennzeichnet, dass** dieser Deckel (52, 70, 105) aus Kunststoff hergestellt ist.
19. Lebensmittelbehälter (50, 69, 104), insbesondere ein Getränkebehälter (50, 69, 104), der wenigstens einen Deckel (52, 70, 105) nach Anspruch 17 oder 18 besitzt.
20. Lebensmittelbehälter (50, 69, 104) nach Anspruch 19, **dadurch gekennzeichnet, dass** die Maße dieses Lebensmittelbehälters (50, 69, 104) den Standardmaßen für Getränkedosen entsprechen.
21. Lebensmittelbehälter (50, 69, 104) nach Anspruch 19, **dadurch gekennzeichnet, dass** die Form dieses Lebensmittelbehälters (50, 69, 104) von den Standardmaßen für Getränkedosen abweicht.
22. Lebensmittelbehälter (50, 69, 104) nach einem der Ansprüche 19 bis 21, **dadurch gekennzeichnet, dass** sein oberer Teil so geformt ist, dass ein vorstehender Rand (54, 91), der um die Trinköffnung (3, 15, 24, 34, 44, 60, 75) herum angebracht ist, wenigstens einen Teil besitzt, der weniger als der übrige Teil dieses Randes (54, 91) vorsteht.
23. Lebensmittelbehälter (50, 69, 104) nach einem der Ansprüche 19 bis 22, **dadurch gekennzeichnet, dass** der Deckel (52, 70, 105) und der Lebensmittelbehälter (50, 69, 104) mit körpergerecht zusammenwirkenden Kontaktflächen (62, 65, 73, 81) ausgestattet sind.
24. Lebensmittelbehälter (50, 69, 104) nach einem der Ansprüche 19 bis 23, **dadurch gekennzeichnet, dass** der Deckel (52, 70, 105) auf dem Lebensmittelbehälter (50, 69, 104) durch wenigstens eine der folgenden Verbindungen (62, 65, 73, 81) befestigt ist: eine Siegelverbindung, eine Schweißverbindung, eine Schnappverbindung (62, 65), eine Crimpverbindung, eine Falzverbindung, eine Bajonettverbindung, eine Labyrinthverbindung sowie eine Schraubverbindung (73, 81).
25. Lebensmittelbehälter (50, 69, 104) nach einem der Ansprüche 19 bis 24, **dadurch gekennzeichnet,**

dass der Deckel (52, 70, 105) aus einem Material hergestellt ist, das dem Material gleicht, aus dem der Lebensmittelbehälter (50, 69, 104) wenigstens teilweise hergestellt ist.

26. Lebensmittelbehälter (50, 69, 104) nach einem der Ansprüche 16 bis 21, **dadurch gekennzeichnet, dass** dieser Lebensmittelbehälter (50, 69, 104) aus einem schichtartigen kunststoffhaltigen Material hergestellt ist, das sich aus einer oder mehreren Materialschichten zusammensetzt, die nicht aus Kunststoff bestehen.

Revendications

1. Dispositif de fermeture (1, 10, 20, 30, 40, 53) pour emballage alimentaire (50, 69, 104), plus particulièrement pour canette (50, 69, 104), comprenant :

- un élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) pourvu d'une ouverture (3, 15, 24, 34, 44, 60, 75), et

- un organe formant écran (4, 11, 21, 41, 56, 76) qui est déplaçable entre une première position, fermée, obturant l'ouverture (3, 15, 24, 34, 44, 60, 75) dans l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) et une seconde position, ouverte, laissant l'ouverture (3, 15, 24, 34, 44, 60, 75) au moins partiellement ouverte,

étant entendu que l'organe formant écran (4, 11, 21, 41, 56, 76) est pourvu d'un organe de blocage (6, 7, 13, 22, 32, 78, 83, 85) fixant l'organe formant écran (4, 11, 21, 41, 56, 76) dans la première position, fermée, et étant entendu que l'on peut débloquer l'organe formant écran (4, 11, 21, 41, 56, 76) orienté dans la première position, fermée, en déplaçant l'organe de blocage (6, 7, 13, 22, 32, 78, 83, 85) dans une direction qui comprend un angle avec l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74), **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) est rattaché à l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) par un joint étanche (45, 57, 82).

2. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon la revendication 1, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) prend appui sur l'ouverture (3, 15, 24, 34, 44, 60, 75) dans l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74).

3. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon la revendication 1 ou 2, **caractérisé en ce que** l'organe de blocage (6, 7, 13, 22, 32, 78, 83, 85) est constitué par une broche (7, 13, 22, 32, 83, 85) reliée à pivotement à l'organe formant écran (4, 11, 21, 41, 56, 76).

4. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe de blocage (6, 7, 13, 22, 32, 78, 83, 85) est scellé initialement dans la première position, fermée, procurant ainsi une obturation évidente à manipuler.

5. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) se trouve sur un côté de l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) et est rattaché à un élément de commande (42, 58, 77) qui est situé au moins sensiblement sur le côté de l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) éloigné de l'organe formant écran (4, 11, 21, 41, 56, 76).

6. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon la revendication 5, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) et l'élément de commande (42, 58, 77) sont constitués par des éléments séparés, agissant conjointement.

7. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe de blocage (6, 7, 13, 22, 32, 78, 83, 85) est rattaché à pivotement à l'élément de commande (42, 58, 77).

8. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une des revendications 5-7, **caractérisé en ce que** le dispositif de fermeture (1, 10, 20, 30, 40, 53) est pourvu d'au moins un premier passage pour gaz (61, 68, 84) qui est fermé dans la première position, fermée, de l'organe formant écran (4, 11, 21, 41, 56, 76) et qui est ouvert après le déplacement de l'élément de commande (42, 58, 77) depuis la première position initiale de l'élément de commande (42, 58, 77) par rapport à l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74).

9. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le dispositif de fermeture (1, 10, 20, 30, 40, 53) est pourvu d'au moins un second passage pour gaz (99) qui est fermé dans la première position, fermée, de l'organe formant écran (4, 11, 21, 41, 56, 76) et qui est ouvert dans la seconde position, ouverte.

10. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon la revendication 8 ou 9, **caractérisé en ce que** chaque passage pour gaz (61, 68, 84, 99) est défini par une ouverture séparée (3, 15, 24, 34, 44, 60, 75) ménagée dans l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74).

11. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une des revendications 8-10, **caractérisé en ce que** au moins un passage pour gaz (61, 68, 84, 99) est pourvu d'une soupape qui fait partie du joint (45, 57, 82). 5
12. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) prend appui sur l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) par des moyens de sollicitation, lesquels moyens de sollicitation exercent une force dirigée vers l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) sur l'organe formant écran (4, 11, 21, 41, 56, 76). 10
13. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) est déplaçable dans une direction perpendiculaire à l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74). 15
14. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) est rattaché à l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) par un guide (5, 93, 94) d'extension au moins sensiblement parallèle à l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74). 20
15. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément formant paroi (2, 12, 25, 31, 35, 43, 52, 59, 74) est fabriqué au moins partiellement en plastique. 25
16. Dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'organe formant écran (4, 11, 21, 41, 56, 76) est fabriqué au moins partiellement en plastique. 30
17. Couvercle (52, 70, 105) d'un emballage alimentaire, plus particulièrement d'une canette (50, 69, 104), pourvu d'un dispositif de fermeture (1, 10, 20, 30, 40, 53) selon l'une quelconque des revendications précédentes. 35
18. Couvercle (52, 70, 105) selon la revendication 17, **caractérisé en ce que** le couvercle (52, 70, 105) est fabriqué en plastique. 40
19. Emballage alimentaire (50, 69, 104), plus particulièrement canette (50, 69, 104), pourvu d'au moins un couvercle (52, 70, 105) selon la revendication 17 ou 18. 45
20. Emballage alimentaire (50, 69, 104) selon la revendication 19, **caractérisé en ce que** les dimensions de l'emballage alimentaire (50, 69, 104) concordent avec les dimensions normalisées des canettes. 50
21. Emballage alimentaire (50, 69, 104) selon la revendication 19, **caractérisé en ce que** la forme de l'emballage alimentaire (50, 69, 104) diffère des dimensions normalisées des canettes. 55
22. Emballage alimentaire (50, 69, 104) selon l'une quelconque des revendications 19-21, **caractérisé en ce que** la partie supérieure est formée de telle sorte qu'un bord saillant (54, 91) agencé autour de l'orifice de consommation (3, 15, 24, 34, 44, 60, 75) est pourvu d'au moins une partie qui saille moins que l'autre partie du bord (54, 91).
23. Emballage alimentaire (50, 69, 104) selon l'une quelconque des revendications 19-22, **caractérisé en ce que** le couvercle (52, 70, 105) et l'emballage alimentaire (50, 69, 104) sont pourvus de faces de contact coopérant par adéquation géométrique (62, 65, 73 ; 81).
24. Emballage alimentaire (50, 69, 104) selon l'une quelconque des revendications 19-23, **caractérisé en ce que** le couvercle (52, 70, 105) est rattaché à l'emballage alimentaire (50, 69, 104) au moyen d'au moins l'un des assemblages suivants (62, 65, 73 ; 81) : un assemblage scellé, un assemblage soudé, un assemblage à enclenchement (62, 65), un assemblage serti, un assemblage agrafé, une assemblage à baïonnette, un assemblage à labyrinthe ou un assemblage vissé (73, 81).
25. Emballage alimentaire (50, 69, 104) selon l'une quelconque des revendications 19-24, **caractérisé en ce que** le couvercle (52, 70, 105) est fabriqué en un matériau similaire au matériau dans lequel l'emballage alimentaire (50, 69, 104) est fabriqué au moins en partie.
26. Emballage alimentaire (50, 69, 104) selon l'une quelconque des revendications 16-21, **caractérisé en ce que** l'emballage alimentaire (50, 69, 104) est fabriqué en un matériau contenant du plastique, de structure lamellaire, qui est pourvu d'une ou de plusieurs couches de matériau consistant en un matériau autre que du plastique.

