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(54) **Title:** CLOSING ELEMENT AND CONTAINER PROVIDED WITH SUCH A CLOSING ELEMENT

(57) **Abstract:** The present invention relates to a closing element for a container, wherein the container comprises an end surface provided with a drinking or pouring opening, the closing element comprising : a first element part which is adapted to be fixedly mounted on the end surface along said drinking or pouring opening and which has an opening substantially corresponding to the drinking or pouring opening in the end surface; a second element part arranged with a first hinge on the first element part, wherein the second element part is provided with a flexible closing part, wherein the second element part is pivotable between a closed position, which substantially closes the opening in the first element part with the closing part, and an opened position which leaves the opening in the first element part substantially open; a third element part arranged with a second hinge on the second element part, wherein the third element part is embodied to be grasped.



CLOSING ELEMENT AND CONTAINER PROVIDED WITH SUCH A CLOSING ELEMENT

The present invention relates to a closing element for a container, particularly a beverage container, wherein the container comprises an end surface provided with a drinking or pouring opening. The invention also relates to a container into which such a closing element is integrated.

Numerous different types of container are known for storage of liquid substances, in particular optionally carbonated beverages or solid substances, including particles which can be sprinkled or poured. A commonly used type of container is a beverage can. Cans are substantially cylindrical containers of metal (particularly tin), wherein a metal press-in tab is mounted in one of the end walls of the container. The press-in tab can be arranged in rotatable manner on the end wall and is pivotable relative to the end wall such that a lower outer end of the press-in tab can press against a part of the end wall. This part is partially surrounded by a weakened tear line so that pressing down by means of the pressed-in outer end of the tab enables the associated part of the end wall to be partially torn away from the rest of the end wall and bent downward. This creates a drinking or pouring opening in the end wall along which the content of the can can be discharged.

Such a closure of a can is generally known and is used in practically all beverage cans. A drawback of the known closure is that once the press-in tab has opened the pouring or drinking opening, this opening can no longer be closed. Once a can has been opened it must thus in general be wholly emptied, and safe storage of the content of an already opened can is not readily possible in practice. In order to obviate this drawback constructions have been proposed in which the closing element is embodied such that it can reclose the drinking or pouring

opening. Embodiments are for instance known in which an opening is created in the end wall of the beverage container using the above mentioned press-in tab, after which this opening can be reclosed by placing therein a separate sealing element, for instance a cap manufactured from flexible plastic. This cap can be pressed into and pulled out of the opening again in simple manner. In this way the container can be temporarily reclosed after having been opened. Such separate closures have the drawback however that the closure is not always very effective, and leakage may therefore occur. The closures are moreover often only suitable for closing the beverage container if the beverage container is not shaken too much. If the beverage container is shaken, for instance during transport (for instance distribution) of the beverage, it is possible, in the case of a carbonated beverage, for such a pressure build-up to occur in the beverage container that said separate closure tends to start leaking. A further drawback of the separate closure is that it must be supplied as a separate element along with the beverage container, for instance by temporarily adhering it to the upper side of the beverage container.

A further drawback of the known closure, optionally in combination with the separate closing element as described above, is that drinking users place their mouth on a part of the beverage container which has been exposed prior to consumption, i.e. during manufacture, transport and storage phases, to ambient influences. The relevant portion (around the drinking opening) thus tends to become dirty, which is often perceived as unhygienic, at least by the users. In some countries it is therefore even mandatory to provide such a beverage container with a plastic or paper protective cap covering for instance the whole end surface of the beverage container. This cap then has to be removed before use, only after which the press-in tab can create the pouring or drinking opening in the end wall.

It is an object of the present invention to provide an improved closing element for such a beverage container, wherein at least one of the above stated drawbacks and other drawbacks of the prior art are obviated.

5 It is also an object of the invention to provide a container with integrated closing element wherein at least one of the drawbacks of the prior art is obviated.

According to a first aspect of the present invention, a closing element for a container, particularly a beverage
10 container, is hereby provided, wherein the container comprises an end surface which is provided with a drinking or pouring opening, the closing element comprising:

- a first element part which is adapted to be fixedly mounted on the end surface along said drinking or pouring opening and
15 which has an opening substantially corresponding to the drinking or pouring opening in the end surface;

- a second element part arranged with a first hinge on the first element part,

- a third element part arranged with a second hinge on the
20 second element part, wherein the third element part is embodied to be grasped; wherein the second element part or the third element part is provided with a flexible closing part, wherein the second or third element part is pivotable between a closed position, which substantially closes the opening in the first
25 element part with the closing part, and an opened position which leaves the opening in the first element part substantially open.

According to an embodiment of the invention, the first hinge and second hinge are situated at opposite outer ends of the second element part. The pivot axes of the hinges moreover preferably
30 extend parallel to each other. The element parts can be moved relative to each other here as a kind of concertina. Owing to the specific arrangement of the hinges use can be made of a relatively large lever when opening the second element part. When

a user for instance pulls on the third element part, force is exerted on the second element part via the second hinge. The second element part, which is pivotable around the first hinge, can thus be easily pivoted to the opened position.

5 The third element part can for instance be pivotable between a starting position, in which the third element part rests on the second element part, and a gripping position in which the third element part extends at an angle relative to the second element part. In the starting position the closing element
10 therefore takes up little height, while in the gripping position the third element part can be readily grasped so that the second element part can be pulled away from the first element part.

 In an embodiment the flexible closing part comprises a peripheral wall, preferably one manufactured from flexible
15 material. The peripheral wall is formed here such that it is overdimensioned to some extent relative to the opening into which the wall is pushed in order to close the opening. A good, substantially liquid-tight or, in determined embodiments, even substantially gas-tight seal can hereby be realized. According
20 to a further embodiment, the peripheral wall is further provided with a radially protruding anti-release edge. This anti-release edge protrudes so far in radial direction that, when the flexible closing part is pushed into the closed position, the anti-release edge remains adhered to the underside of the first element part.
25 This prevents the flexible closing part sliding easily out of the opening in the first element part. The anti-release edge preferably extends all the way around the peripheral wall so that a good seal can be obtained.

 In a further embodiment the flexible closing part comprises
30 one or more radial protuberances for the purpose of holding the second element part in the closed position. These radial protuberances can be formed on the anti-release edge and/or on other parts of the flexible closing part. The function of the

radial protuberances is once again to hold the second element part in the closed position. Certainly when the container comprises carbonated beverage and is subjected to violent movements during the transport phase, it may be necessary to provide both the protuberances and the anti-release edge in order to guarantee a good seal.

In determined embodiments the protuberance and/or anti-release edge can have a substantially rounded (under)side and an opposite, substantially flat (upper) side. When pressed the rounded form provides some measure of guiding, while the flat side prevents the closing element unintentionally springing open.

In a determined embodiment one or more strengthening ribs are provided on the inner side of the peripheral wall. The strengthening ribs make it for instance possible, in the case of a closing element with relatively great flexibility (in order to enable a good seal), to nevertheless provide the required degree of stability.

When the closing element is applied on a container with an upright edge, such as a beverage can, a determined embodiment of the invention can provide fixing means for releasable fixing of the closing element to said upright edge of the container. This means that an opened closing element can be fixed in the opened position. This is for instance convenient when drinking from the beverage container.

In a further embodiment the second element part comprises a notch. The second element part is further embodied such that it can be pivoted in the opened position such that it clamps fixedly with the notch to the upright edge of the container.

In yet another embodiment the second element part comprises a venting hole. This hole can be embodied such that no liquid can pass through, while gas (air, carbon dioxide etc.) can do so. This reduces the pressure difference occurring between the

interior of the container and outside it. This can for instance reduce the chance of the content spraying out through the opening in the container when the closing element is opened. For the purpose of ensuring that the venting hole is closed during for instance the transport phase or storage phase (e.g. to prevent loss of too much carbon dioxide), the third element part comprises a venting hole closing member for closing the venting hole in the closed situation. When, following transport, the third element part is first pivoted from the starting position to the gripping position, equalization of the pressure difference can already begin to take place. After a time the pressure difference will have decreased sufficiently to move the second element part from the closed to the opened position.

According to a further embodiment, the closing element comprises a securing element mounted and/or formed on the first and second element parts for securing the first and second element parts in the closed position. This enables the user to see that the container has not been tampered with. The securing element can then be removed or broken (for instance torn off) to enable opening and closing of the closing element in the usual manner.

According to a further embodiment of the invention, the third element part comprises one or more clamping parts which can be arranged fitting into one or more recesses in the second element part. This makes it possible to clamp the third element part fixedly to the second element part in the closed position. This prevents the third element part taking up an undesired position prior to use.

In a particular embodiment the closing element comprises an edge part provided on the third element part and formed in order to receive a fingertip therein. The closing element can hereby be opened easily with one fingertip.

The closing element is preferably manufactured wholly or partially from a flexible plastic. The material which is used can differ depending on the content of the can, for food products it could be (preferably "foodproof") PP or PET. The material can
5 be used in different hardness (Shore), for instance depending on the content of the container (for instance whether it is carbonated or not, so that pressure build-up does or does not occur in the container).

In particularly advantageous embodiments the closing
10 element (including the hinges) is manufactured integrally, for instance in an injection moulding process. The element can be manufactured here from one material so that the element has the same hardness throughout and the cost price is moreover generally lower than when materials with two different hardnesses are used.

15 In embodiments of the invention the closing element is manufactured by incorporating the end surface of the container in the injection moulding process. Once the closing element has been formed round the end surface, the end surface can be fixed to the walls of the container. In order to enable a simpler
20 manufacturing process for the container and closing element, in a further embodiment the closing element comprises:

- a first element sub-part provided with one or more first mounting elements;

- a second element sub-part provided with one or more second
25 mounting elements;

wherein the first and second element sub-parts can be coupled to each other via the mounting elements.

This embodiment enables the closing element to be formed separately of (the end surface of) the container so that the
30 manufacturing process can be simplified.

It is further often the case (depending for instance on the intended content of the container) that the desired properties of the material of the part of the closing element situated in

the container differ from the desired properties of the part of the closing element situated outside the container. In embodiments in which the closing element is formed from one material it is sometimes not possible to satisfy the often
5 contradictory requirements made of the material properties. According to a further embodiment, the first element sub-part is manufactured from a different material than the second element sub-part. Each of the element sub-parts can be manufactured here from a material with the desired properties. In a further
10 embodiment of the invention the second element sub-part is manufactured from the same material as the second and third element parts, or the second element sub-part, the second element part and the third element part are manufactured integrally from the same material.

15 According to an embodiment of the invention, the element sub-parts comprise peripheral edges which are formed, in the coupled situation wherein the element sub-parts extend on either side of the end surface of the container, to form a peripheral groove in which the edge around the opening in the end surface
20 is received. The closing element can in this way be easily mounted on the container, i.e. by coupling the two element sub-parts to each other.

There are numerous possible ways of mounting the two element sub-parts. In one of the preferred embodiments of the invention
25 the mounting elements form a bayonet coupling. Once the element sub-parts have been coupled to each other, it is recommended that uncoupling can no longer take place. In most embodiments it is after all the intention to keep the closing element permanently mounted on the container. The element sub-parts, preferably the
30 mounting elements thereof, can for this purpose comprise locking means for locking the element sub-parts in coupled position. An example of such locking means is described in the following figure description, although it will be perfectly clear to the

skilled person that numerous alternative solutions are possible for locking the closing element.

In an embodiment of the invention the central part of the second element part is open. This means that, when the second element part is folded open (and so no longer rests on the first element part) and the user wishes to consume the content of the container, the chance is small that part of the head of the user, for instance his or her nose, makes contact with the closing element in the second and/or third element part thereof. A further advantage is that the open space in the second element part can be used to receive parts of one or both other element parts therein when the closing element is closed. In a further embodiment the second and third element parts therefore have a form such that the third element part can be wholly or partially received in the second element part. The thickness of the closing element can be reduced by having the third element part received in the second element part.

In a particularly advantageous embodiment the element parts are embodied such that the second and third element parts can extend substantially aligned adjacently of each other in the closed situation. This means that the overall thickness of the second and third element parts, and thereby of the closing element, can be very small in the closed situation.

The second element part can for instance be substantially U-shaped. The hinges with the first element part are then preferably formed on the two outer ends of the U-shape. Other forms of the second element part are of course also possible. The third element part can preferably be pivoted to a position between the legs of the U-shape in more or less fitting manner so that a thin and narrow construction can be realized.

According to embodiments of the invention, the closing element comprises a fixing for releasable fixing of the closing element to an upright edge around the end surface of the beverage

container so that the closing element remains fixed on the container during drinking. According to a determined embodiment, the fixing comprises at least one notch provided in the second element part. The second element part is adapted here to be
5 fixedly clamped with the notch to the upright edge of the container in the opened position.

In a specific embodiment of the invention the first and/or second element can be embodied to pivot the third element part beyond the peripheral edge of the end surface of the beverage
10 container in the fully opened position. In determined embodiments the third element part remains in this position under the influence of the force of gravity, in other embodiments the third element part can be fixed in this position by means of a fixing part provided on the third element part, for instance a
15 hook-like member which can be fixed behind the upright peripheral edge of the container. It is possible in all cases to avoid the third element part (which also has the flexible closing part which can come into contact with the content of the container) coming into contact with the face of the user during drinking.

20 In determined embodiments the second element part is embodied such that the second element part comprises a protuberance at the position of the notch. By providing a notch in the first element part the protuberance of the second element part can be received by the notch in the first element part. A
25 better fixation of the two element parts relative to each other can hereby be realized. This can moreover also ensure that the second element part can take a relatively thin form and that the overall height of the first and second element parts in the closed situation is extremely small. In the case of a beverage can with
30 upright peripheral edge all around the end surface the closing element preferably does not protrude above the upright peripheral edge. This can be important in the further processing of the beverage containers.

In embodiments of the invention the first hinge extends on or close to a first outer end of the second element part and the second hinge on or close to an opposite, second outer end of the second element part, and/or the first, second and third element parts are coupled concertina-wise to each other. This can achieve a compact construction which can be pivoted in simple manner between the closed and fully opened position and which moreover takes up a minimal amount of space in the fully opened position and therefore does not get in the user's way during drinking.

In an embodiment of the invention the flexible closing part is positioned adjacently of the second hinge of the second element part and the gripping part on the free outer end of the second closing part. In this way the force required to open a closed closing element can be exerted on the closing part in simple manner.

In order to ensure that the user can see whether the beverage container has been tampered with, the closing element is preferably provided with one or more seals. In determined embodiments the seal comprises at least one set of sealing elements which are present on different element parts and which are mutually coupled during manufacture and/or immediately after filling of the container. Such sealing elements can take different forms. A sealing element can for instance comprise a notch and/or a protrusion. It is for instance possible to provide both the first and second element part with a protrusion, wherein the protrusions are placed on one another in the closed situation. The protrusions are sealed by attaching the protrusions to each other, preferably by fusing them at least partially together. When the closing element is opened the protrusions are torn away from each other, which is immediately visible to the user. Other embodiments have additionally or alternatively sealing elements which are mutually coupled via a tear line. Other embodiments are of course also possible. All

that is important is that, once a closing element has been opened, this must remain permanently visible.

In an embodiment of the invention a strengthening sleeve is provided. This sleeve is adapted to be placed over the free
5 outer end of the third element part in order to strengthen the gripping part thereof. The strengthening sleeve is preferably manufactured from a material which is less elastic than the material of the third element part. In a specific embodiment the strengthening sleeve comprises a receiving space for receiving
10 therein the free outer end of the third element part. The strengthening sleeve is fixed to the third element part by means of a fixing part, for instance a protuberance on the third element part which fits into a corresponding opening in the strengthening sleeve.

15 The flexible closing part can comprise a peripheral wall which is provided with one or more strengthening ribs. Pressure chambers which are open on the underside are defined between the ribs. If the pressure in a closed container increases, for instance under the influence of carbon dioxide gases, the
20 construction of the pressure chambers ensures that the peripheral wall will begin to expand slightly in radial direction. This has a positive effect on the sealing quality of the closing element.

In embodiments of the invention a gasket is provided which
25 is embodied to be placed on the inner side of the container against the edge of a drinking or pouring opening. When the first element part of the closing element is now a clamping part, the gasket can be clamped fixedly between the end wall of the container and the first element part. This results in a seal
30 between the closing element and the container which can be easily realized and is operationally reliable. Formed on the gasket in a further embodiment is a closing flange embodied to be placed on the outer side of the container against the edge of a drinking

or pouring opening. The gasket can in this way wholly enclose the edge of the drinking opening in the container so that a still further improved seal can be realized.

According to another aspect of the invention, a container
5 with a closing element integrated therewith is provided. The closing element can be embodied here to remain permanently mounted on the container from the factory.

As already described above, the container described herein can assume numerous forms and dimensions, and the container can
10 particularly be made suitable for different types of substance (solid/liquid). The container can comprise a beverage can, oil can and the like.

The invention also relates to the use of the closing element defined herein and/or of the container.

Further advantages, features and details of the present
15 invention will be elucidated on the basis of the following description of several embodiments thereof. Reference is made in the description to the accompanying figures, in which:

Figure 1 is a perspective view of the upper side of a
20 beverage can provided with an integrated closing element according to a first embodiment of the invention, in closed situation;

Figure 2 is a perspective view of the beverage can provided with the first embodiment of the closing element, in a first
25 intermediate position;

Figure 3 is a perspective view of the first embodiment of the closing element in an opened position;

Figure 4 is a perspective view of the first embodiment of the closing element in an opened and fixed position;

30 Figure 5 is a perspective view of a beverage can and a rear side of the first embodiment of this closing element in the opened position;

Figure 6 is a perspective front view of a second embodiment of the closing element according to the invention;

Figure 7 is a top view of the second embodiment of figure 6;

5 Figure 8 is a perspective view of the front side of a third embodiment of a closing element according to the invention in opened position;

Figure 9 is a perspective view of the third embodiment of the closing element in closed position;

10 Figure 10 is a perspective view of a beverage can with a fourth embodiment of the closing element according to the invention in a first intermediate position;

Figure 11 is a perspective view of the fourth embodiment of the invention in opened position;

15 Figure 12 is a perspective view of a fifth embodiment of the invention in closed situation;

Figure 13 is a perspective view of the fifth embodiment of figure 12 in an opened situation;

20 Figure 14 is an exploded perspective view of a sixth embodiment of the invention;

Figure 15 is a perspective view of the sixth embodiment in a situation in which it is mounted on a beverage container;

Figure 16 is a perspective view of a seventh embodiment of the invention;

25 Figure 17 is a schematic side view of the seventh embodiment, in which the position of the beverage container is shown in broken lines;

Figure 18 is an exploded side view of an eighth embodiment of the invention and a part of the upper surface of a beverage container;

30 Figures 19A-E are side views of the eighth embodiment of the invention in successive stages of assembly;

Figure 20 is a perspective view of a ninth embodiment of the invention;

Figure 21 is a perspective view of an embodiment of a beverage container;

5 Figure 22 is a perspective view of the upper side of a beverage can provided with an integrated closing element according to a tenth embodiment of the invention in closed situation;

10 Figure 23 is a perspective side view of the tenth embodiment of figure 22;

Figure 24 is a further perspective side view of the embodiment of figure 22;

Figure 25 is a side view of the tenth embodiment in opened position;

15 Figure 26 is a side view of the tenth embodiment in closed position;

Figure 27 is a side view of the tenth embodiment of the invention in fully opened position and mounted on a beverage container;

20 Figure 28 is a perspective view of the beverage container provided with a closing element according to the tenth embodiment in fully opened position;

Figure 29 is a perspective view of the eleventh embodiment of the invention;

25 Figure 30 is a side view of the eleventh embodiment in the folded-open position;

Figure 31 is a side view of the eleventh embodiment in closed position;

30 Figure 32 is a side view in closed position of a twelfth embodiment of the invention;

Figure 33 is a perspective view of the twelfth embodiment;

Figure 34 is a further perspective view of the twelfth embodiment of the invention;

Figure 35 is a top view of the twelfth embodiment of the invention;

Figure 36 is a perspective view of the thirteenth embodiment of the invention;

5 Figure 37 is a side view in closed situation of the fourteenth embodiment, and a container on which the embodiment has to be mounted;

Figure 38 shows the side view of figure 37, wherein the gasket is positioned against the edge of the container;

10 Figure 39 is a side view according to figure 37 in partially opened position;

Figure 40 is a side view of the embodiment in opened situation, wherein the closing element is arranged all around the gasket;

15 Figures 41A-D show respective views showing the steps for mounting the embodiment of the invention on the beverage container;

Figure 42 is a side view of a fourteenth embodiment of the invention;

20 Figure 43 is a perspective view of the fourteenth embodiment;

Figures 44A-44D are respective views showing the different steps for mounting the fourteenth embodiment on the container;

25 Figure 45 is a side view of a fifteenth embodiment of the invention;

Figure 46 is a perspective view of the fifteenth embodiment; and

Figure 47 is a further perspective view of the fifteenth embodiment of the invention.

30 Figures 1 and 2 show a first embodiment of a closing element 6 according to the invention, while figures 3-7 show the combination of a container 1 and an embodiment of the closing element according to the invention integrated with the

container. Figures 3-6 show the closing element in respectively the closed position, a gripping position, an opened position and a clamped position.

Closing element 6 is mounted in permanent manner on the peripheral edge around a pouring or drinking opening (O) in upper end surface 3 of can 1. In the shown embodiment the opening is provided close to an upright collar 4 arranged between said end wall 3 and side wall 2 of can 1. In other embodiments the opening can of course be provided at a random other location in end wall 3. Referring to figure 5, closing element 6 is constructed substantially from a first element part 10, a second element part 11 and a third element part 12. In determined embodiments the third element part 12 forms a pull-tab, and the terms pull-tab and third element part are mutually interchangeable below.

A hinge 13 is provided between first and second element parts 10, 11 so that second element part 11 can be pivoted relative to first element part 10. A hinge 14 is likewise provided between second element part 11 and third element part 12 so that third element part 12 can be pivoted relative to second element part 11.

First element part 10 takes a substantially flat form and is provided at the outer end opposite hinge 13 with an opening, and in the shown embodiment the edge 20 of this opening has a shape corresponding to that of the pouring or drinking opening provided in can 1. Edge 20 comprises a mounting part 19 with which closing element 6 can be permanently fixed to the beverage container. Mounting 17 comprises a radially protruding first and second flange 15, 16 between which a groove 17 is provided. Groove 17 is embodied for receiving therein the edge of the pouring or drinking opening in the beverage container so that the first closing element part 10 can be firmly attached to beverage container 1.

Second element part 11 is provided at the outer end opposite hinge 13 with a downward extending closing part 22. The outer periphery of the downward extending closing part substantially corresponds to the inner periphery of edge 20 of first element part 10. Closing part 22 is manufactured from flexible material so that when it is arranged in the opening of first element part 10 it lies under tension against edge 20 thereof for substantially liquid-tight closing of the opening. In order to ensure that closing part 22 remains in place in the closed position (as shown for instance in figure 3) a radial flange is provided on the underside of closing part 22. The radial flange forms an anti-release edge 23 which, in a fully inserted position of closing part 22, extends just below the underside of mounting 19 so that the anti-release edge (flange) 23 holds closing part 22 in place in the closed situation.

In order to enable the downward extending closing part 22 to display the desired closing behaviour in the radial direction, closing part 22 is embodied as a substantially peripheral wall. Several strengthening ribs 26 are provided in the centre of the wall. These strengthening ribs are preferably made from the same material as closing part 22, but can be manufactured from a different material in other embodiments. The strengthening ribs can for instance be embodied in a harder plastic. Formed between the ribs are chambers in which a pressure build-up can occur (for instance carbon dioxide present in the empty part of the container). The pressure build-up in the chambers ensures that the peripheral wall of the closing part is pushed radially outward, which ensures that the closing element clamps more firmly against the outer edge. This enhances the closure of the closing element. Another function of the strengthening ribs can be that they prevent excessive deformation, for instance in the case of relatively soft materials and/or for instance in the case

of larger surface areas (in the case of containers with a relatively large volume).

As shown in among others figures 1, 2 and 5, the second closing element 11 is provided with a curved groove 35 on the side opposite closing part 22. The groove makes it possible to fix the closing element, more particularly the third element part, to the container, as will be described hereinbelow.

As stated above, third element part 12 is pivotally mounted on second element part 11. In the shown embodiment a number of ribs 36 are arranged on the outer end opposite hinge 14 between the first and second element parts 11, 12 and on the upper side thereof in order to increase the grip on this outer end of third closing part 12. A number of ridges 38 are further also arranged on the underside of the third element part. A number of similar recesses 37 are present at corresponding positions in second closing part 11 in order to clamp third element part 12 to second element part 11 in the closed situation. This reduces the chance of undesired release of third element part 12 from second element part 11, for instance during transport of the beverage container.

Figures 3 to 7 show closing element 6 in mounted situation. Figure 3 shows the closed position, in which the closing element parts 10, 11, 12 are placed one above another and close the pouring or drinking opening in beverage container 1. In the closed situation the overall height of closing element 6 is only a few millimetres, and preferably a height such that the upper side of third element part 12 does not protrude above edge 5 of upright collar 4 of beverage container 10. In other embodiments closing element 6 does protrude above said edge, but only over a small height such that it can be accommodated by an edge of a corresponding collar provided on the underside of beverage container 1. Beverage containers 1 are therefore easy to stack in both embodiments.

In order to open closing element 6 a user grips the third element part 12, preferably at the outer end where the above stated ridges 36 are provided, and pivots the first element part 12 open via hinge 14 (direction P_1 , figure 3) to the first
5 intermediate position shown in figure 4, also referred to as the gripping position. From this first intermediate position the user can then pull the second element part 11 away from the first element part 10 by continuing to pull on the third element part 12 until second element part 11 is pivoted upward (direction P_2 ,
10 figure 4) to the opened position shown in figure 5. So much force must be exerted here that the friction resulting from the presence of the above-mentioned radial edge 23 can be overcome.

In the opened position shown in figure 5 the user can remove the content from beverage container 1. Because in the shown
15 embodiment the second element part 11 completely covers the first element part 10 in the closed position, the upper side of first element part 10 is not contaminated in the opened position shown in figure 5, and the user can place his/her mouth on the closing element in hygienically safe manner.

20 In order to increase convenience of use during pouring or drinking of the content from the beverage container by the user, second element part 11 can be fixed using the above-mentioned curved groove 35 to upper edge 5 of collar 4 of beverage container 1. Figure 6 shows a situation in which closing element 6 is opened
25 and is fixed in the opened position in that second element part 11 is attached releasably to the beverage container.

When use is made of flexible material to embody the second element part 11 it may be sufficient for the purpose of attaching the second element part to the beverage container to arrange a
30 narrow groove 35 in the upper surface thereof. In the first embodiment of the invention shown in for instance figure 4 a number of fixation protrusions 40 are however arranged in groove

35 with which the closing element can be clamped even more effectively to upper edge 5 of the beverage container.

A hole 38 is preferably provided in the second closing part 11.

5 Figures 8 and 9 show a second embodiment of the invention. The second embodiment is identical to the first embodiment with the exception of a number of aspects to be discussed hereinbelow. The first aspect relates to an extension of a third element part 12 with a tongue 31. This makes it easier for a user to grip second
10 element part 12. A further differing aspect relates to the radial anti-release edge 23. In the shown second embodiment this edge 23 is provided with a number of protuberances 24 arranged over the periphery of the edge. These protuberances 24 extend in radial direction and are slightly rounded on the underside, and
15 take a flat form (in radial direction) on the upper side. Due to the slightly round underside the protuberances 24 can be pushed easily into the opening of closing element 6. Once the second element part 11 has been pivoted fully into the closed position, the flat upper side of protuberances 24, in co-action
20 with anti-release edge 23, ensures that element 22 is secured in said opening. Particularly when a relatively high pressure prevails inside the beverage container, for instance as a result of carbon dioxide gas pressure, protuberances 24 provide for an improved fixing of the second element part 11 on the first element
25 part.

Another different aspect relates to the securing means with which the second embodiment of the closing element is provided in order to lock or secure the beverage container in the factory. In the shown embodiment the securing means comprise two upright
30 protrusions 42 and 43 which are pushed into corresponding openings 44 and 45 respectively during manufacture in the factory. Protrusions 42, 43 are for instance fused by means of heat with the material of second element part 11. Further shown

is that protrusions 42, 43 have respective narrowed portions 46, 47 close to their connection to first element part 10. This narrowed portion provides a breaking point for the (plastic) protrusion 42, 43. When protrusions 42, 43 are broken off at the position of said narrowed portions upon initial use, the user can easily visually determine that the closing element has already been opened in unauthorized manner.

Figures 10 and 11 show a third embodiment of the invention. This third embodiment is wholly similar to the first embodiment of the invention, with the proviso that, instead of the above-mentioned tongue 31 according to the second embodiment for the purpose of improving the gripping options for the user, a protuberance 40 is arranged on the upper side of closing element 12 for the same purpose. This protuberance 40 is formed such that the end of a finger, for instance the index finger, can be placed herein in stable manner so that grip on the third element part 12 can be improved.

Figures 12 and 13 show a fourth embodiment of the invention. In this embodiment a minuscule hole 50 is arranged in second element part 11. The hole is so small that, while no liquid can escape therethrough, air can do so. Hole 50 is positioned at the location of the above-mentioned opening in first element part 10 so that air can escape from the beverage container in the position shown in figure 12. When third element part 13 is however pivoted to a position on top of second element part 12, a plastic pin 51 provided on the underside of third element part 13 will seal said hole 50. In this closed situation neither liquid nor air can escape from the beverage container.

When opening the closing element 10 the user first pulls the third element part 12 away from the second element part 11, wherein said pin 51 is then pulled out of hole 50. This makes it possible for any carbon dioxide gas in the beverage container to escape so that the can can be further opened with a reduced

chance of the liquid being able to escape from the beverage container due to carbon dioxide gas pressure.

Figures 14 and 15 show a sixth embodiment of the invention. The sixth embodiment is largely identical to the second
5 embodiment, with the exception of a number of aspects to be discussed hereinbelow. In the following description the same reference numerals will be used as far as possible for identical components.

Figure 14 shows a closing element 53 substantially
10 constructed from a first element part 54, a second element part 11 and a third element part 12. Third element part 12 forms in the above described manner a pull-tab to enable the closing element to be pulled open. A hinge 13 is provided between the first and second element parts 54, 11 so that second element part
15 11 can be pivoted relative to first element part 54. A hinge 14 is likewise provided between second element part 11 and third element part 12 so that third element part 12 can be pivoted relative to second element part 11.

In the shown embodiment the first element part 54 is divided
20 into two element sub-parts, i.e. an upper element sub-part 55 and a lower element sub-part 60. Both element sub-parts 55, 60 are in principle separate of each other but can be attached to each other in the manner to be described below.

The upper element sub-part 55 has a substantially annular
25 element 56. Two bayonets parts 57 are provided on the radial inner side of the annular element. The lower element sub-part 60 comprises an annular upright (axial) edge 62 and an annular (radial) edge 61 formed thereon.

Figure 14 shows the situation before closing element 53 is
30 mounted on a wall of a beverage container 2, while figure 15 shows the situation in which the closing element is coupled to end wall 3 of beverage container 2. In the coupled situation shown in figure 15 the element sub-parts 55, 60 are attached to each other

so that the edge of wall 3 is positioned in channel 75 between the annular element 56 of the upper element sub-part 55 and the annular edge 61 of the lower element sub-part 60. This holds closing element 53 in place.

5 According to the shown embodiment use can be made of a bayonet coupling to couple the upper and lower element sub-parts to each other. As stated above, the upper element sub-part 55 is provided for this purpose with bayonets parts 57 extending radially inward. Upright edge 62 of the lower element sub-part
10 60 is similarly provided with radial notches 64. Each of the notches 64 comprises an insert part 65 along which bayonet parts 57 can be pushed into the notches and a coupling part 66 into which bayonet parts 57 can slide by rotating the lower and upper element sub-parts relative to each other. Notch 64, and more
15 particularly coupling part 66 thereof, has a conical portion. This means that edge 69 is thinner at the outer end of coupling part 66 than at the position of the start 68 of the coupling part. This results in the upper and lower element sub-parts being pressed extra firmly against each other. This makes the closing
20 element better able to withstand the pressures which may occur in the beverage container.

 In order to prevent the upper and lower sub-element parts detaching from each other once they have been coupled, for instance during the transport phase of the beverage container
25 or as a result of improper use of the closing element, the shown embodiment provides a securing or locking for the purpose of locking the closing element in the coupled position shown in figure 15. The locking comprises two axial resilient protrusions 70, one protrusion on each bayonet part 57. When the sub-element
30 parts have been screwed onto each other, these protrusions 70 come to rest in corresponding openings 71 provided at the end of coupling parts 66 of notch 64. This prevents the element sub-parts being removed from each other again.

It is also simple to embody the lower element sub-part 60 in a material (more particularly a material with different material properties) other than that of the upper element sub-part 55. Because the two sub-parts are formed separately of each other, the lower sub-element part 60 can for instance be embodied with a hardness (usually a greater hardness, for instance to prevent the closing element being pulled in its entirety out of the opening in the beverage container) other than that of the upper sub-element part 55. The upper sub-element part 55 is preferably formed integrally with the other element parts 11 and 12, and element parts 11, 12, 55 are therefore then manufactured from the same material. This material generally has an optimal hardness which is lower than the hardness of the lower sub-element part. A correct choice of the two hardnesses can ensure that the pressure tightness (as a result of carbon dioxide gas) is enhanced.

Figures 16 and 17 show a further embodiment of a closing element 80 according to the invention. Closing element 80 corresponds to the above described embodiments, with the exception of the aspect described below. The closing element comprises a first element part 90, a second element part 91 and a third element part 93, wherein the element parts are connected to each other via hinges in the above described manner. Edge 81 of first element part 90 corresponds to for instance the above-mentioned edge 20 of first element part 10. A first connecting part 82 is however provided on the underside of edge 81. This connecting part 82 comprises a substantially cylindrical wall which is provided on the outward facing peripheral surface with screw thread 83.

Further provided is a ring 84. The ring is formed such that it can be pushed over the connecting part. Ring 84 is manufactured from relatively flexible material (material with a relatively

low hardness) and is adapted to realize an improved seal between the closing element and the beverage container.

A second connecting part 85 can be attached to the first connecting part 82. The second connecting part is substantially annular and comprises screw thread 86 which provided on the inner peripheral surface and with which the second connecting part 85 can be screwed fixedly to the first connecting part 82. A peripheral groove 87 is provided on the upper side of the second connecting part 85 between two upright edges 86 and 88. This peripheral groove is formed such that the above stated ring 84 can be arranged at least partially therein. In the assembled situation ring 84 is enclosed between the underside of the end surface of the beverage container and the second closing part 85, and ring 84 (which is manufactured from relatively soft material compared to the material of connecting parts 82,85) provides for an excellent seal between the beverage container and closing element 80.

Figures 18 and 19 show a further embodiment of the invention. This embodiment corresponds in broad outline to the above described embodiment of figures 16 and 17, with the proviso that an additional closing ring is arranged. Figure 18 shows a closing element 94 which comprises in known manner a first element part, a second element part and a third element part, wherein the element parts are connected to each other via hinges. First element part 95 is provided with a first connecting part 96 which is provided on the outer side with external screw thread. The first element part further comprises a second connecting part 99 which is provided on the upper side in the above described manner with a peripheral groove 100 in which a sealing ring 98 can be accommodated. Second closing part 99 is provided with internal screw thread 101 with which the second connecting part 99 can be screwed fixedly to first connecting part 96. An additional ring 102 is provided as addition to the seventh

embodiment described above. This ring 102 comprises a lying part 103 and an upright part 104. A round opening is arranged in lying part 103, this such that ring 102 can be pushed over connecting part 96 of the first element part.

5 The above-mentioned first ring 98 and second ring 102 are manufactured from relatively soft material (more particularly plastic with a low Shore value). This means that the material has a lower hardness than the material of the remaining part of closing element 94. The two rings 98, 102 have the important
10 function of providing a good seal between the interior of the beverage container and the outside world.

Figure 19 shows several stages of the mounting of the closing element on the beverage container. Figure 19A shows end edge 97 of a beverage container on which the above stated second
15 ring 102 is placed, this such that the opening in ring 102 corresponds to the pouring opening of the beverage container. Figure 19B shows that the first connecting part 96 of the first element part 95 of the closing element is placed via the opening in second ring 102 and end wall 97 of the beverage container.
20 Figure 19C shows that first ring 98 is placed on the underside of end edge 97 of the beverage container. This figure and the subsequent figure (figure 19D) also show how the second connecting part 99 can be screwed fixedly to the first connecting part 96, wherein first ring 98 is clamped between end edge 97
25 and second connecting part 99 (figure 19D). A good seal can in this way be realized between the closing element and the end wall. Figure 19E then shows how a closing part 103 of second element part 91 is pushed into the opening and fixed there in the above described manner by having pushed anti-release edge 104 over
30 lower edge 105 of the first connecting part. In the position shown in fig. 19E the pouring opening of the beverage container is thus fully closed.

Figure 20 shows the ninth embodiment of the present invention. This ninth embodiment is almost wholly similar to the above-mentioned embodiments, with the proviso that a specially embodied hinge connection is provided between first element part 106 and second element part 107. Hinges 108 and 109 are arranged between element parts 106 and 107. These hinges extend at some distance relative to each other and take a slightly oblique form relative to the upper surface of the two element parts 106, 107. The slightly oblique placing of hinges 108, 109 ensures that the element part tends to remain in the folded-open position (as shown in figure 20) when the second element part 107 is opened. This has a favourable effect on the drinking or pouring properties of the whole, since the second element part 107 (as well as the third element part 108 provided thereon) of the closing element remains in the opened position and will thus not get in the way during drinking even when the beverage container is held at an angle.