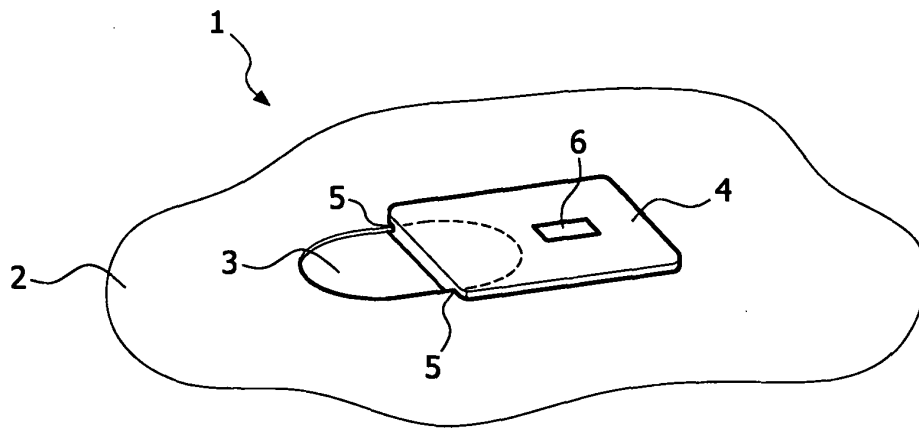


FIG. 1

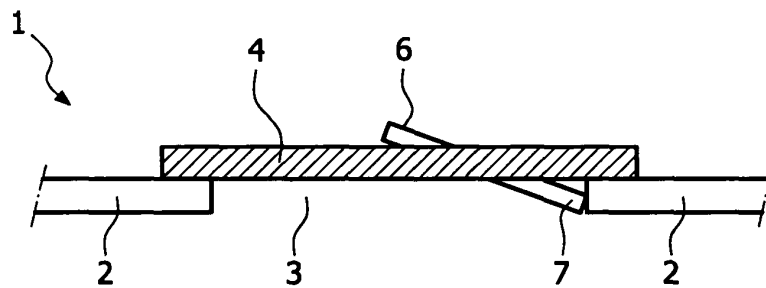


FIG. 2A

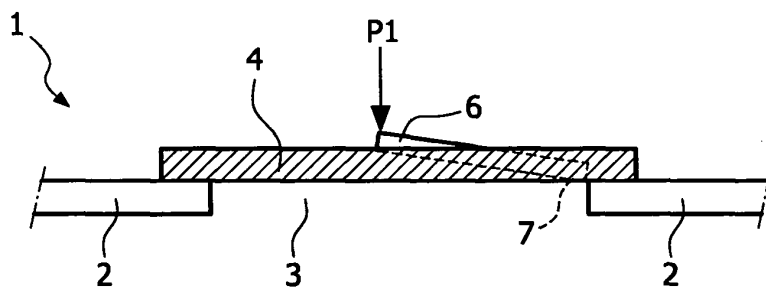


FIG. 2B

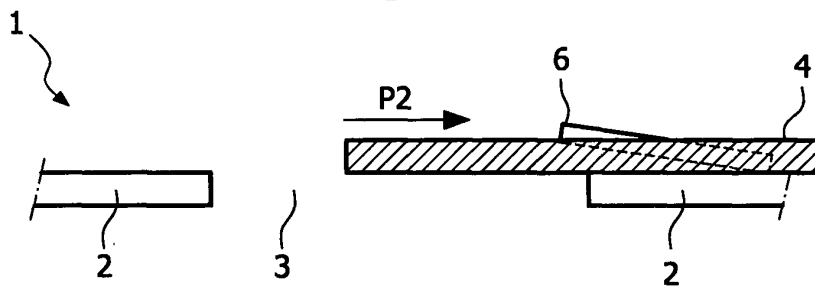


FIG. 2C

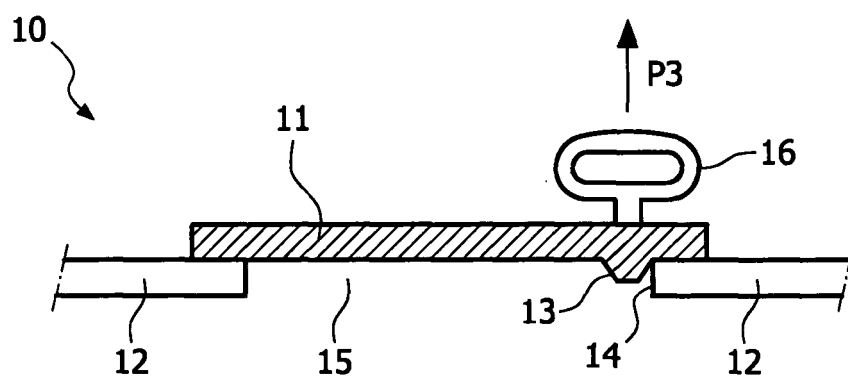


FIG. 3