Figure 21 shows a particular embodiment of the beverage container itself. The figure shows a beverage container 108 which is formed in known manner with an upright edge 109 and an end surface 110. A pouring opening 111 is provided in end surface 110. This end wall 110 is usually manufactured from metal. A flange 112 is situated on the inner side of end wall 110 at the position of pouring opening 111. In the case of a metal end wall this flange 112 can for instance be manufactured by means of a punching operation. Other ways of forming the flange on the end wall are of course also possible. Flange 112 serves to increase the thickness of the end wall locally so that the plastic closing element as described herein can be better mounted on the beverage container.

The plastic closing element can be clamped over said flange 112 and fixed thereto. As a result of a correct dimensioning of the closing element and a correct degree of flexibility thereof,

it is only necessary in determined embodiments to slide the closing element into the pouring opening for sufficiently firm mounting of the closing element on the beverage container. In other embodiments an adhesive material, for instance a

5 "foodproof" adhesive, can additionally further be arranged between the closing element and flange 112. A further advantage of flange 112 is that it can have a positive effect on the strength of the closing element because the collar of the closing element acquires more support surface.

10 Figures 22-26 show a tenth embodiment of a closing element according to the invention, while figures 27 and 28 show a beverage container on which the tenth embodiment of the invention is arranged. The closing element is mounted in optionally permanent manner on the peripheral edge all around a pouring or
15 drinking opening (O) in upper end surface 203 of a container in the form of a can 1. In the shown embodiment the opening is provided close to an upright collar 204 arranged between said end wall 203 and side wall 202 of can 201. In other embodiments the opening can of course be provided at a random other location
20 in end wall 203.

Referring to figures 22-26, closing element 206 is constructed substantially from a first element part 210, a second element part 211 and a third element part 212. In determined
25 embodiments the third element part 212 forms a pull-tab and the terms pull-tab and third element part are mutually interchangeable below.

A hinge 213 is provided between the first and second element part 210, 211 so that second element part 211 can be pivoted relative to first element part 210. A hinge 214 is likewise
30 provided between second element part 211 and third element part 212 so that third element part 212 can be pivoted relative to second element part 211.

First element part 210 takes a substantially flat form and is provided at the outer end opposite hinge 213 with an opening 220, and in the shown embodiment the edge of this opening has a shape corresponding to that of the pouring or drinking opening provided in can 201. The edge comprises a mounting part 219 with which closing element 206 can be mounted on the beverage container. Mounting 219 comprises at least a flat part 262, a radially protruding lower rib or edge 264 and a groove 263 provided therebetween. Groove 263 is embodied to receive therein the edge of the pouring or drinking opening in the beverage container so that the first closing element part 210 can be firmly attached to beverage container 201.

Third element part 212 is provided at the outer end opposite hinge 214 with a downward extending closing part 222. The outer periphery of the downward extending closing part substantially corresponds to the inner periphery of opening 220 of first element part 210. Closing part 222 is manufactured from flexible material so that, when it is arranged in the opening of first element part 210, it lies under tension against edge 220 thereof for substantially liquid-tight closing of the opening. In order to ensure that closing part 222 remains in place in the closed position (as shown for instance in figure 26) a radial flange is provided on the underside of closing part 222. The radial flange forms an anti-release edge or rib 223 which, in a fully inserted position of closing part 222, extends just below the underside of mounting 219 so that anti-release edge (flange) 223 holds closing part 222 in place in the closed situation.

In order to enable the downward extending closing part 222 to display the desired closing behaviour in the radial direction, closing part 222 is embodied as a substantially peripheral wall. Several strengthening ribs 226 are provided in the centre of the wall. These strengthening ribs are preferably of the same material as closing part 222 but can be manufactured from a

different material in other embodiments. The strengthening ribs can for instance be embodied in a harder plastic. Formed between the ribs are 50 chambers in which pressure build-up can occur (for instance carbon dioxide present in the empty part of the container). The pressure build-up in the chambers ensures that the peripheral wall of the closing part is pushed radially outward, which ensures that the closing element clamps more firmly against the outer edge. This enhances the closure of the closing element. Another function of the strengthening ribs can be that they prevent excessive deformation, for instance in the case of relatively soft materials and/or for instance in the case of larger surface areas (in the case of containers with a relatively large volume).

As mentioned above, third element part 212 is pivotally mounted on second element part 211. A grip in the form of a number of ridges 238 is arranged on the underside and upper side of the free outer end of the third element part so that the pull-tab can be firmly grasped by the user.

Figures 27 and 28 show closing element 206 in the mounted situation. The figures show the closing element in the opened position. Referring to figure 5, element parts 210, 211, 212 are placed one above another in the closed position in order to close the pouring or drinking opening in beverage container 201. In order to open closing element 206 a user grips the third element part 212, for instance at the outer end where the above-mentioned ridges 236 are provided, and pivots third element part 212 open via hinge 214 to the opened position shown in figure 2. So much force must be exerted here that the friction resulting from the presence of the above-mentioned radial edge 222 can be overcome. From this opened position the user can then pivot the second and third element parts further to the fully opened position shown in figures 6 and 7. In the fully opened position the user can remove the content from beverage container 201.

In the closed situation (as shown in figure 26) the overall height of closing element 206 is only a few millimetres, and preferably a height such that the upper side of third element part 212 does not protrude above edge 205 of upright collar 204 of beverage container 210. In other embodiments closing element 206 does extend above said edge, but only over a small height such that this can be accommodated by an edge of a corresponding flange provided on the underside of beverage container 201. Beverage containers 201 are therefore easy to stack in both embodiments

As shown for instance in figure 24, second element part 211 is substantially U-shaped. The legs of the U are attached with hinges 207 to the first element part, while the arc of the U is attached to third element part 213 using a hinge. Because the central part of the second element part is open, there is space to wholly or partly receive the third element part therein. In the shown embodiment the shape of the third element part is adapted to the U-shape of the second element part. In the closed situation the third element part can therefore be received in more or less fitting manner in the second element part. Figure 5 shows that it is even possible to align the respective upper surfaces of the second and third element parts relative to each other. This means that the closing element takes up very little height in the closed position.

In the fully opened situation shown in figures 27 and 28 the user can remove the content from the beverage container. In order to ensure that the face of the user does not touch the second and third element parts when drinking from the drinking opening, it is advisable to fix them in the position shown in figures 27 and 28. In order to fix the second element part 211 relative to the beverage container the second element part, as shown in figures 23-28, is provided with a number of curved grooves or notches 235. These grooves are at a position and take a curved

form such that, when the second element part is pivoted open, the grooves come to lie on upper side 205 of upright collar 204 of the beverage container. Owing to the shape and dimensions and as a result of the flexible properties of the material of the element part, the second element part can then be clamped
5 releasably to beverage container 201.

In the embodiment shown in fig. 27 the third element part 212 hangs downward and will be substantially forced to remain in this position because the second element part is clamped
10 fixedly to beverage container 201. When the container is tilted, for instance during drinking, the second and third element parts will therefore also remain in the position shown in figure 27, whereby the user can drink freely without running the risk of the closing element folding shut again.

The notches or grooves 235 in second element part 212 are
15 arranged in a piece of material which is so thin that a protuberance 270 (figure 23) is formed on the side opposite the notch. This protuberance could ensure that second element part 212 could no longer be placed flat on first element part 211, which would result in the overall thickness (height) of the
20 closing element being increased in the closed situation.

Figure 23 however shows that curved grooves or recesses 272 are also arranged in first element part 211. The shape, dimensions and position of these recesses correspond to those
25 of protuberances 270 of second element part 212, so that protuberances 270 can be wholly or partially received in recesses 272.

Determined embodiments of the invention are further provided with one or more sets of sealing elements for sealing
30 the closing element, and as a result also the container, prior to use. Figure 23 shows that two protrusions 274, 274' are provided on the peripheral edge of first element part 211 and two protrusions 275, 275' on second element part 212. After the

closing element has been mounted on the container, the protrusions can be attached to each other, for instance by adhesives such as glue suitable for this purpose or by heating the protrusions and at least partially fusing them together. In this way the first and second element parts are then sealed relative to each other. When the closing element is opened the seal is broken, which can be clearly and easily ascertained by the user.

A similar seal is achieved by the anti-tamper notches 276, 276' and 277, 277' in respectively the first and second element parts 211, 212. The remaining material of the first and second element parts is mutually adhered or fused together to some extent so that the element parts are locally sealed. For sealing of the second and third element parts use can be made of a tongue 278 which is attached to both the second element part and the third element part. The tongue is provided with a tear line, for instance in the form of an elongate local weakening (for instance as a result of the presence of a row of perforations). As long as the tear line is still intact the user knows that the second and third element parts have never been opened relative to each other.

Figures 29-31 show a further embodiment of the invention. This embodiment substantially corresponds to the above described embodiment, with the exception of the aspect to be described below of a hook-like fixing element 251 provided on the underside of the flexible closing part. In the shown embodiment the hook-like element 251 is mounted on one of the ribs 250. In the other embodiment the hook-like fixing element 251 can be provided at another position. What is important is that, when the element parts are moved into the opened position, hook-like element 251 can be placed behind the upright edge or collar of the beverage container so that third element part 213 remains fixed in the fully opened position. Hook-like element 251 can be provided as

alternative to the above-mentioned notches 235, or in addition thereto.

Figures 32 to 35 show a further embodiment of the invention. Said embodiment corresponds to any of the above-mentioned
5 embodiments, with the exception of the aspect of the separate strengthening sleeve to be described below. Strengthening sleeve 254 is constructed from an elongate, flat component 255 which has a little or no flexibility, and a support 256 which is provided at an outer end thereof and in which a receiving space
10 257 is provided. Strengthening sleeve 254 can be pushed over the free outer end of pull-tab 212, for instance when the pull-tab is manufactured from a material with insufficient stiffness. The strengthening sleeve increases the stiffness of pull-tab 212, which can facilitate opening and closing of the closing element,
15 certainly when the whole closing element is manufactured from a relatively flexible plastic. It is of course also possible to manufacture the closing element from two or more different materials with different hardnesses, for instance in a so-called 2K injection moulding process.

20 For the purpose of attaching strengthening sleeve 254 to pull-tab 212 the outer end of pull-tab 212 is provided with an oblique protrusion 258 and the strengthening sleeve is provided with an opening 259 corresponding therewith. The oblique protrusion 258 is embodied such that the strengthening sleeve
25 can slide easily over the pull-tab. Once the protrusion has come to lie in said opening 259, the strengthening sleeve remains fixed to pull-tab 212. The strengthening sleeve is further provided with ridges 239 on the upper side and underside and protrusions 240 on the end surface in order to enhance grip when
30 grasped by the user.

Figures 36-44 show a further embodiment of the invention. In this embodiment the closing element can be mounted in alternative manner on the container. Use is made of a gasket 260.

This gasket is arranged in the container first, only after which the closing element is mounted on the end surface of the beverage container. In the embodiment shown in the figure, gasket 260 substantially takes the form of a flat ring which is provided on the inner side with an upright closing flange 261. Referring to figure 41A, gasket ring 260 is placed against peripheral edge 265 of the end surface of the container defining the drinking opening (O), this such that upright flange 261 closes the lateral side and the underside of peripheral edge 265 as shown in figure 41B. The closing element is then arranged around annular gasket 260 (figure 41C).

Referring to figure 39, the lower element 211 of the closing element comprises a flat element part 262, a notch 263 provided thereunder, and a rib 264. When the closing element is now pressed into the drinking opening, rib 264 and the flat element part will clamp the gasket firmly all around the edge 265 of the drinking opening, herein automatically enclosing gasket 260 therein. This situation is for instance shown in figure 41C. A very good seal can in this way be provided between the closing element and the beverage container. When the flexible closing part of third element part 213 is now pushed into the opening (as shown in figure 41D), the cap of the flexible closing part can be fixed behind the lower element 264 so that the beverage container is (and remains) closed liquid-tightly.

Figures 42-44 show a further embodiment of the invention. In this embodiment gasket 266 substantially takes the form of a flat ring which is provided on the inner side with an upright closing flange 267. Closing flange 267 is moreover provided with an additional lateral closing flange 268. This closing flange 268 provides for a further improved seal, since the edge 265 around the drinking opening is now sealed by the gasket on the underside, lateral side as well as the upper side (figures 44A and 44B). In similar manner as described above, the closing

element can then be pushed over the gasket to the position as shown in figure 44C.

Figures 45-47 shows a further embodiment of the invention. This embodiment corresponds to the above stated embodiment, with
5 the exception of the aspect to be discussed below of the additional securing of the closing element to the container. As shown in figure 45, first element part 211, more particularly part 264 thereof, is provided with a protrusion 269 which can function for additional securing of the closing element. In the
10 shown embodiment the protrusion is attached to the anti-release edge of the closing element which can be positioned in the opening of the container. This securing ensures that, when the closing cap is pulled away, the first element part always remains in place and can therefore not be undesirably detached from the container.

15 The present invention is not limited to the embodiment thereof described herein. The rights sought are rather defined by the following claims, within the scope of which many modifications and adjustments and changes can be envisaged.

CLAIMS

1. Closing element for a container, particularly a beverage container, wherein the container comprises an end surface
5 provided with a drinking or pouring opening, the closing element comprising:

- a first element part which is adapted to be fixedly mounted on the end surface along said drinking or pouring opening and which has an opening substantially corresponding to the drinking
10 or pouring opening in the end surface;

- a second element part arranged with a first hinge on the first element part,

- a third element part arranged with a second hinge on the second element part, wherein the third element part is embodied
15 to be grasped; wherein the second element part or the third element part is provided with a flexible closing part, wherein the second or third element part is pivotable between a closed position, which substantially closes the opening in the first element part with the closing part, and an opened position which
20 leaves the opening in the first element part substantially open.

2. Closing element as claimed in claim 1, wherein the flexible closing part comprises a peripheral wall, and the peripheral wall is provided with a radially protruding
25 anti-release edge for releasable attachment of the associated element part to the first element part.

3. Closing element as claimed in claim 1 or 2, wherein the anti-release edge extends all the way around the peripheral wall.
30

4. Closing element as claimed in any of the foregoing claims, wherein the flexible closing part comprises one or more

radial protuberances for the purpose of holding the second element part in the closed position.

5 5. Closing element as claimed in any of the foregoing claims, wherein a protuberance and/or anti-release edge has a substantially rounded side and an opposite, substantially flat side.

10 6. Closing element as claimed in any of the foregoing claims, wherein one or more strengthening ribs are provided on the inner side of the peripheral wall and/or wherein the flexible closing part comprises one or more open pressure chambers for allowing the peripheral wall to expand in radial direction when pressure increases.

15

 7. Closing element as claimed in claim 6, comprising two or more strengthening ribs extending substantially parallel relative to each other.

20 8. Closing element as claimed in any of the foregoing claims, wherein the container has an upright edge and wherein the closing element comprises fixing means for releasable fixing of the closing element to said upright edge of the container and/or wherein the second element part comprises a notch and
25 wherein the second element part is adapted in the opened position to clamp fixedly with the notch to the upright edge of the container.

30 9. Closing element as claimed in any of the foregoing claims, manufactured from a flexible plastic, in particular manufactured integrally, and more particularly manufactured in an injection moulding process.

10. Closing element as claimed in any of the foregoing claims, wherein the first element part comprises:

- a first element sub-part provided with one or more first mounting elements;

5 - a second element sub-part provided with one or more second mounting elements;

wherein the first and second element sub-parts can be coupled to each other via the mounting elements, wherein the element sub-parts preferably comprise peripheral edges which are formed,
10 in the coupled situation wherein the element sub-parts extend on either side of the end surface of the container, to form a peripheral groove in which the edge around the opening in the end surface is received.

15 11. Closing element as claimed in claim 10, wherein element sub-parts, preferably the mounting elements thereof, comprise locking means for locking the element sub-parts in coupled position, wherein in the coupled position the first element sub-part extends preferably in the container and the second
20 element sub-part extends outside the container.

12. Closing element as claimed in claims 10-11, wherein the first element sub-part is manufactured from a different material than the second element sub-part, wherein the second element
25 sub-part is preferably manufactured from the same material as the second and third element parts.

13. Closing element as claimed in any of the foregoing claims, wherein the central part of the second element part is
30 open.

14. Closing element as claimed in any of the foregoing claims, wherein the second and third element parts have a form

such that the third element part can be received in the second element part.

15 15. Closing element as claimed in any of the foregoing claims, wherein the element parts are embodied so that the second and third element parts extend substantially aligned adjacently of each other in the closed situation.

10 16. Closing element as claimed in any of the foregoing claims, wherein the second element part is substantially U-shaped, wherein hinges are preferably formed on the two outer ends of the U-shape.

15 17. Closing element as claimed in claim 16, wherein the third element part can be pivoted to a position fitting between the legs of the U-shape.

20 18. Closing element as claimed in any of the foregoing claims, wherein the first and/or second element are embodied to pivot the third element part beyond the peripheral edge of the end surface of the beverage container in the fully opened position.

25 19. Closing element as claimed in any of the foregoing claims, wherein the third element part comprises a fixing part for fixing thereof to the beverage container in the fully opened position.

30 20. Closing element as claimed in claim 19, wherein the fixing element comprises a hook-like member provided on the closing part.

21. Closing element as claimed in any of the foregoing claims, wherein the closing element comprises a fixing means for releasable fixing of the closing element to an upright edge round the end surface of the beverage container, wherein the fixing
5 comprises at least one notch provided in the second element part, and wherein the second element part is adapted to be fixedly clamped with the notch to the upright edge of the container in the opened situation, wherein the second element part preferably comprises a protuberance at the position of the notch and wherein
10 a notch is preferably provided in the first element part for receiving therein the protuberance of the second element part in the closed position.

22. Closing element as claimed in any of the foregoing
15 claims, wherein the first, second and third element parts are coupled concertina-wise to each other.

23. Closing element as claimed in any of the foregoing claims, comprising at least one set of sealing elements provided
20 on different element parts in order to seal the container prior to use, wherein a sealing element comprises at least one of a notch in an element part and a protrusion from an element part and/or wherein sealing elements of different element parts are at least partially fused together and/or wherein the sealing
25 elements are mutually coupled via a tear line.

24. Closing element as claimed in any of the foregoing claims, comprising a strengthening sleeve adapted to be placed over the free outer end of the third element part in order to
30 strengthen the gripping part thereof, wherein the strengthening sleeve preferably comprises a receiving space for receiving therein the free outer end of the third element part, wherein the strengthening sleeve is preferably manufactured from

material which is less elastic than the material of the third element part.

25. Closing element as claimed in claim 24, comprising a
5 fixing part for fixing the strengthening sleeve to the outer end of the third element part.

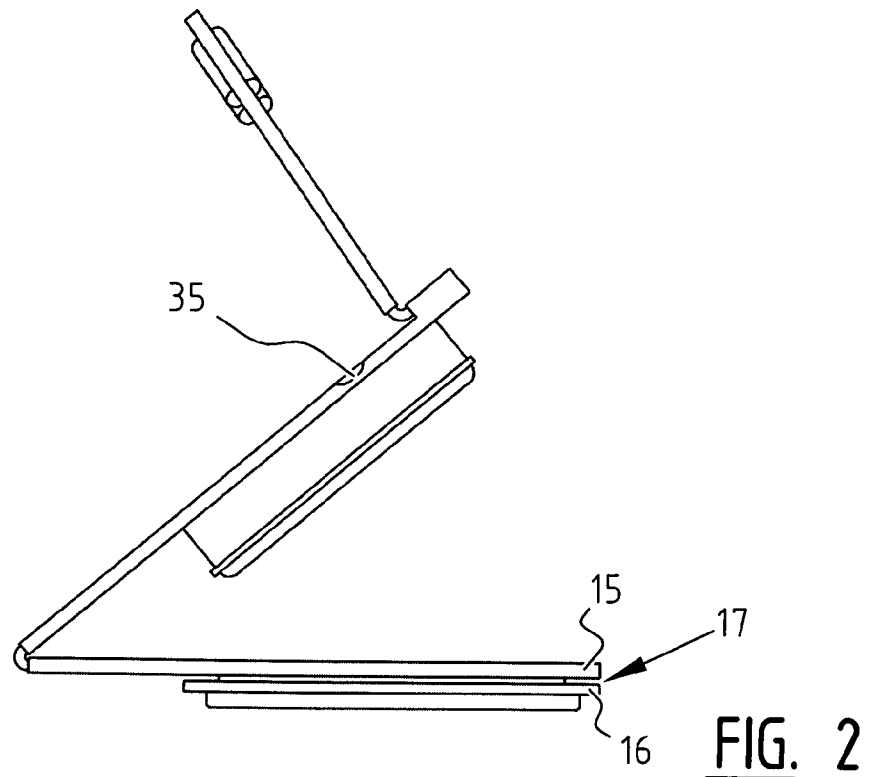
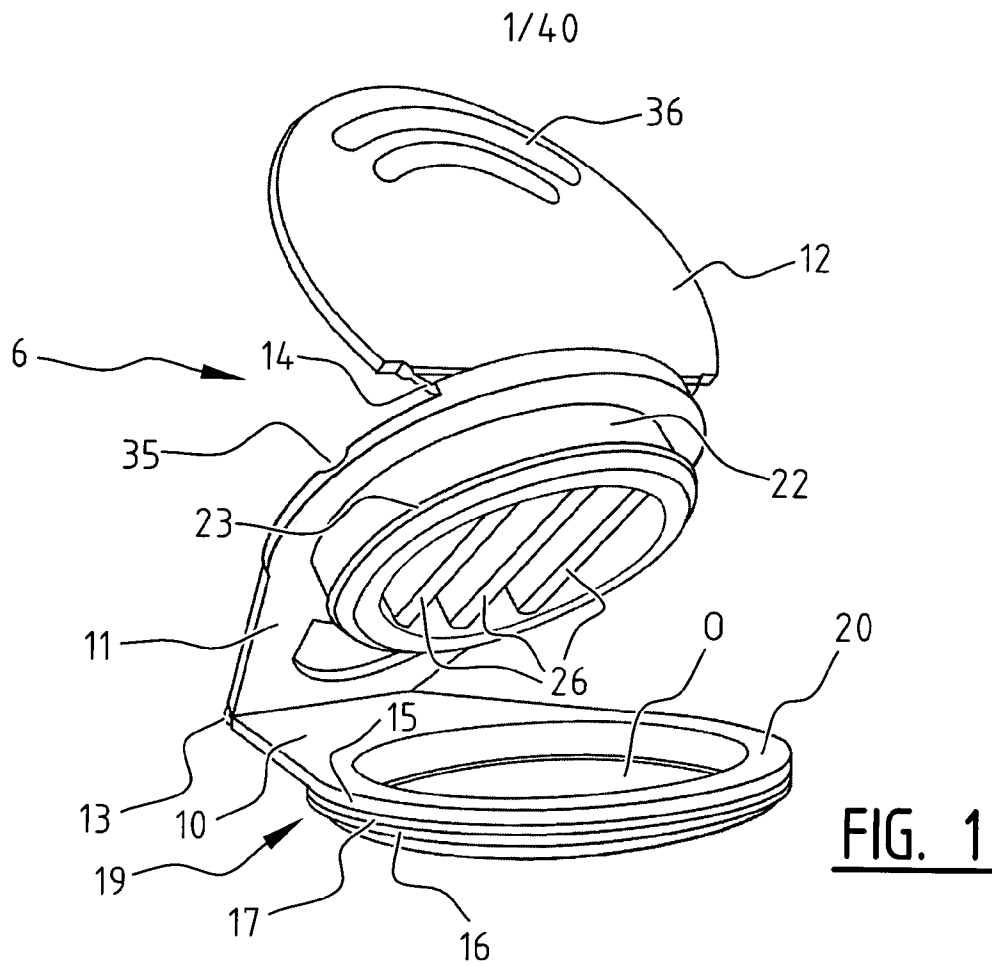
26. Closing element as claimed in any of the foregoing claims, comprising a first element part adapted to be placed on
10 the inner side of the container against the edge of a drinking or pouring opening, wherein the first element part comprises a clamping part for clamping the gasket fixedly between the end wall of the container and the first element part.

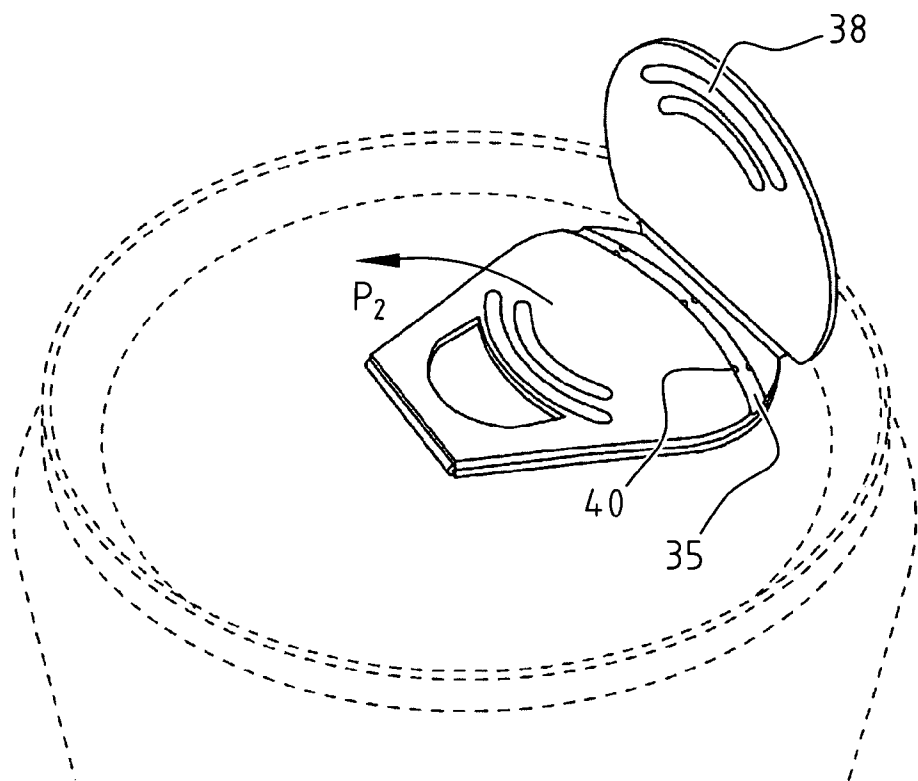
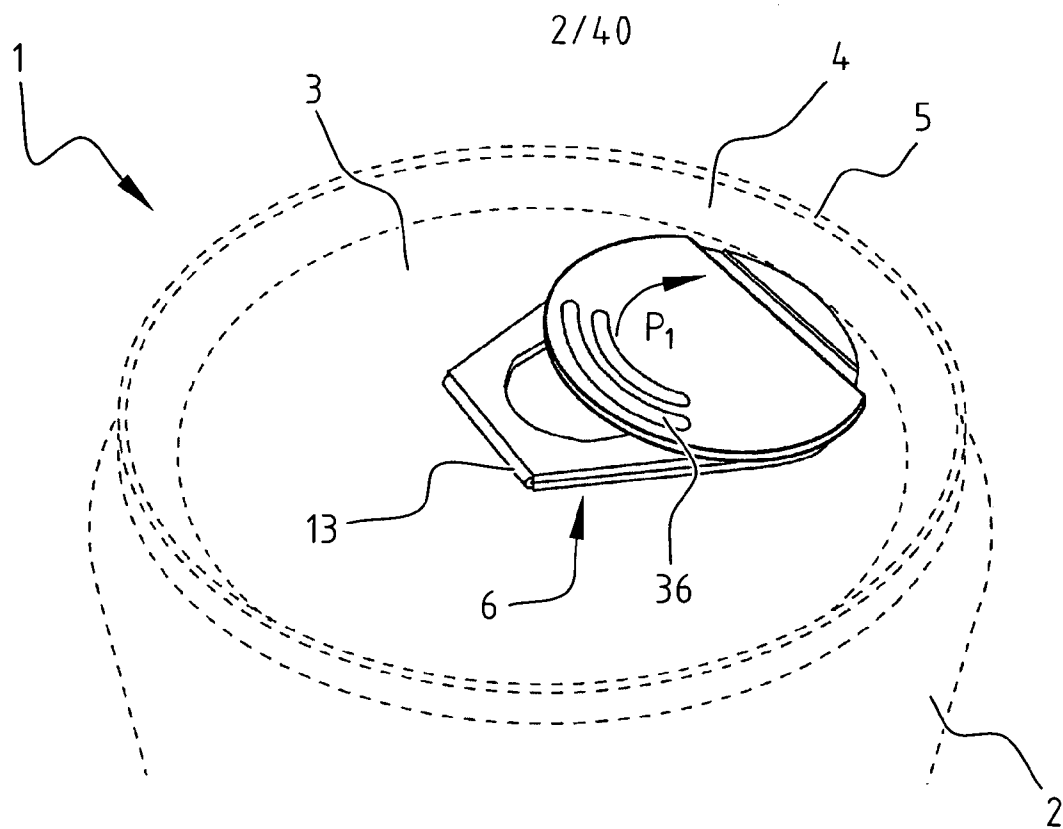
15 27. Closing element as claimed in claim 26, wherein the gasket comprises a substantially round and substantially elastic ring and/or wherein there is formed on the gasket a closing flange embodied to be placed on the outer side of the container against the edge of a drinking or pouring opening.

20

28. Closing element as claimed in any of the foregoing claims, wherein a first hinge part and a second hinge part are arranged between the first and second element parts, wherein the hinge parts extend obliquely relative to the plane of the first
25 element part and/or relative to each other.

29. Container with a closing element as claimed in any of the foregoing claims integrated therewith, wherein the container preferably comprises a liquid-tight and/or gas-tight closable
30 can packaging, in particular a beverage can or oil can.





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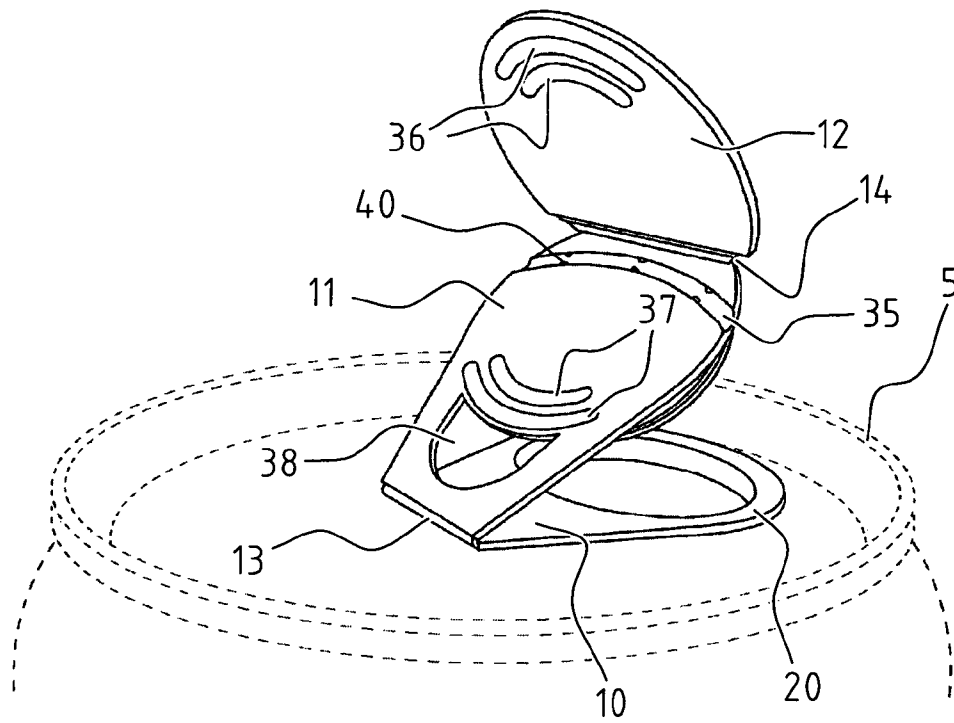


FIG. 5

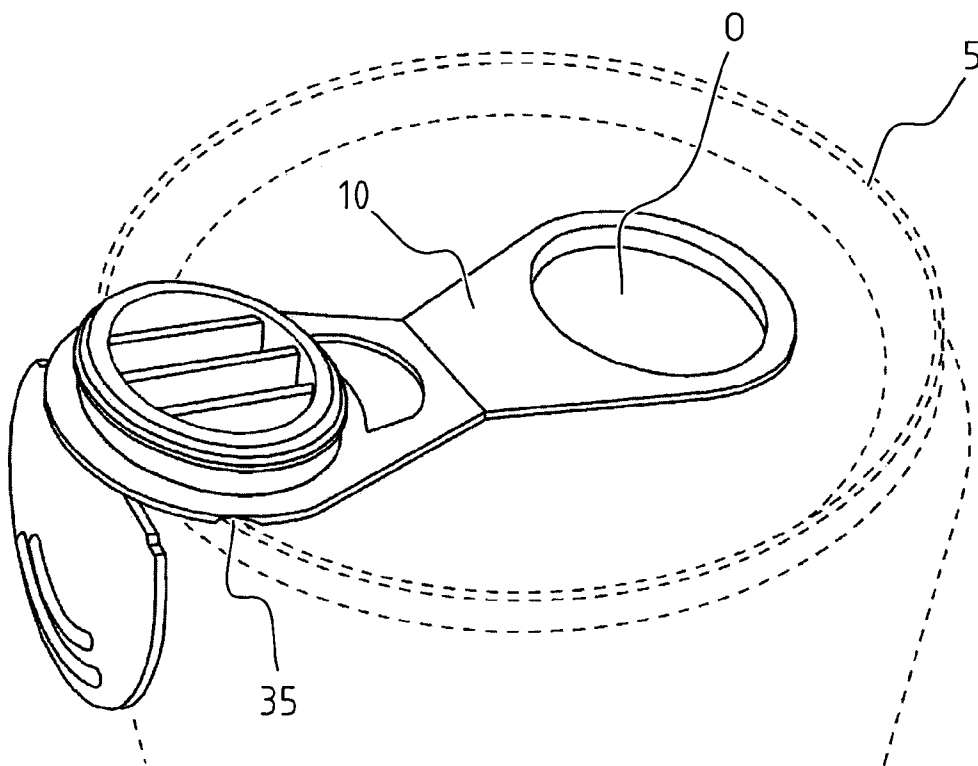


FIG. 6

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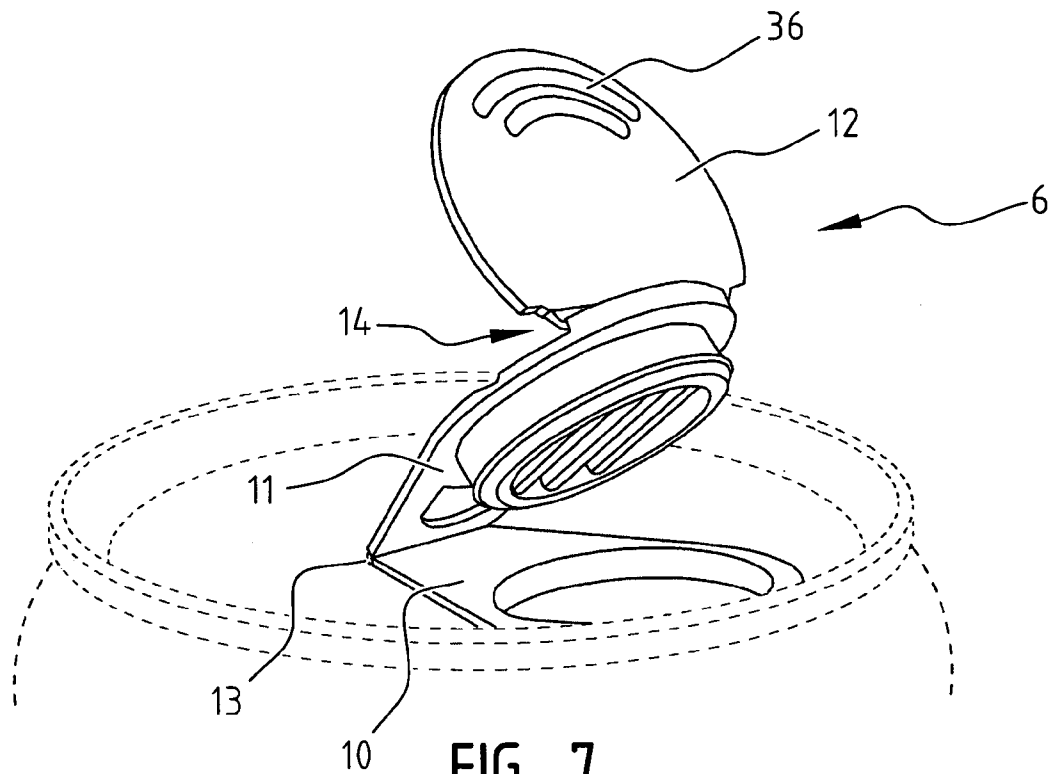