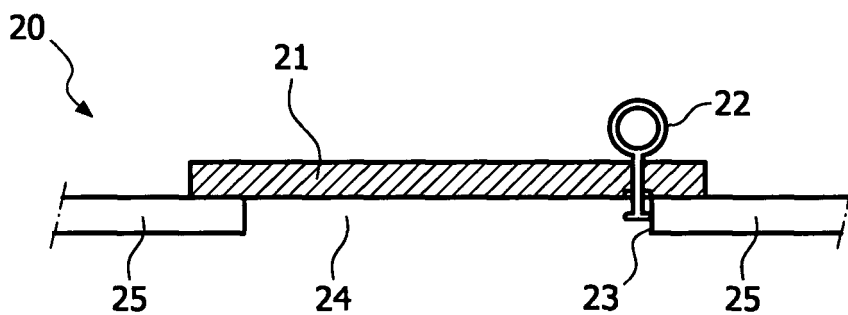


FIG. 4A

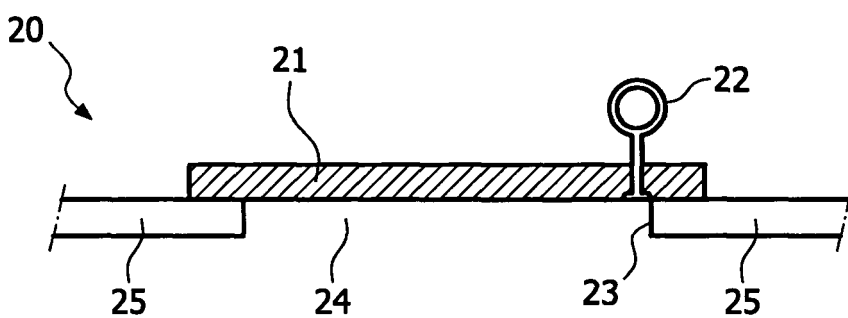


FIG. 4B

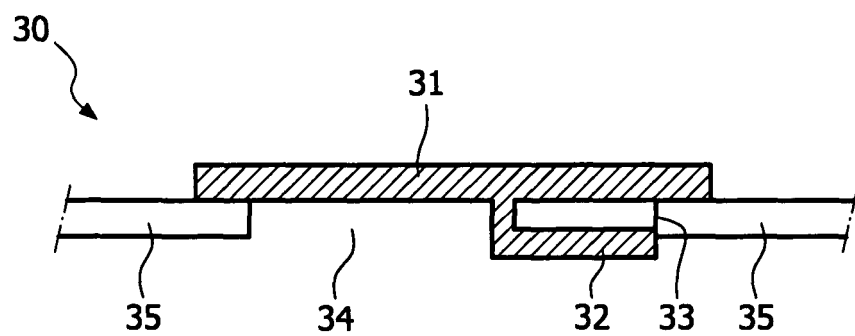


FIG. 5A

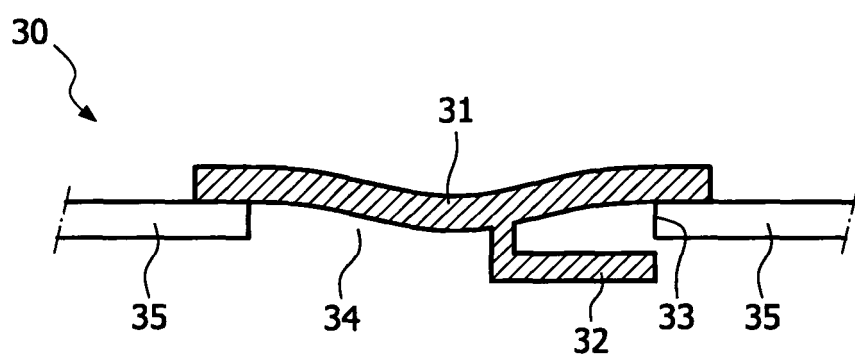


FIG. 5B

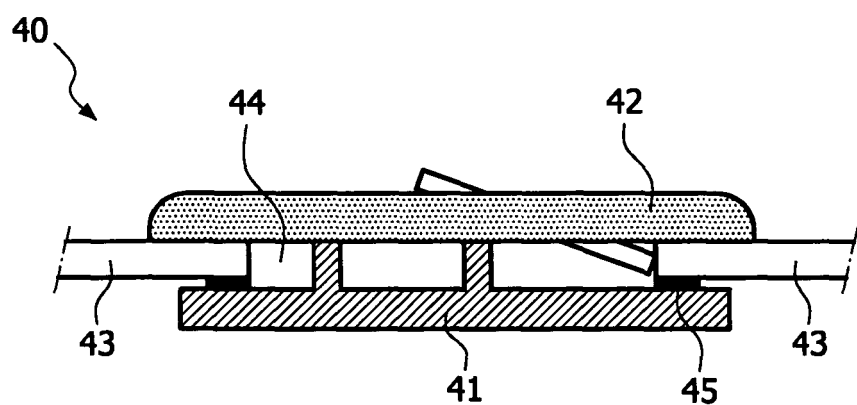


FIG. 6