FIG. 7

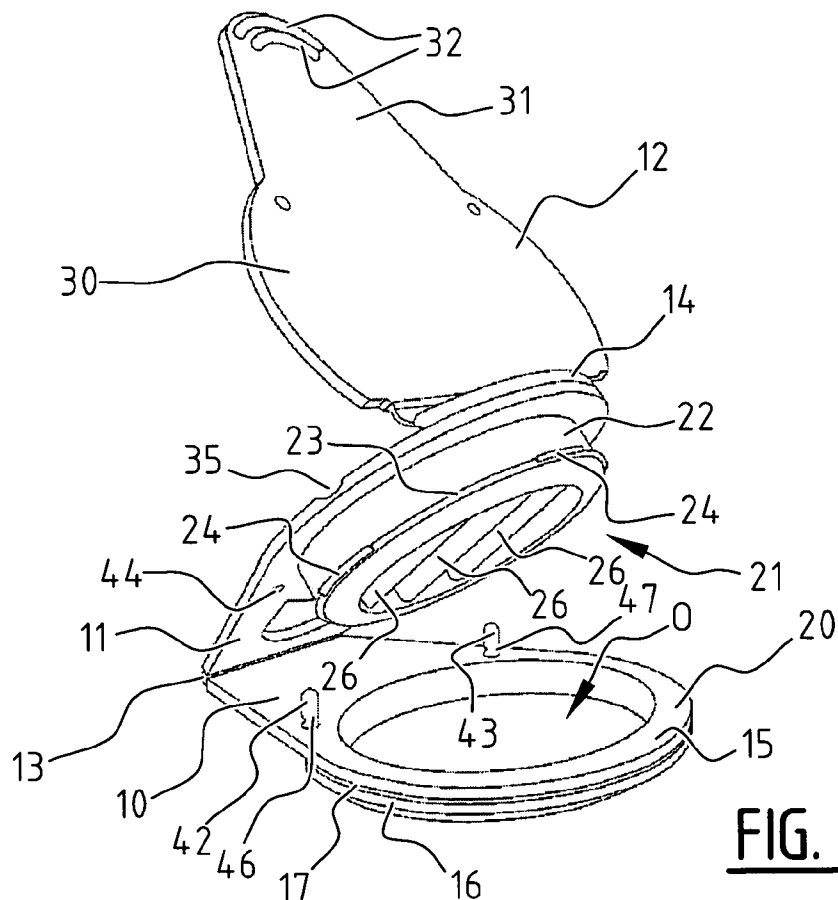
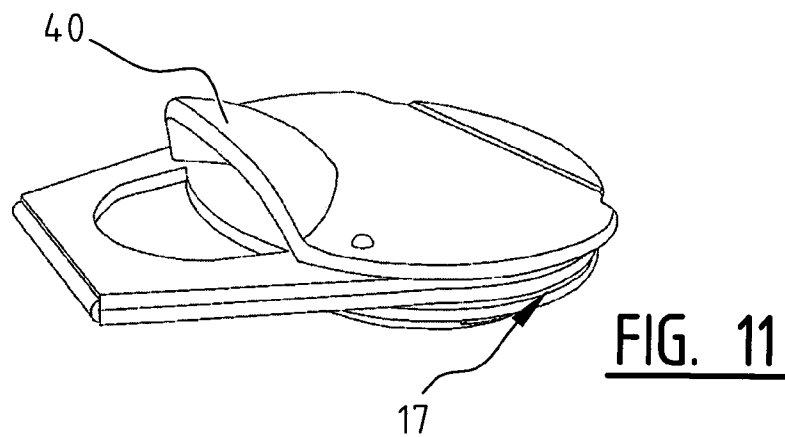
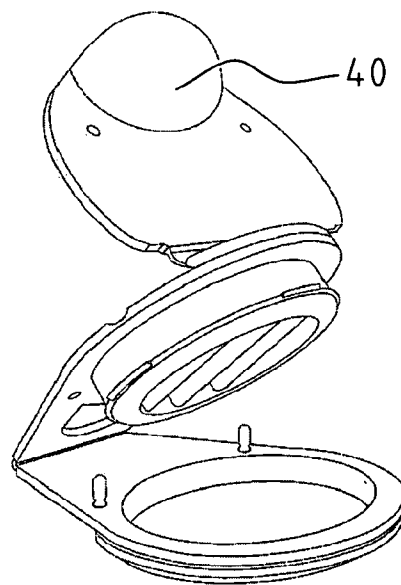
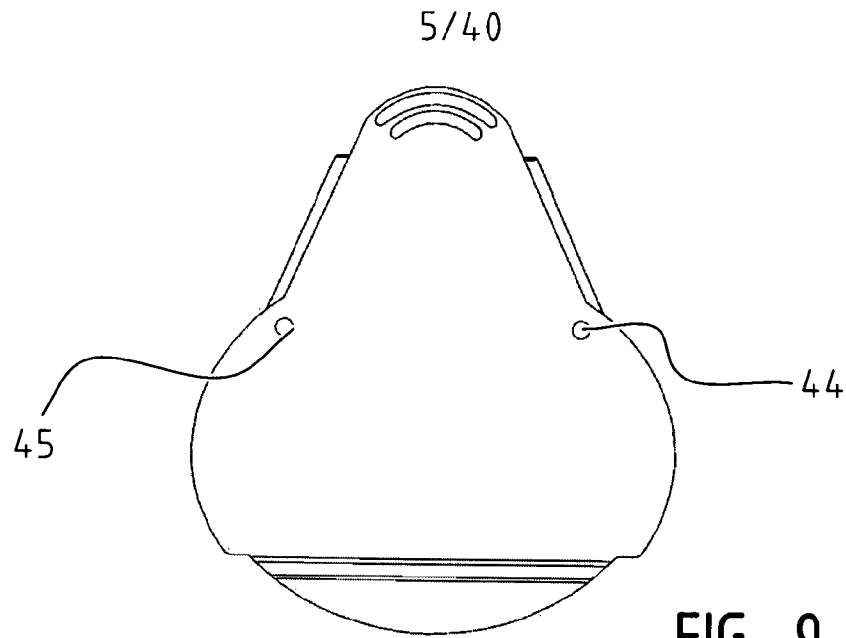


FIG. 8



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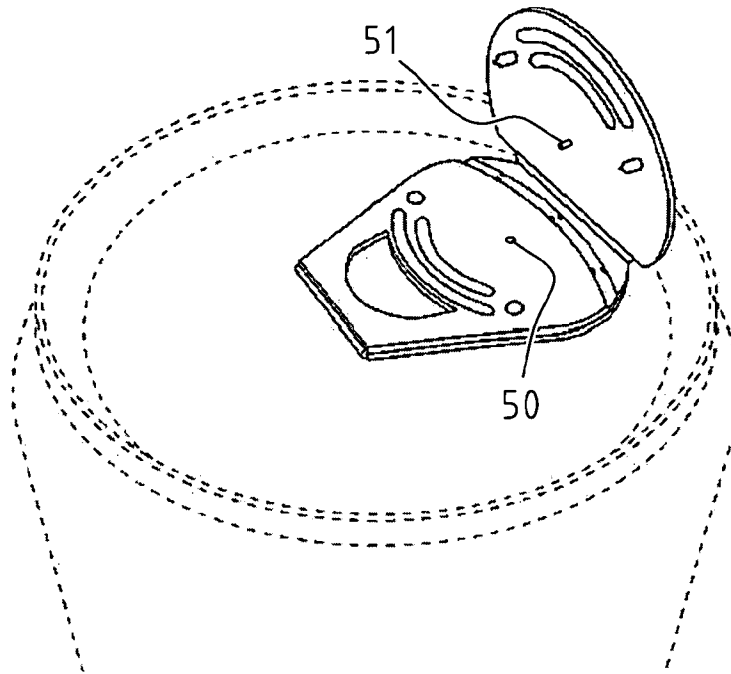


FIG. 12

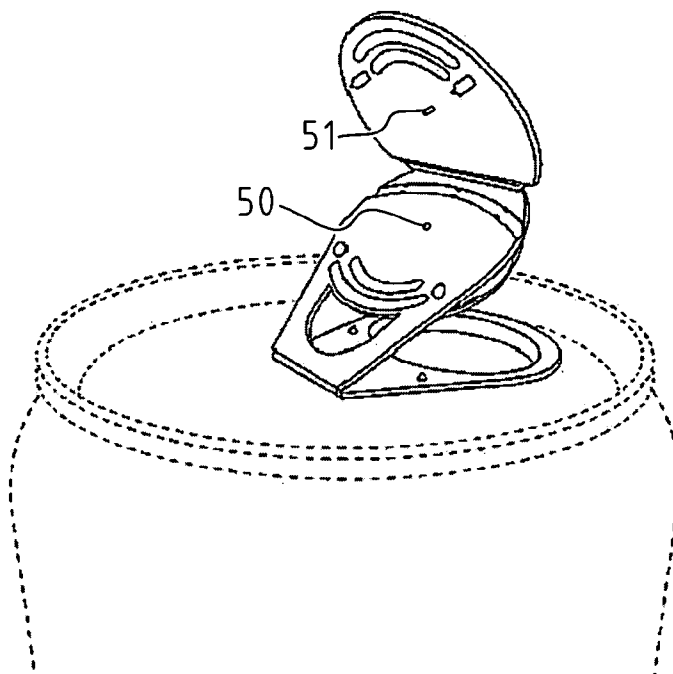
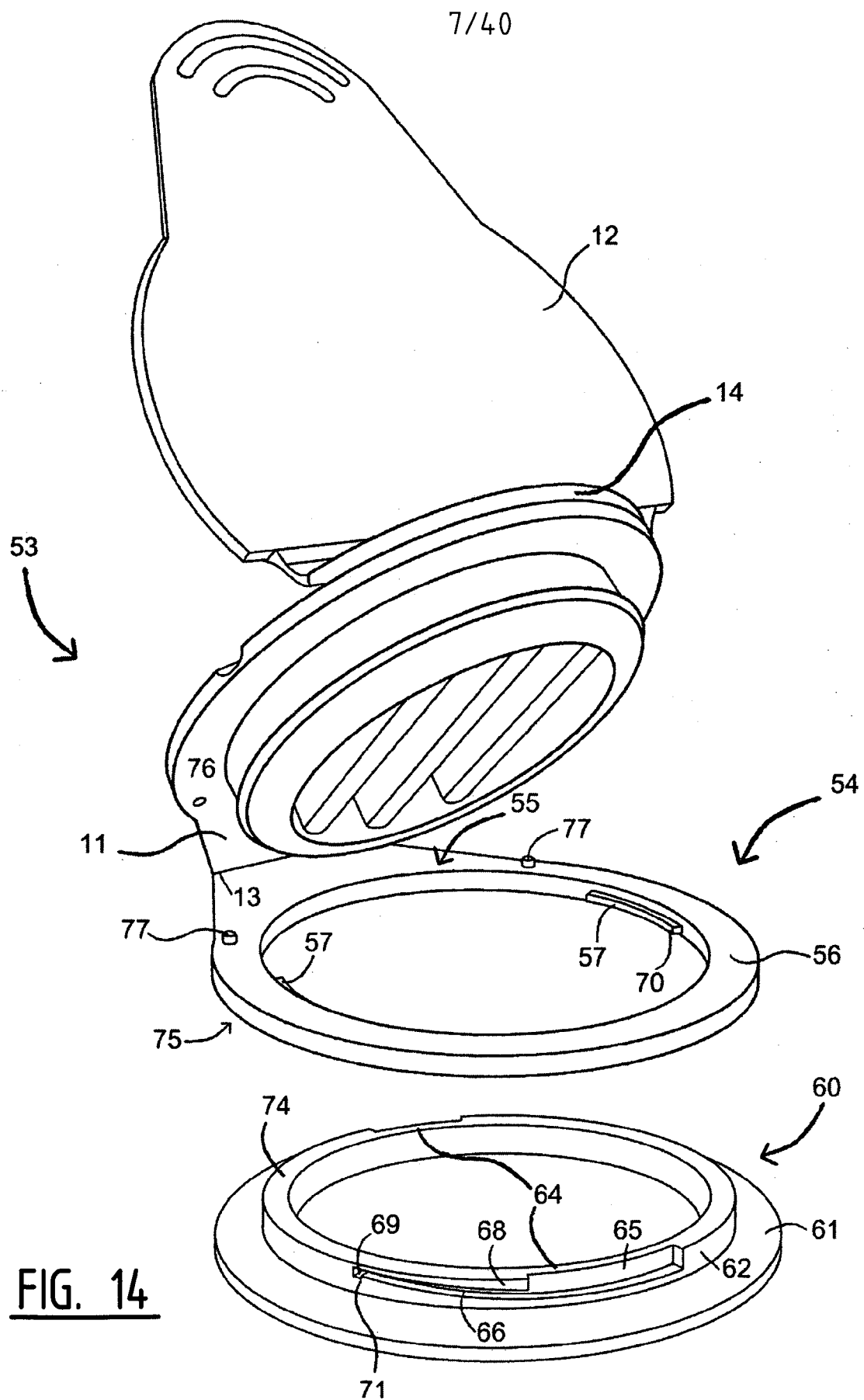


FIG. 13



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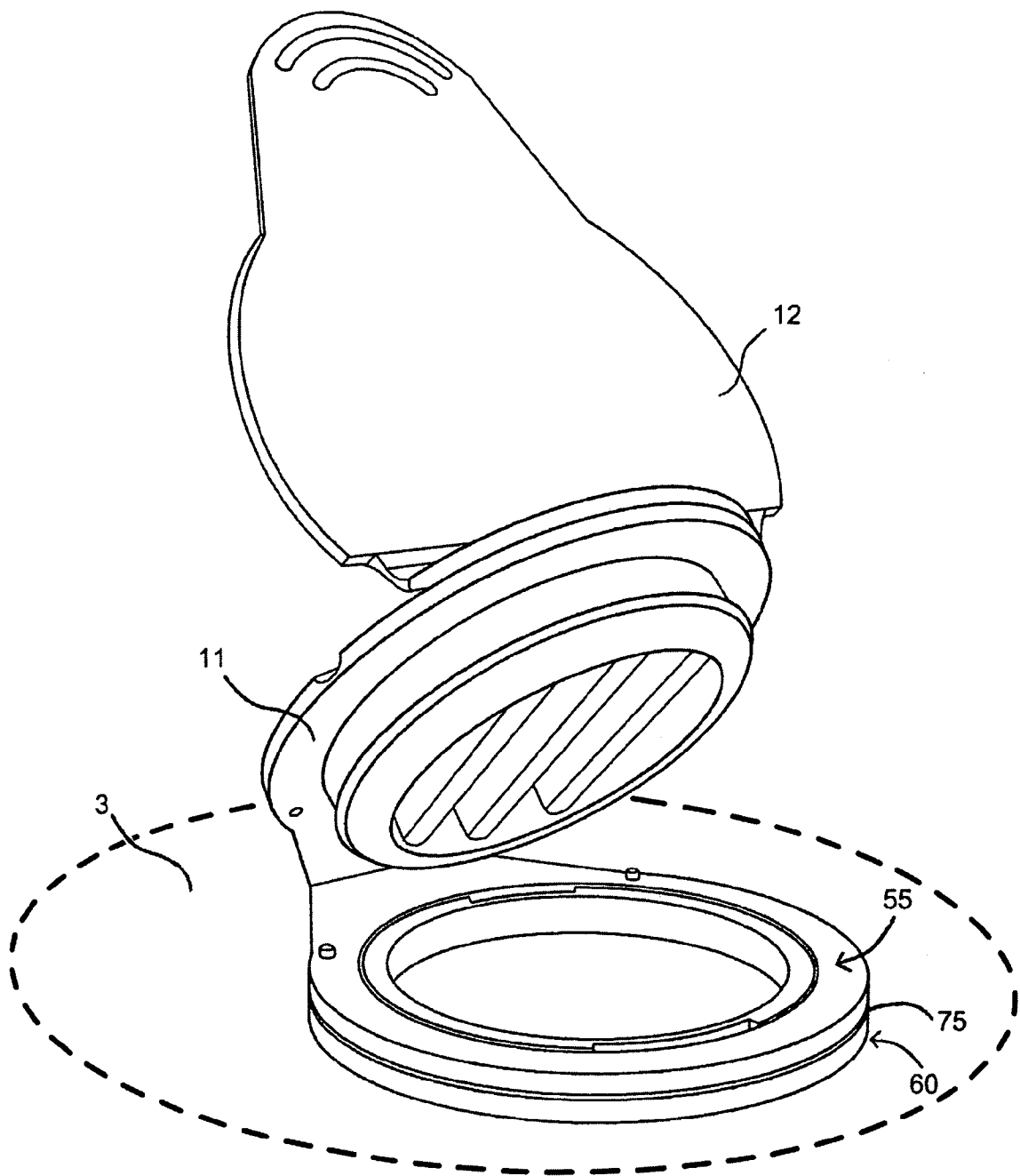


FIG. 15

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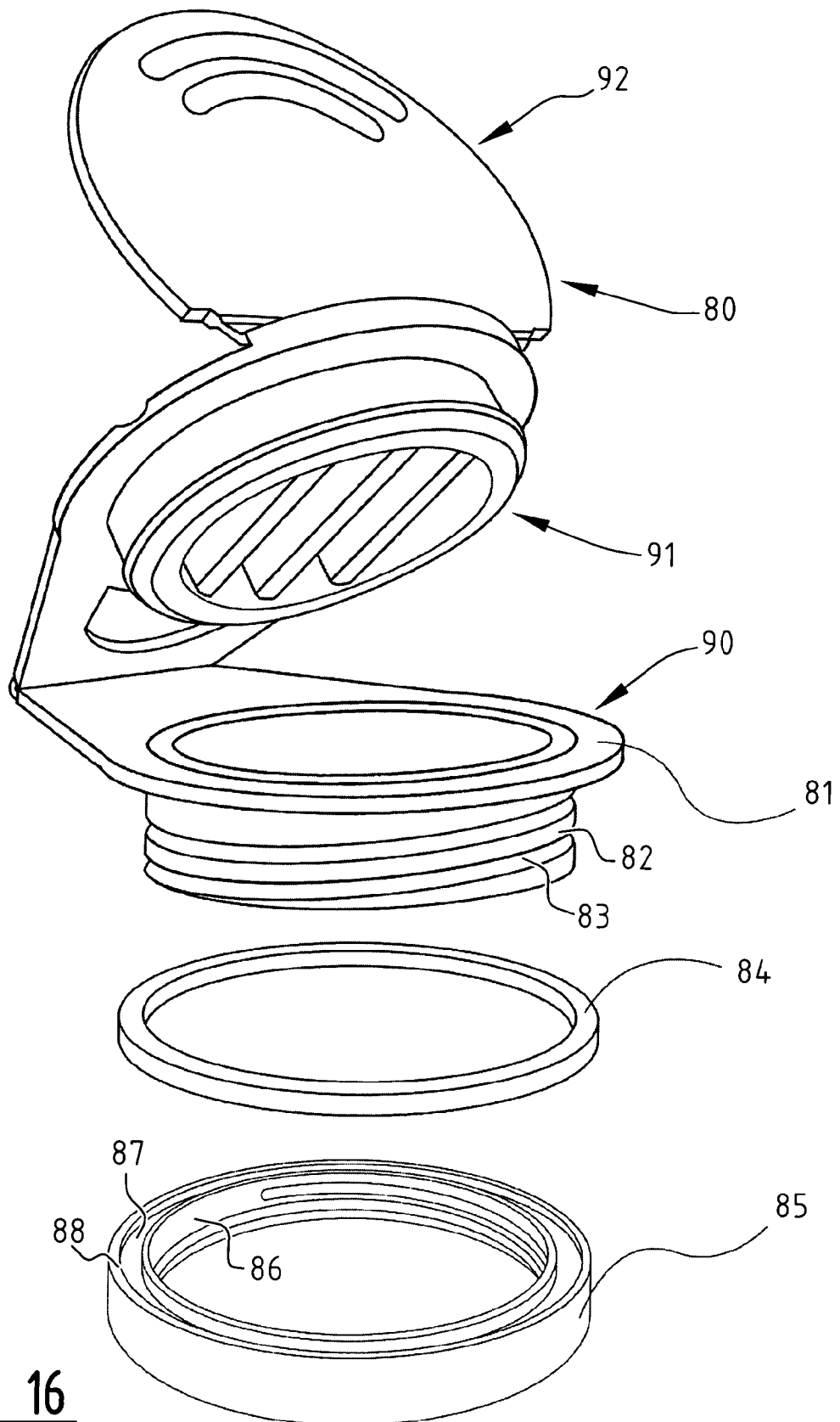


FIG. 16

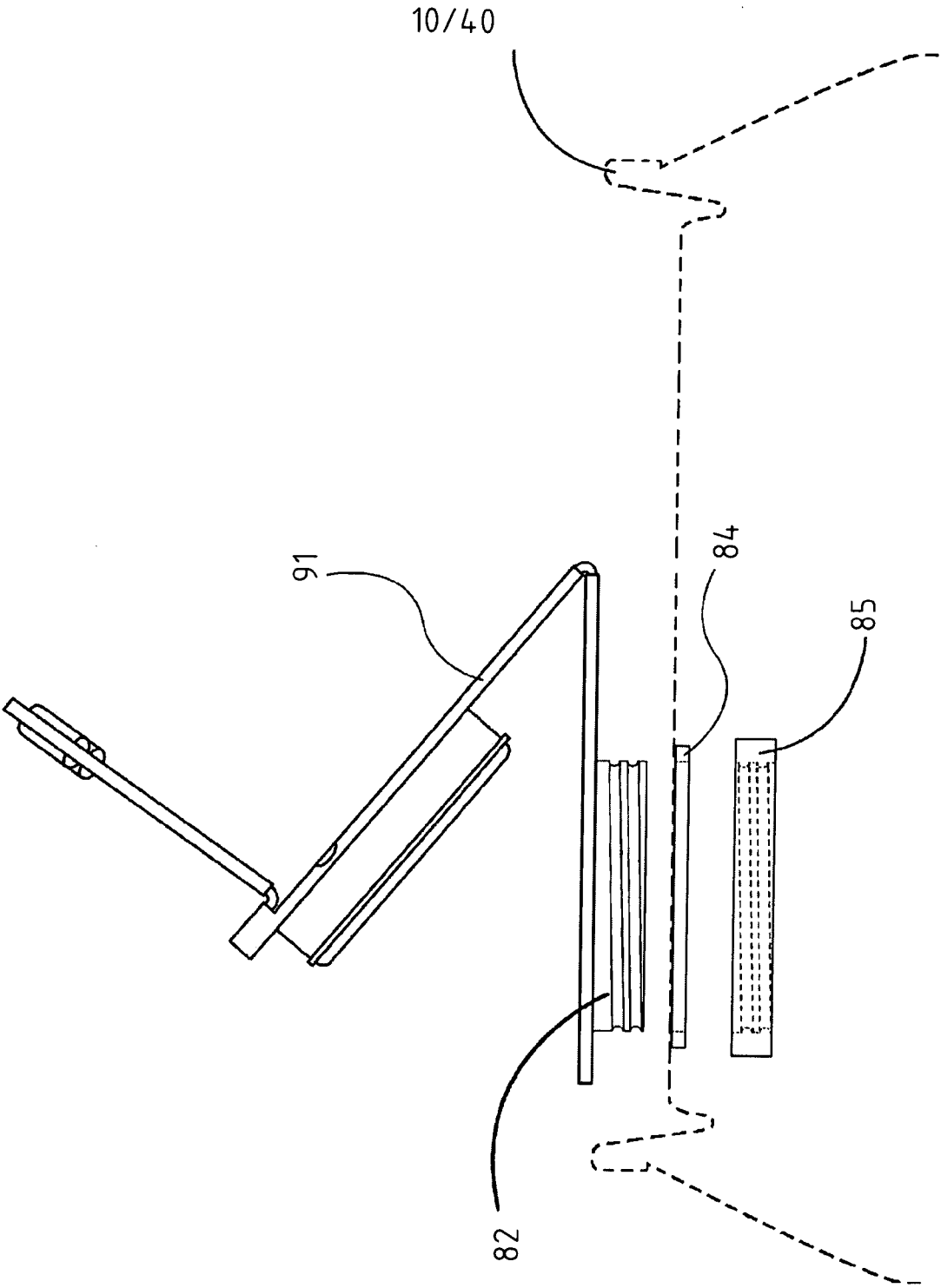


FIG. 17

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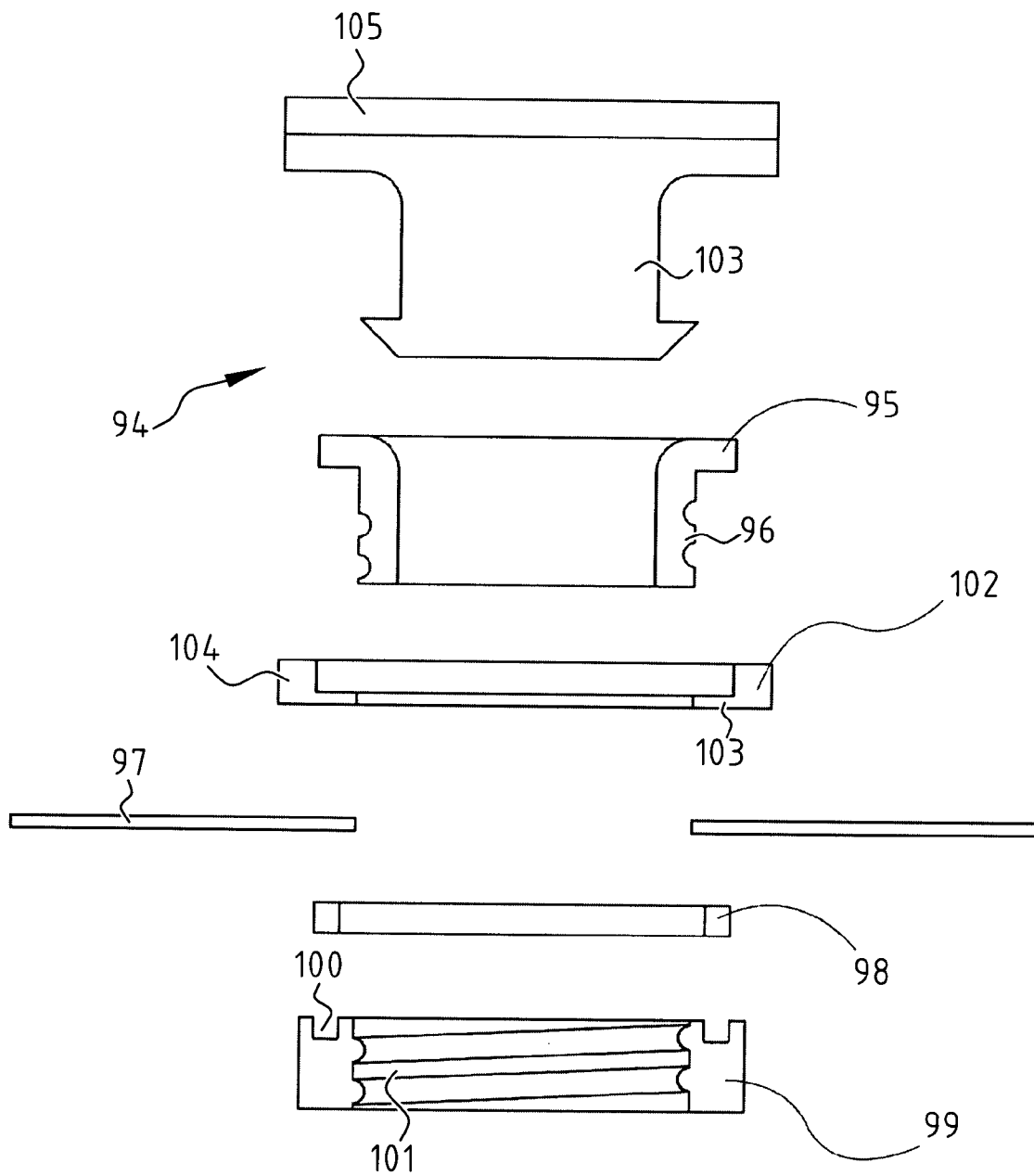