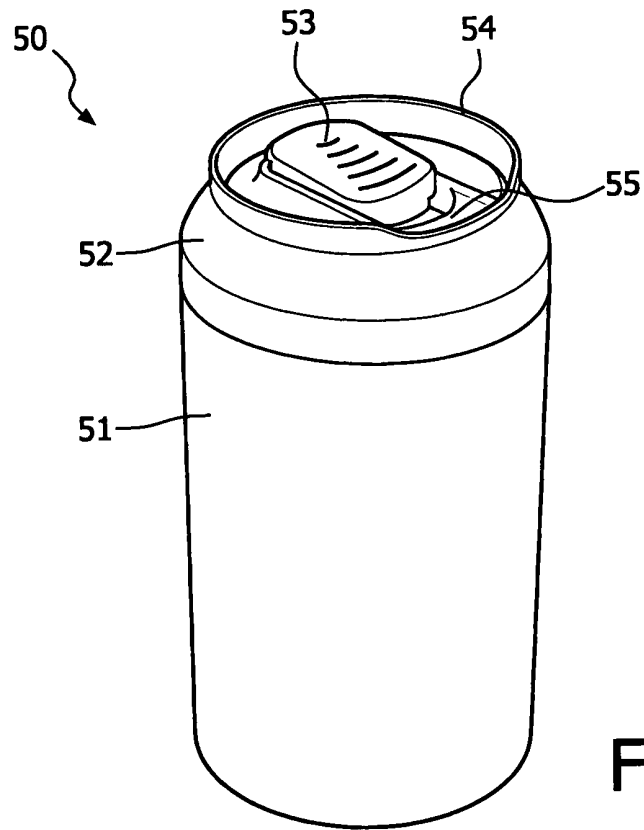


FIG. 7A

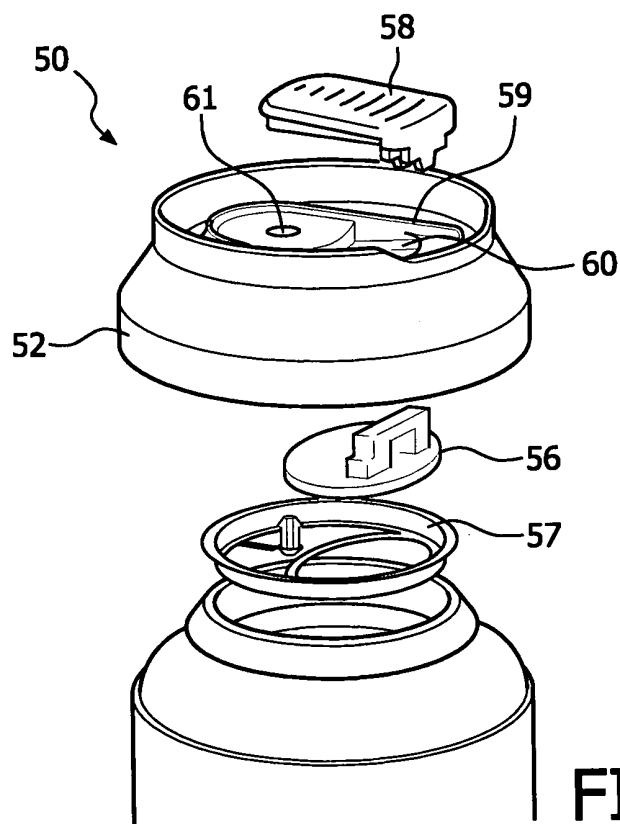


FIG. 7B

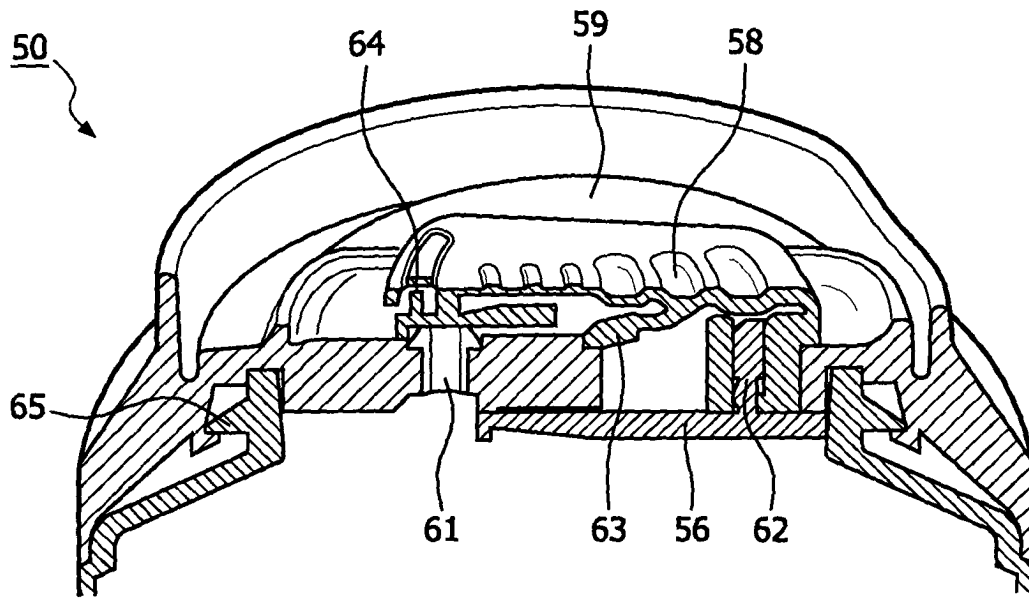


FIG. 8A

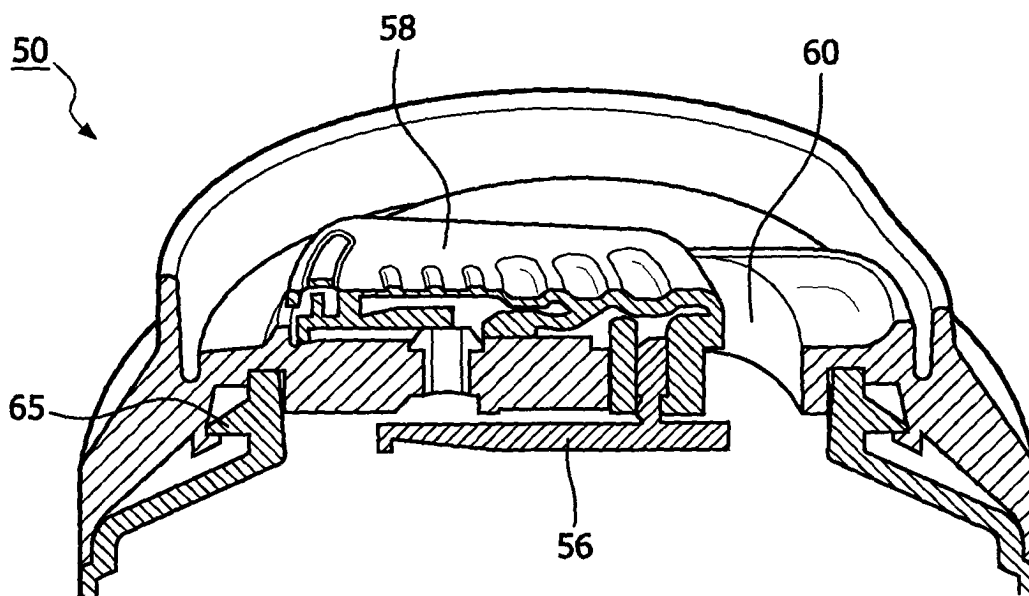


FIG. 8B

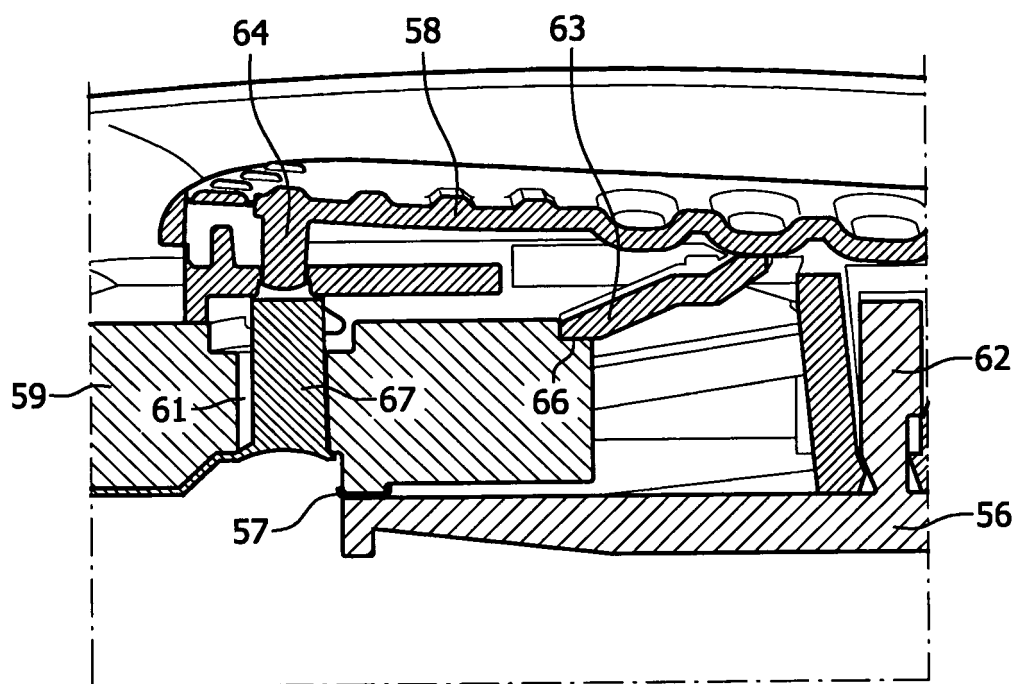


FIG. 9