FIG. 18

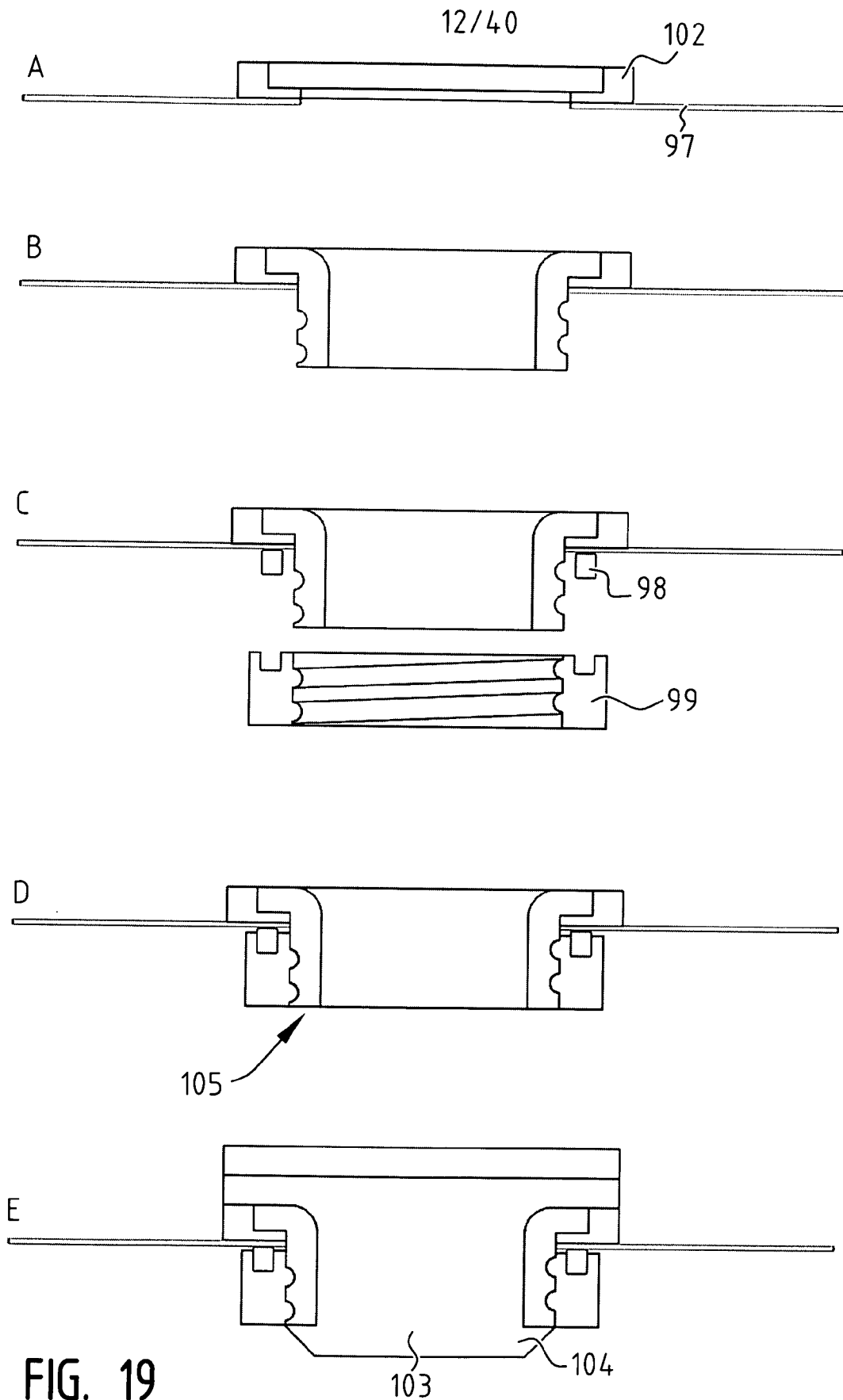


FIG. 19

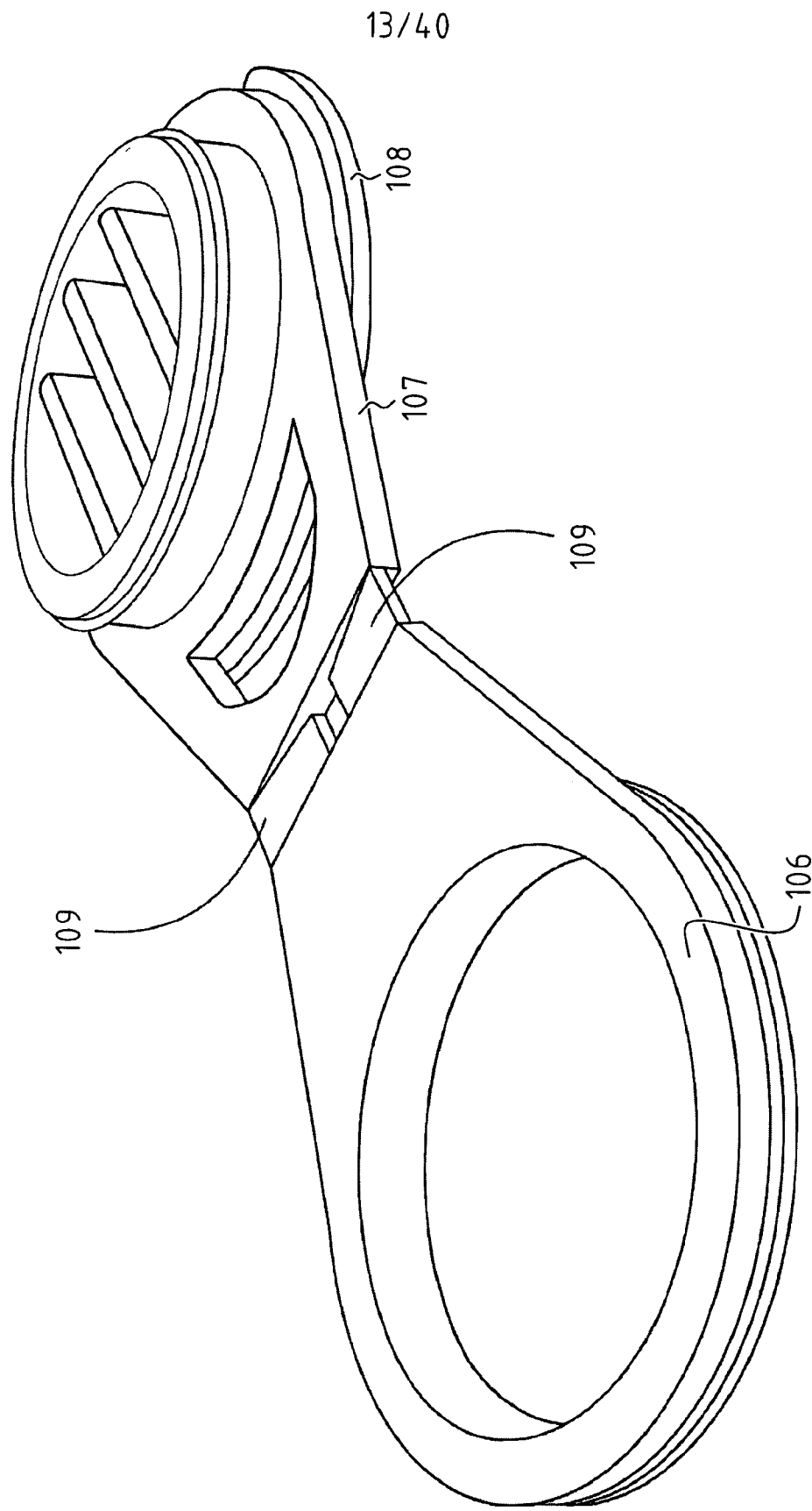


FIG. 20

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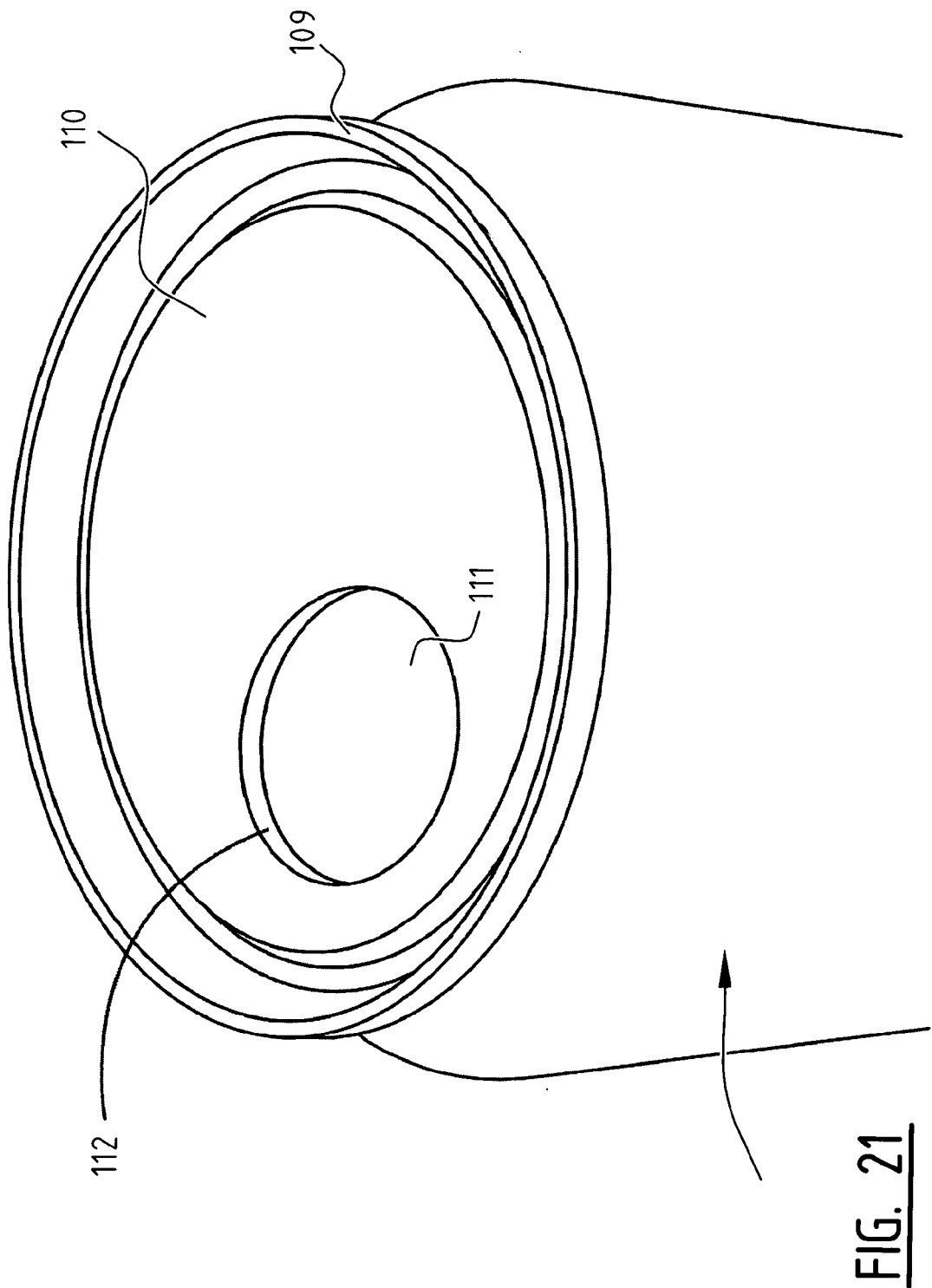
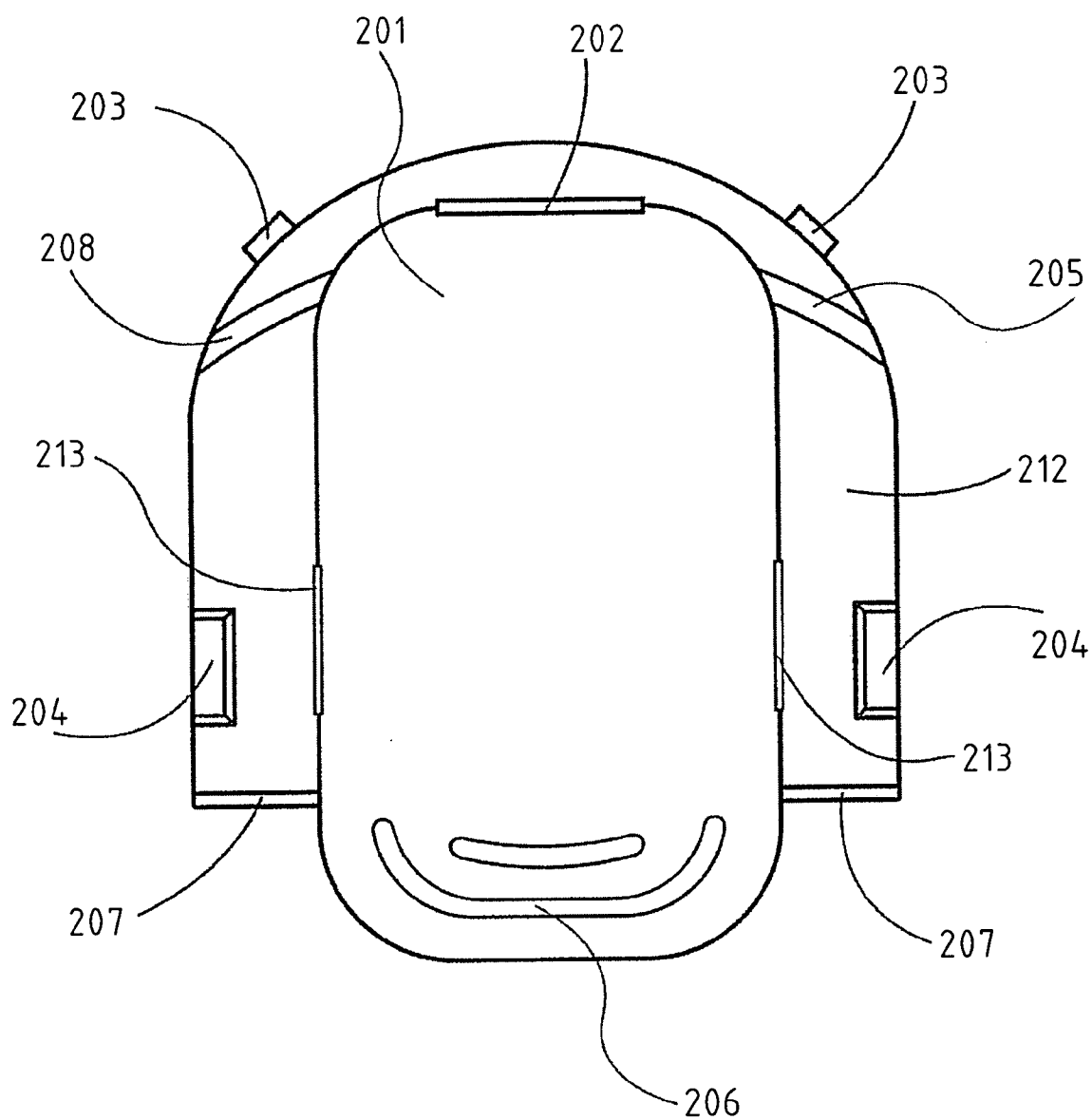


FIG. 21

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**FIG. 22**

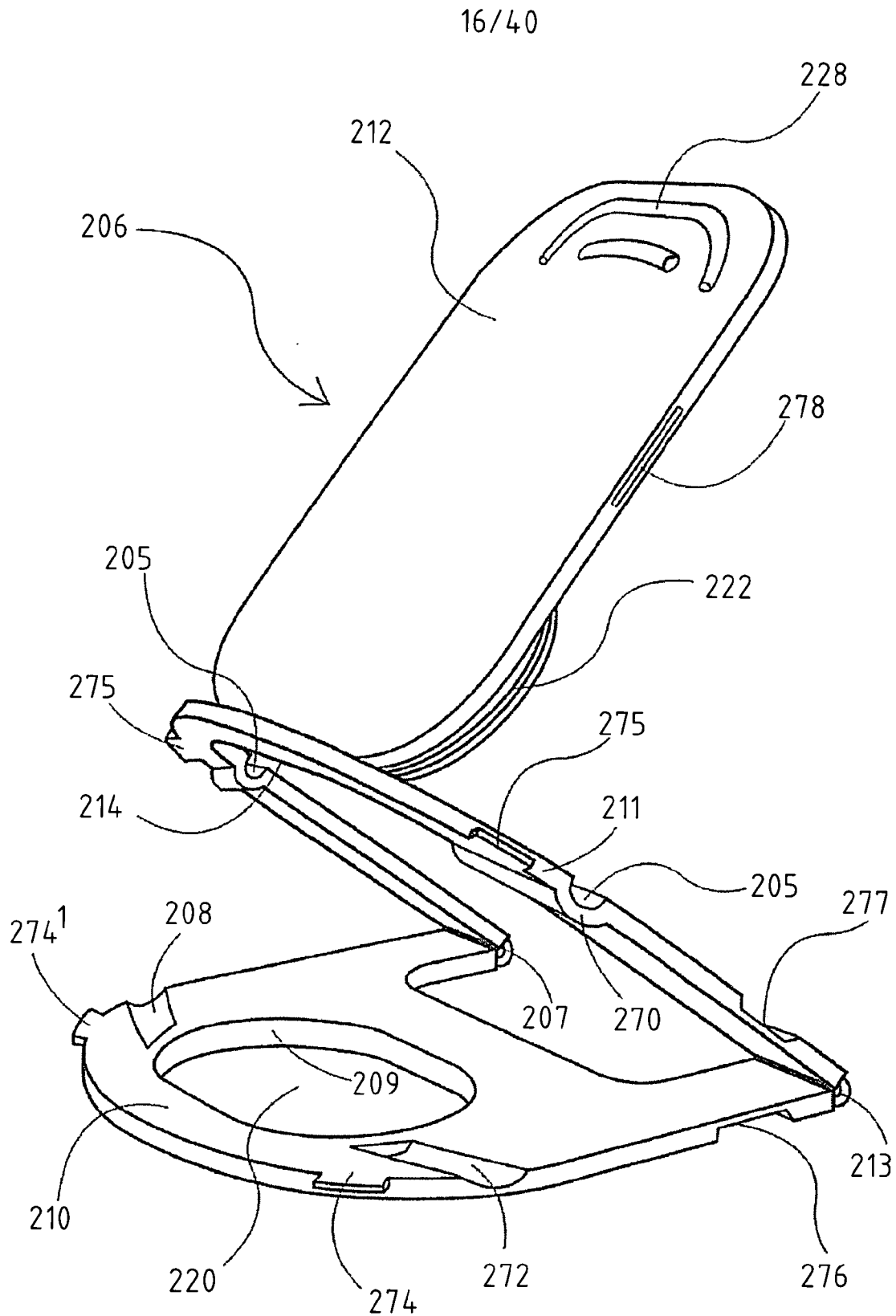
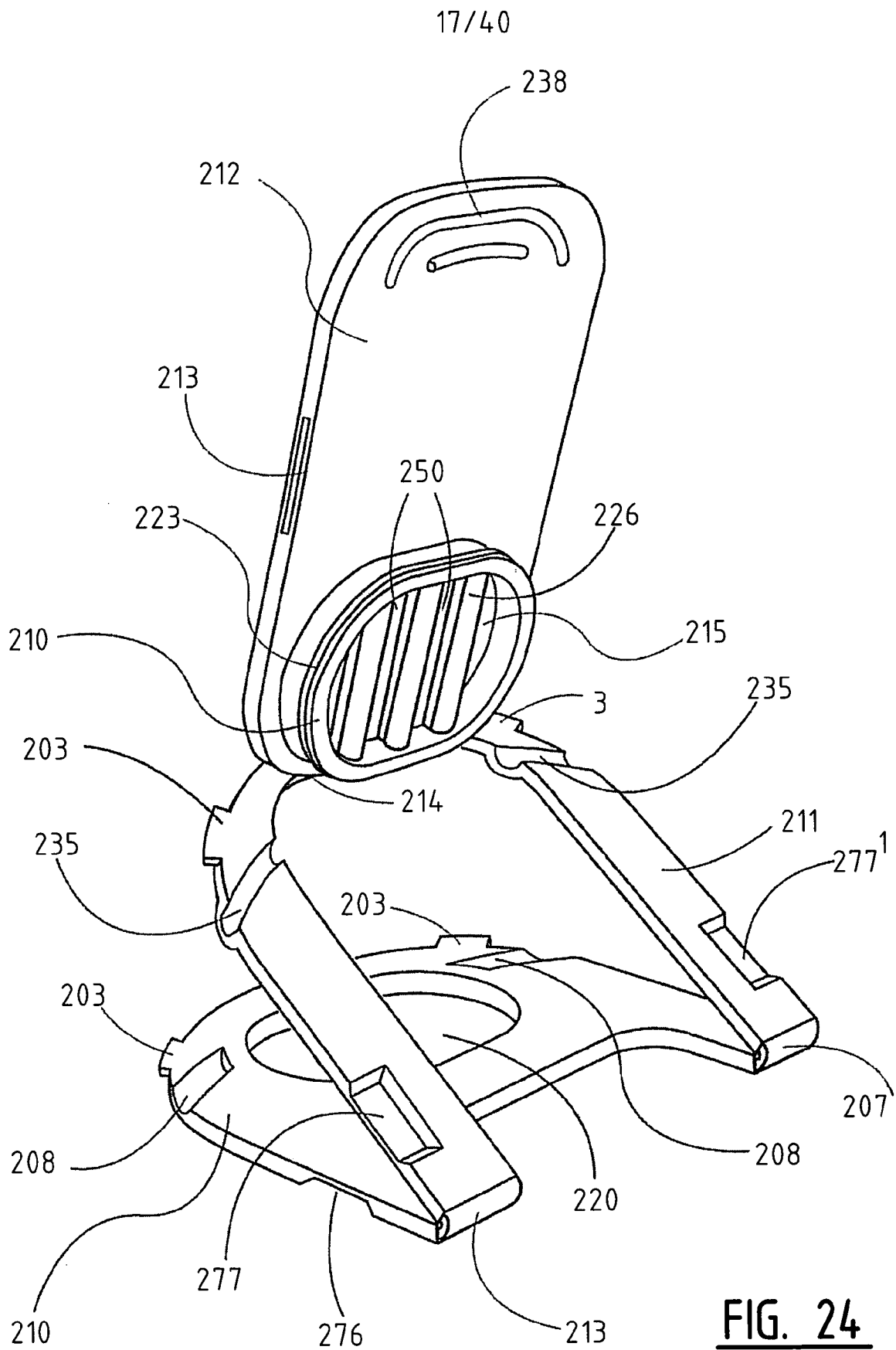


FIG. 23



SUBSTITUTE SHEET (RULE 26)

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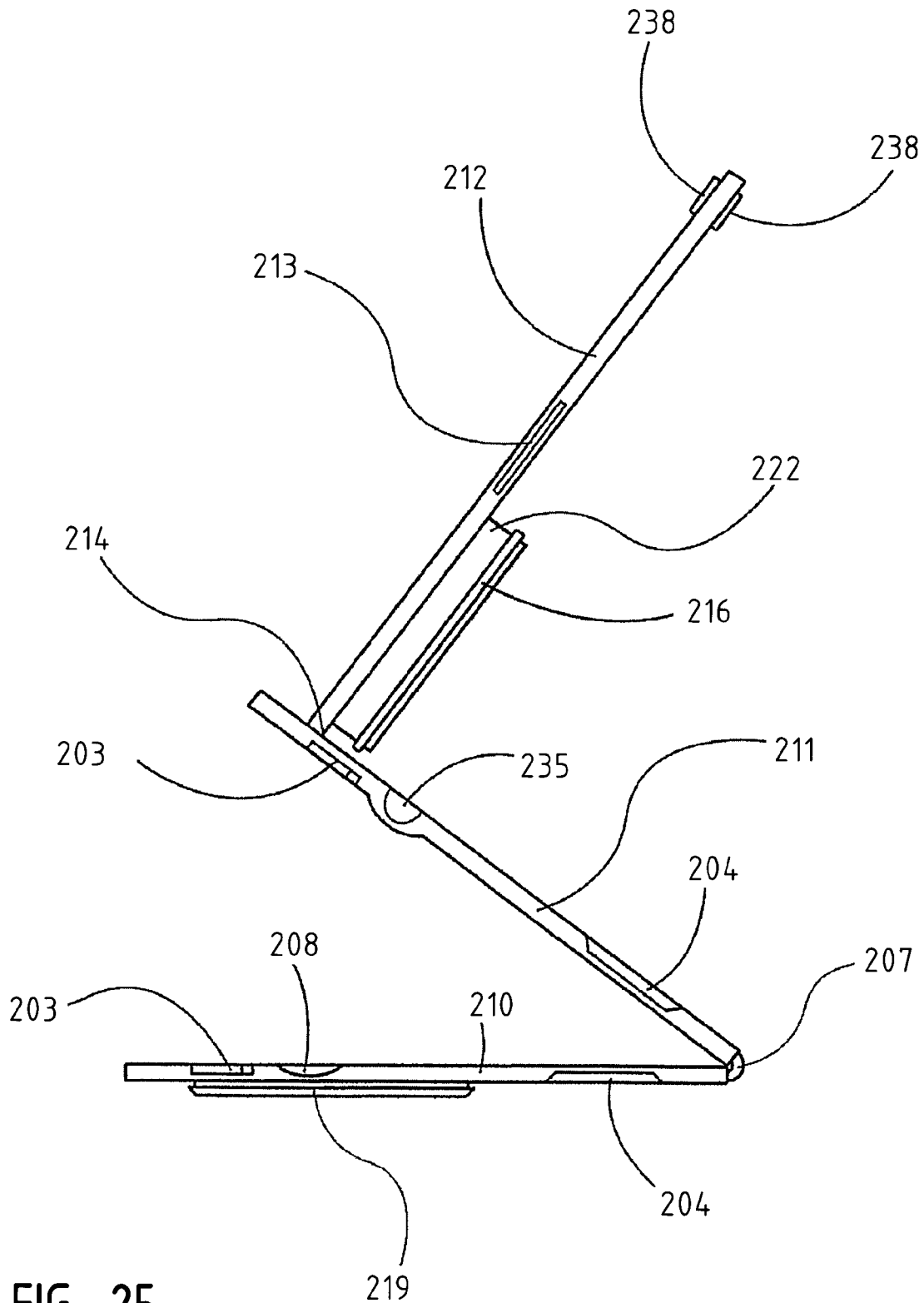