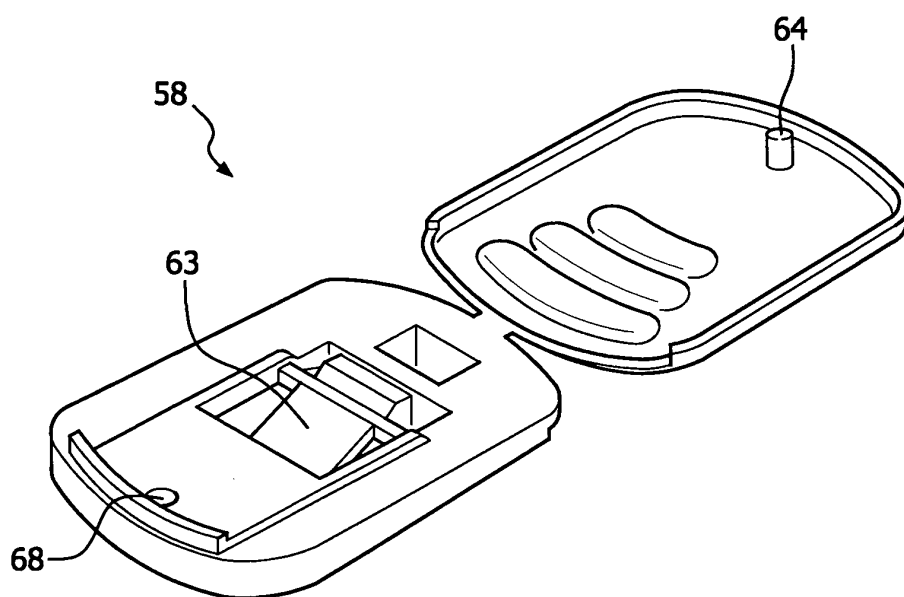


FIG. 10

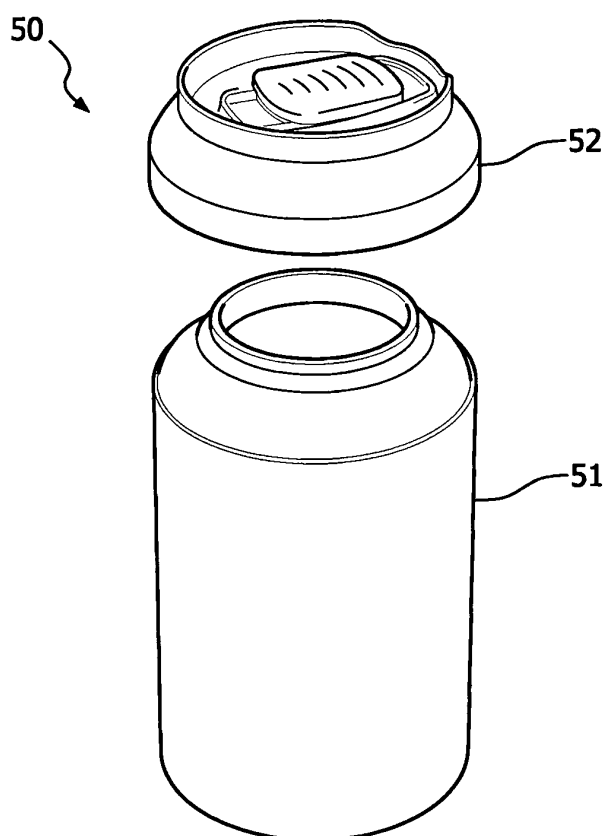


FIG. 11

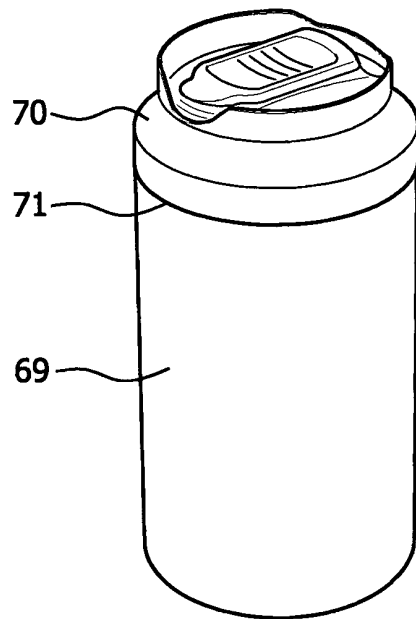


FIG. 12

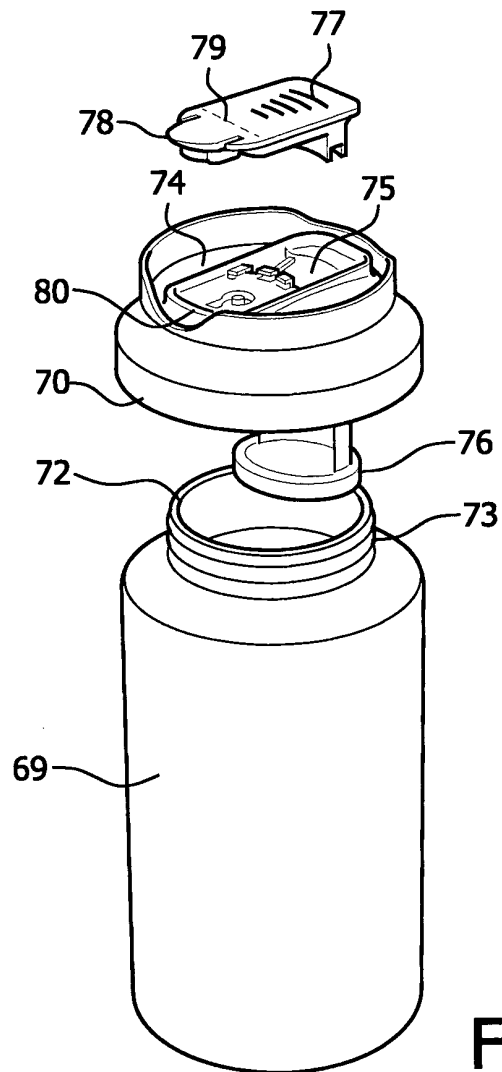


FIG. 13

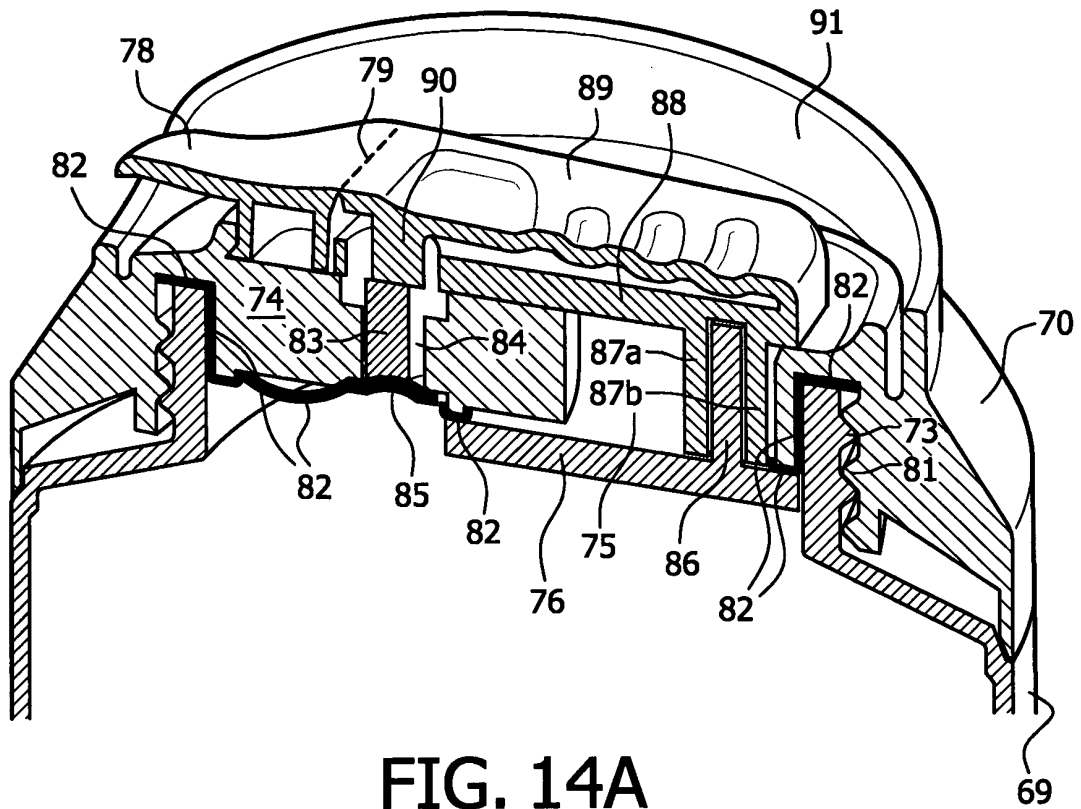


FIG. 14A

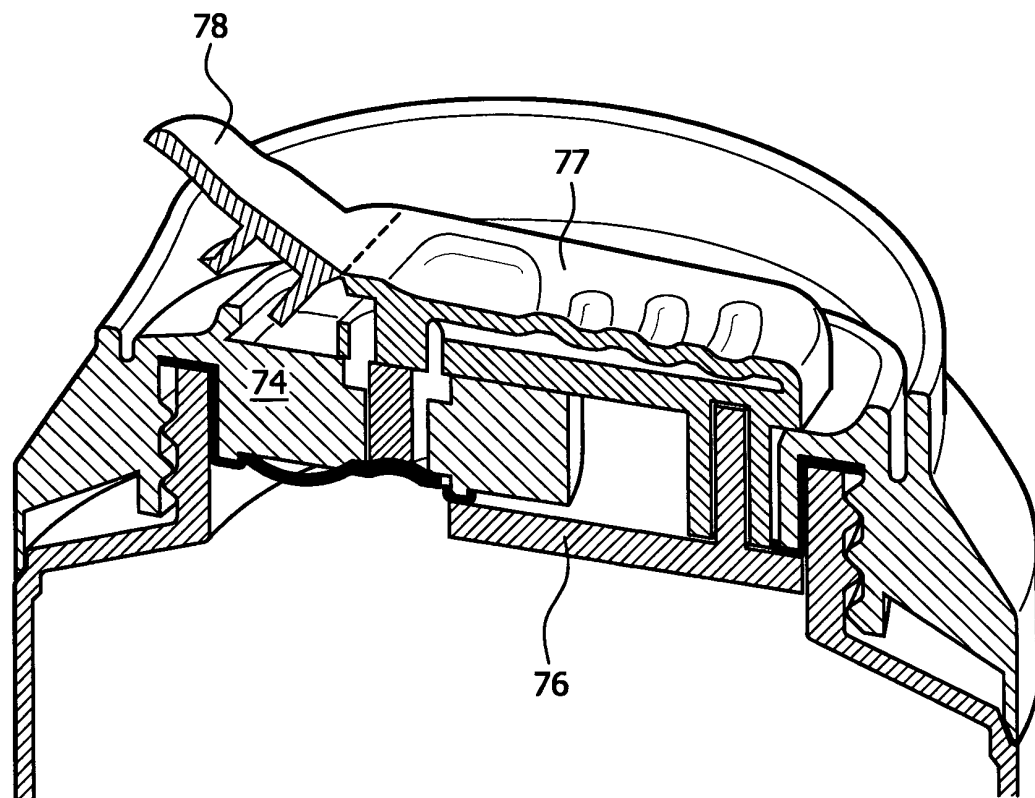


FIG. 14B

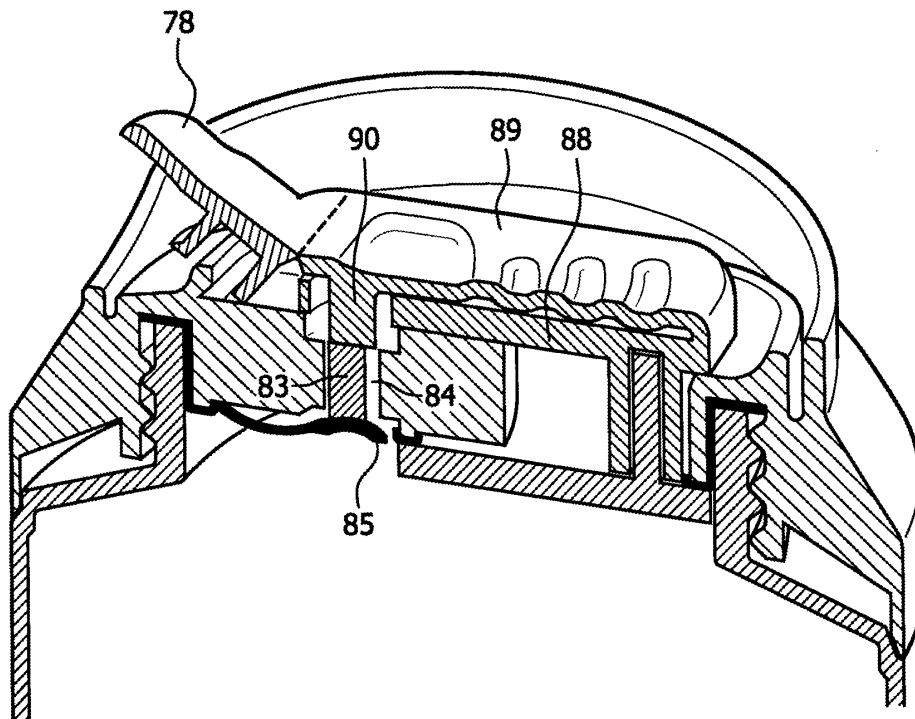


FIG. 14C

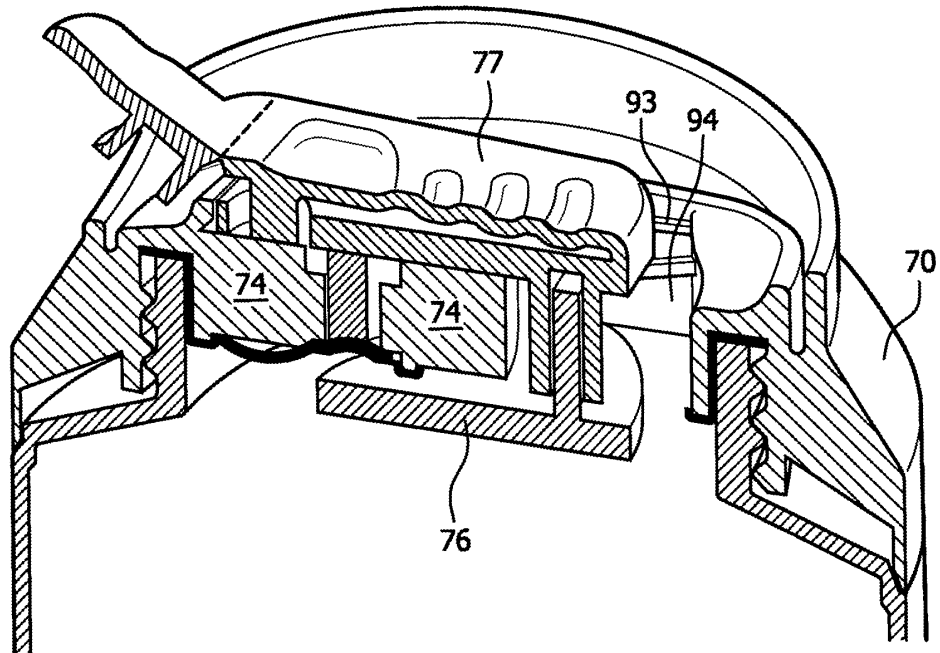


FIG. 14D

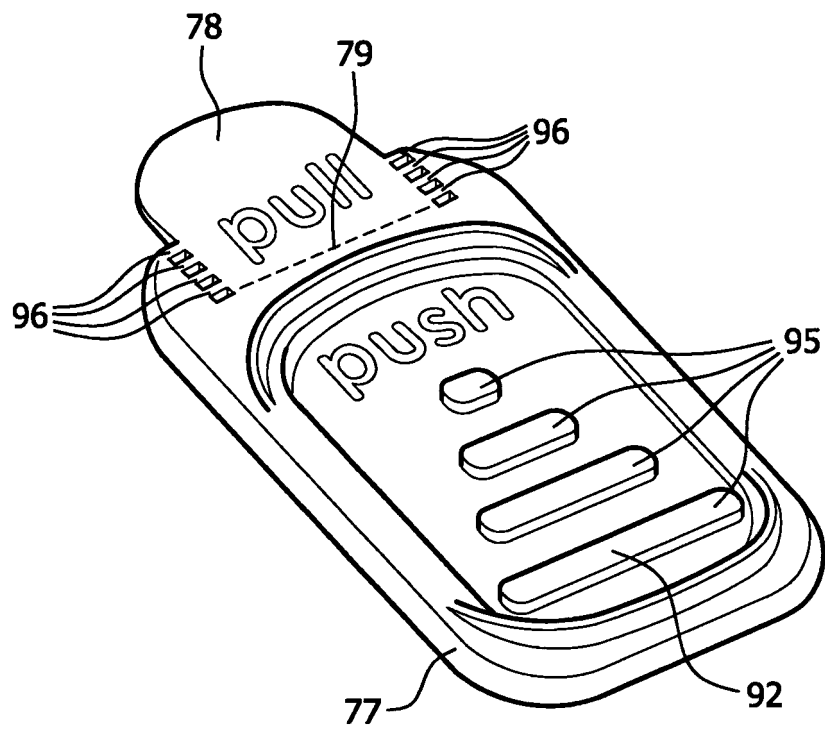


FIG. 15

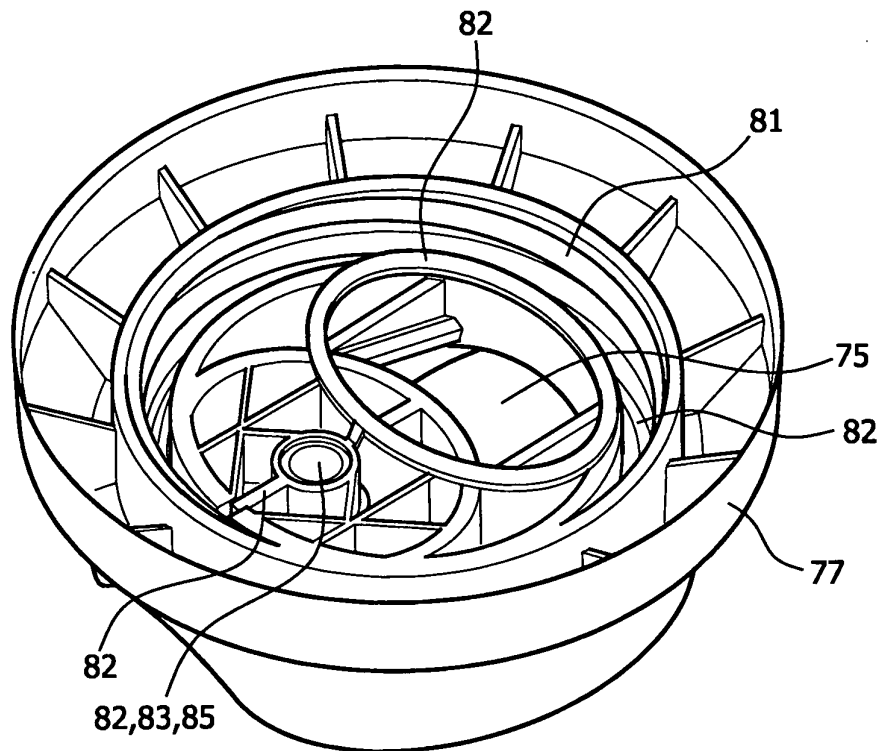


FIG. 16

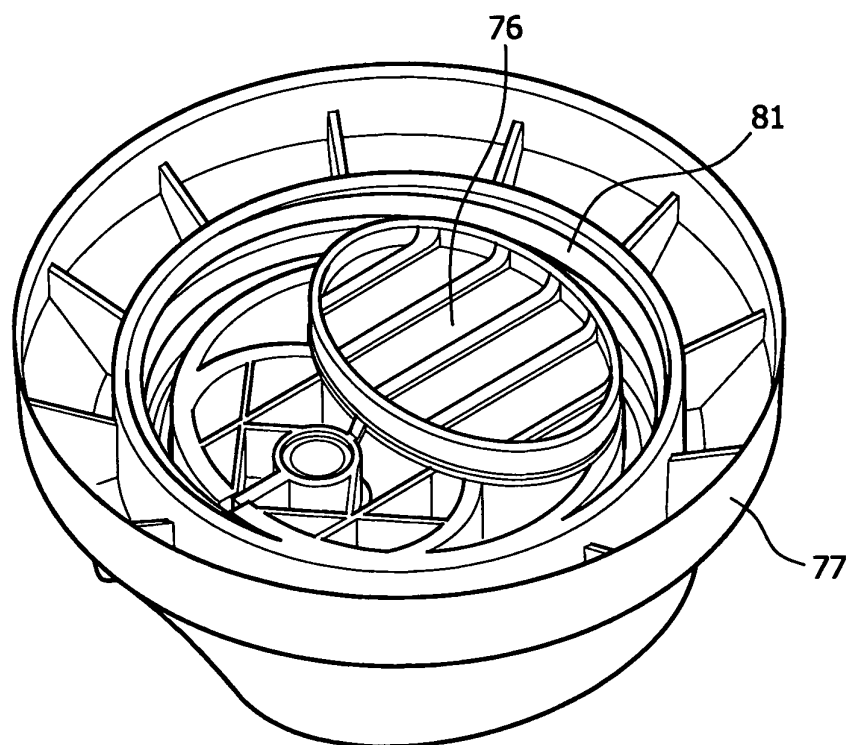


FIG. 17

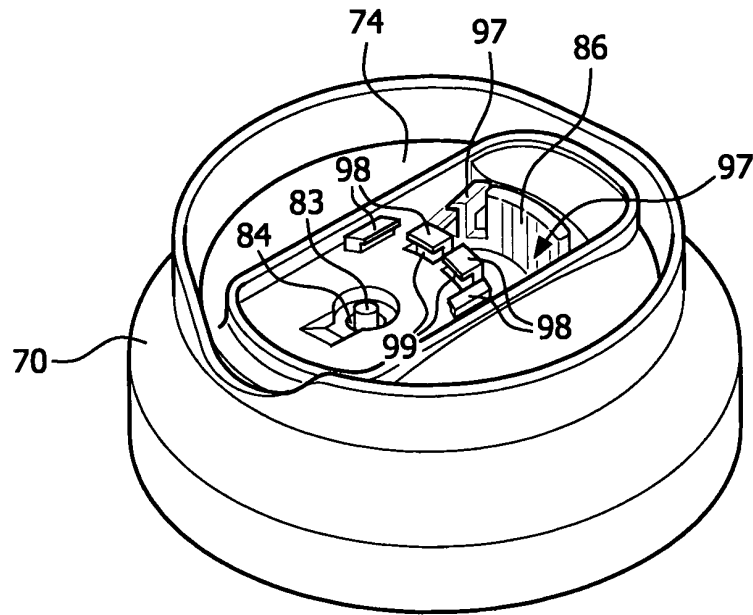


FIG. 18

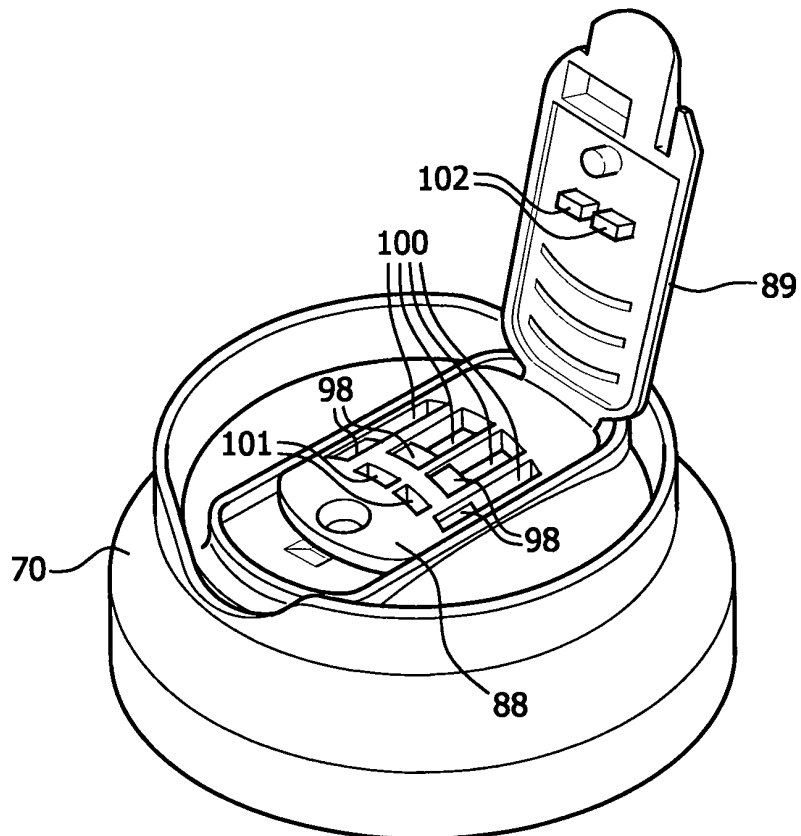


FIG. 19

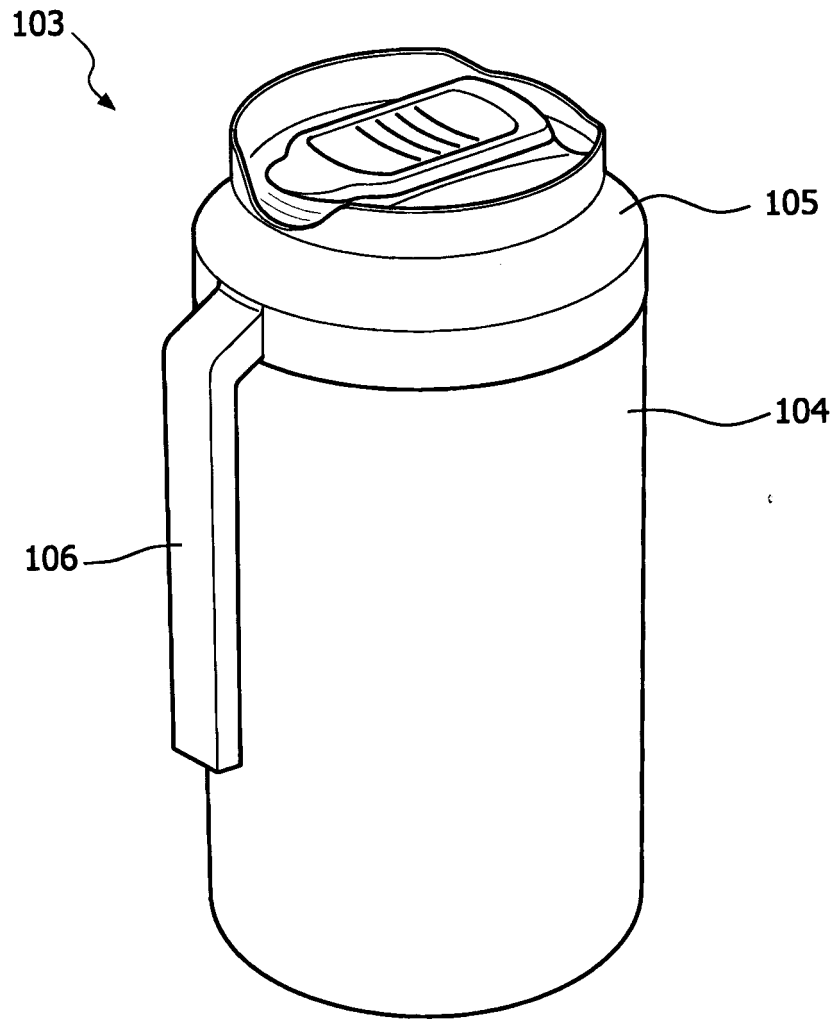


FIG. 20

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4162742 A [0003]