FIG. 25

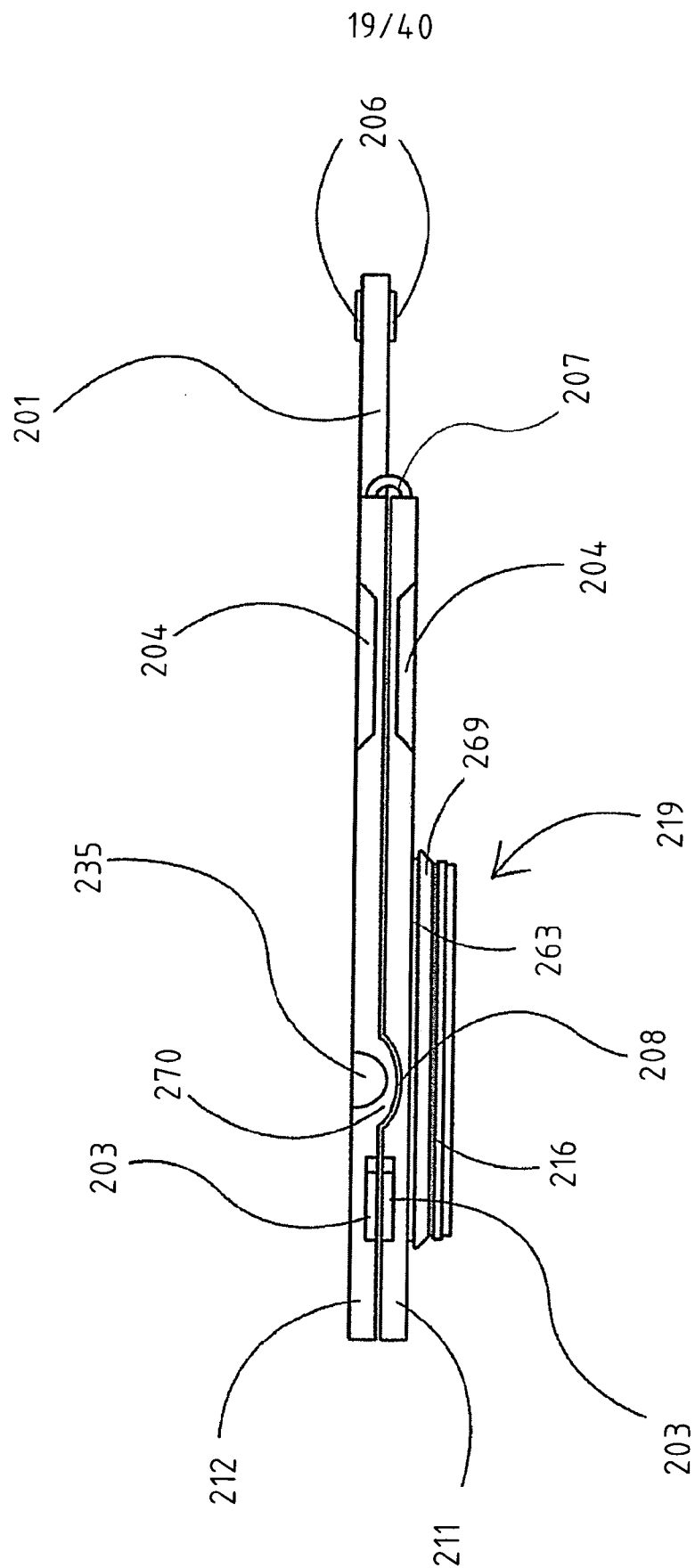


FIG. 26

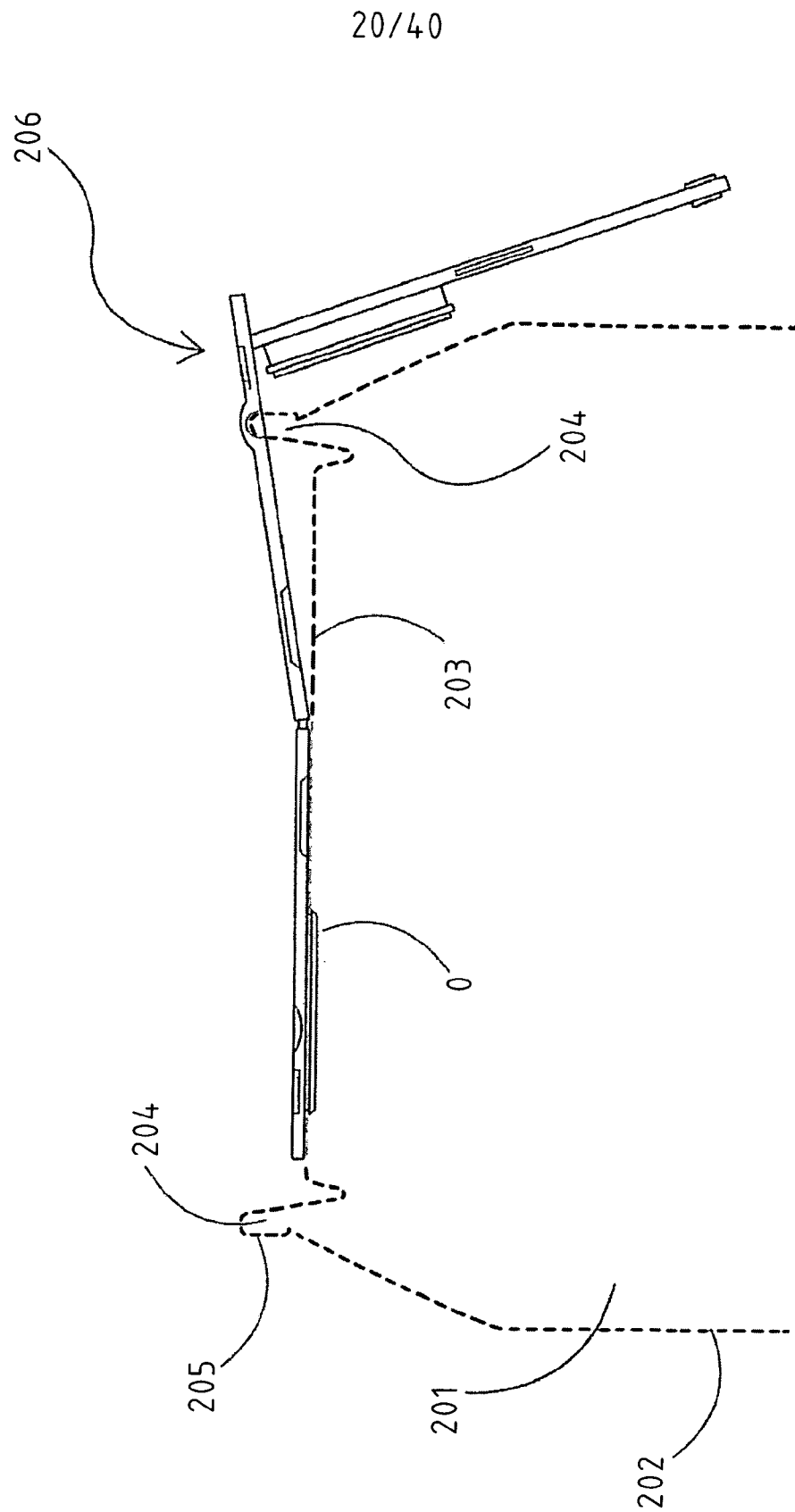


FIG. 27

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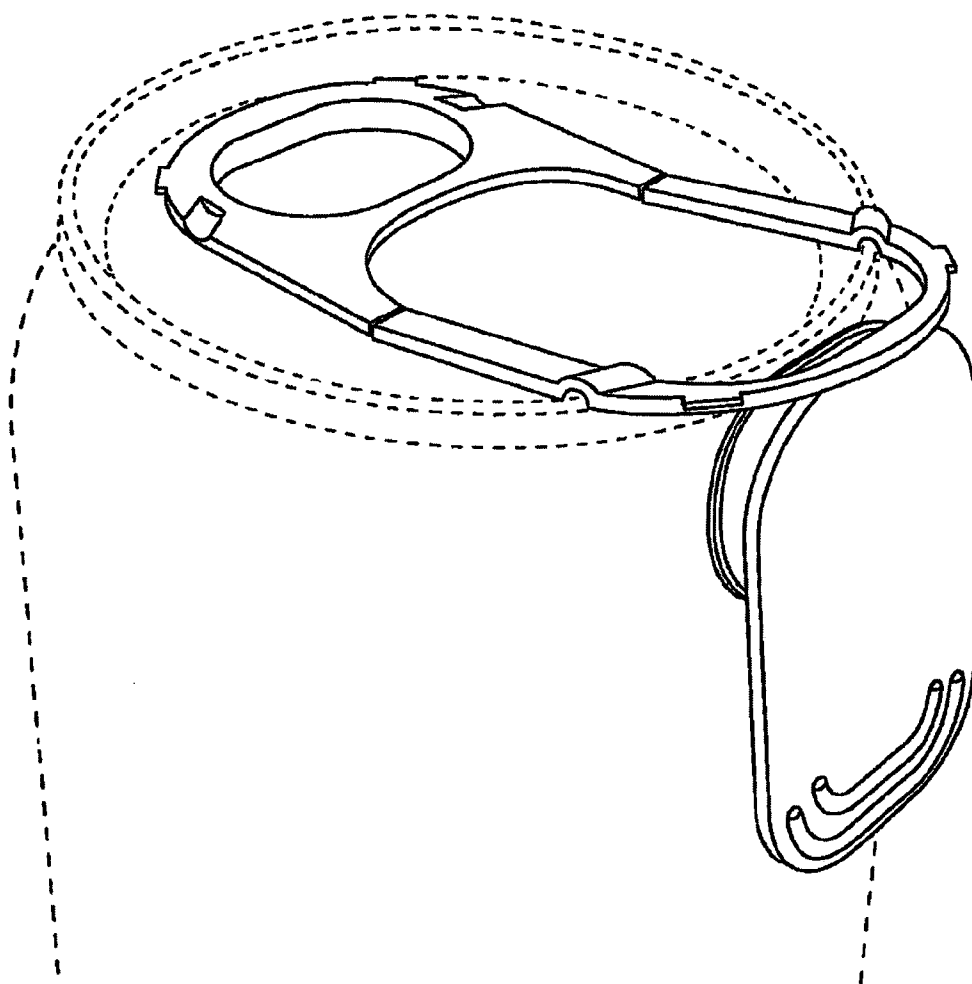


FIG. 28

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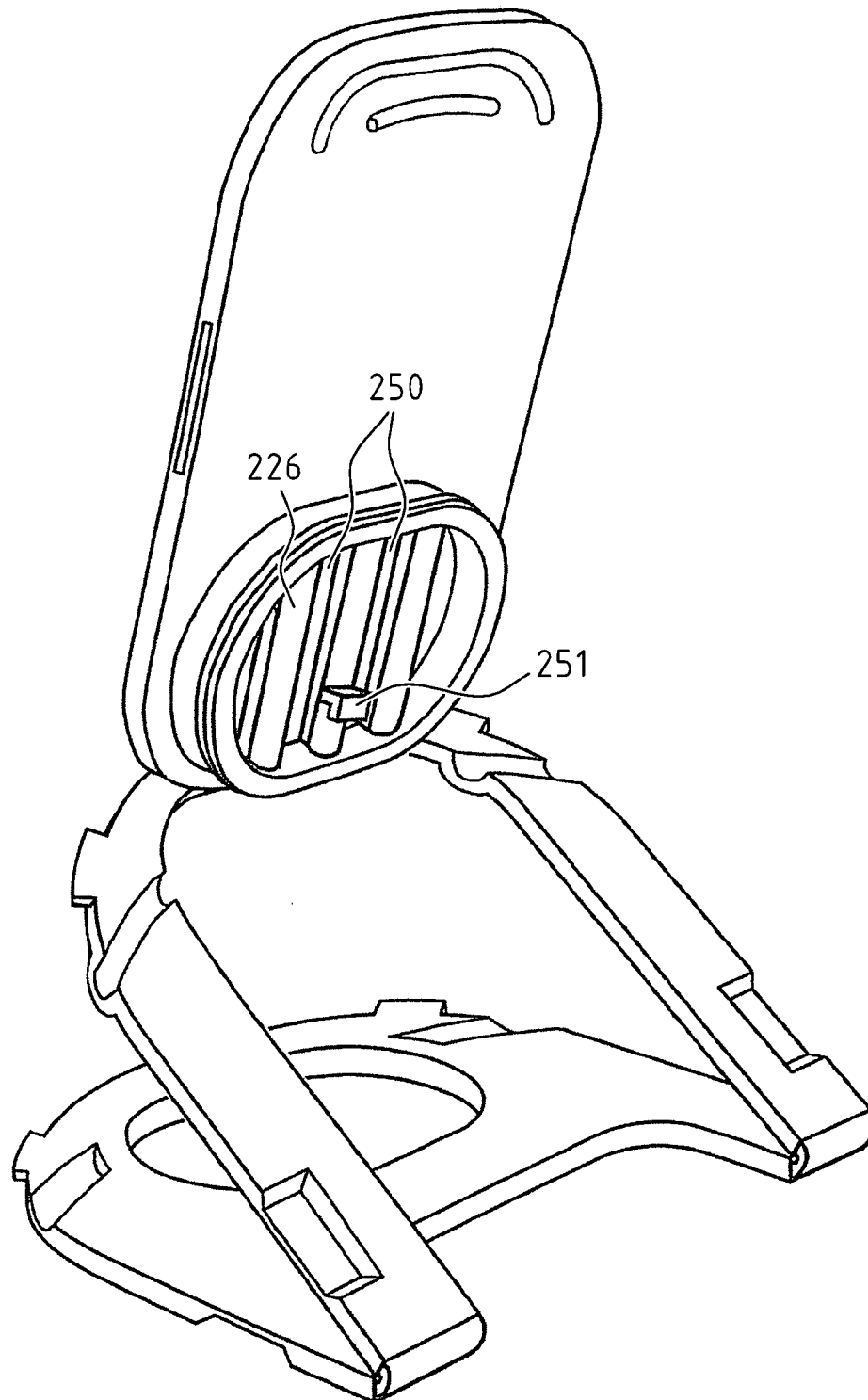


FIG. 29

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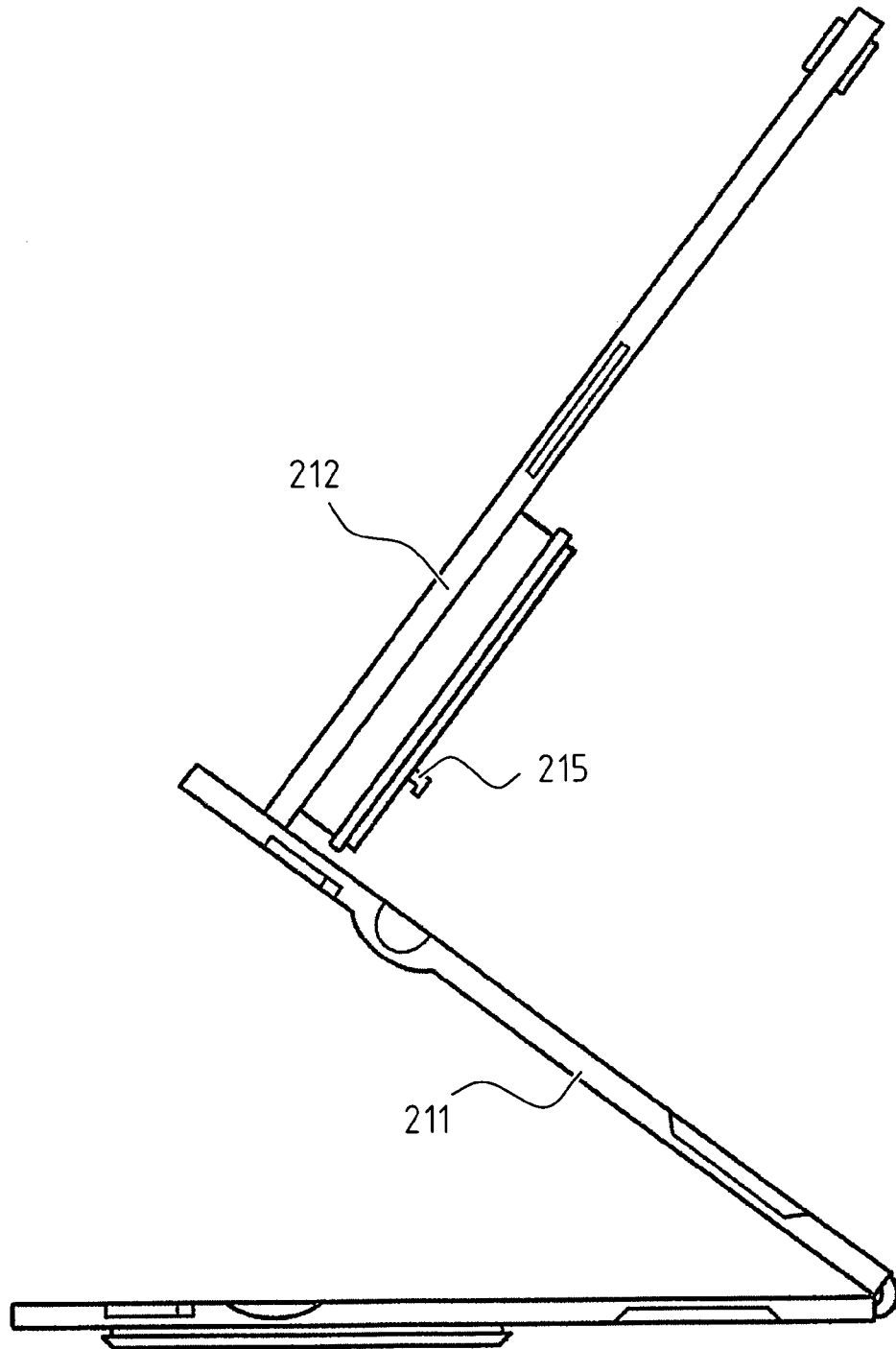


FIG. 30

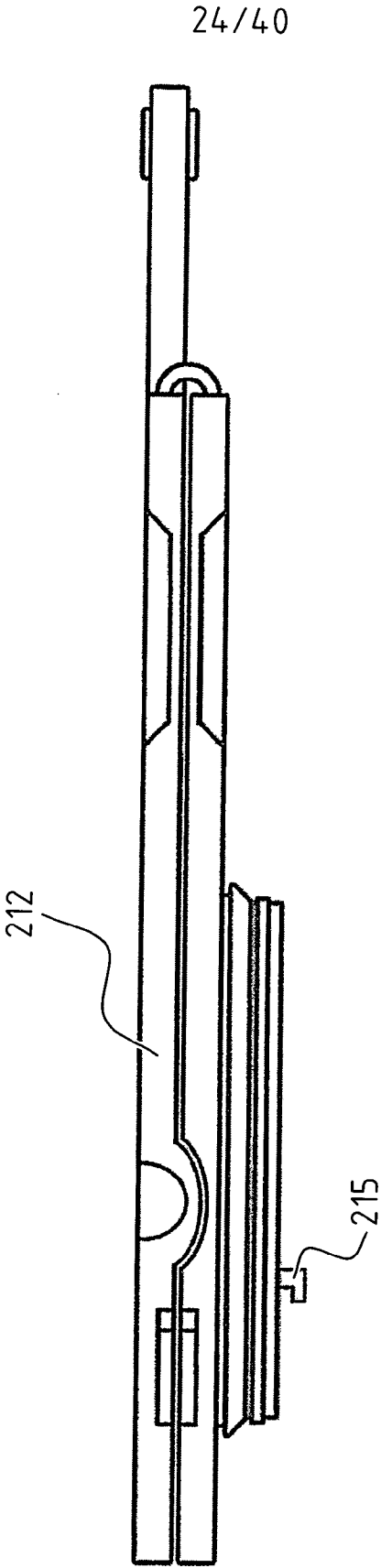


FIG. 31

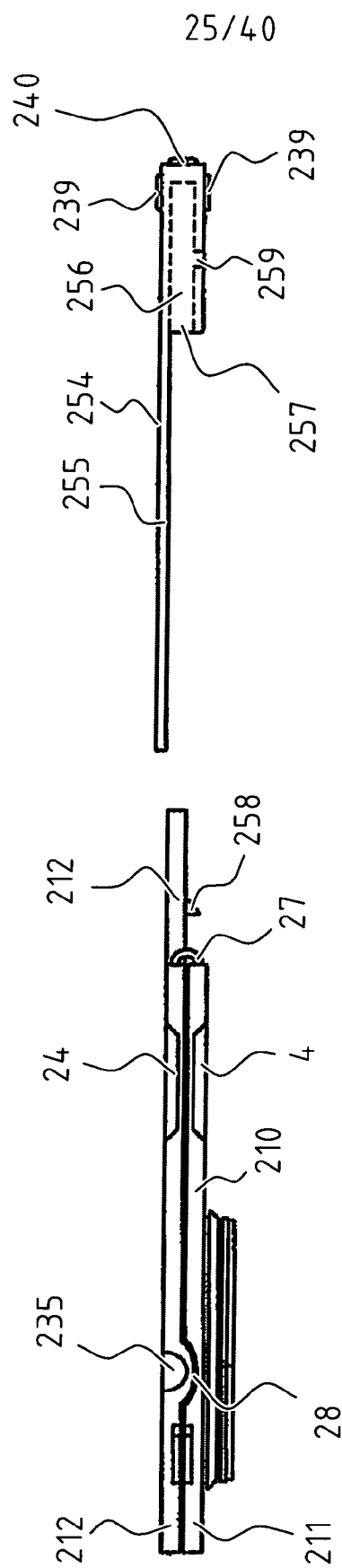


FIG. 32

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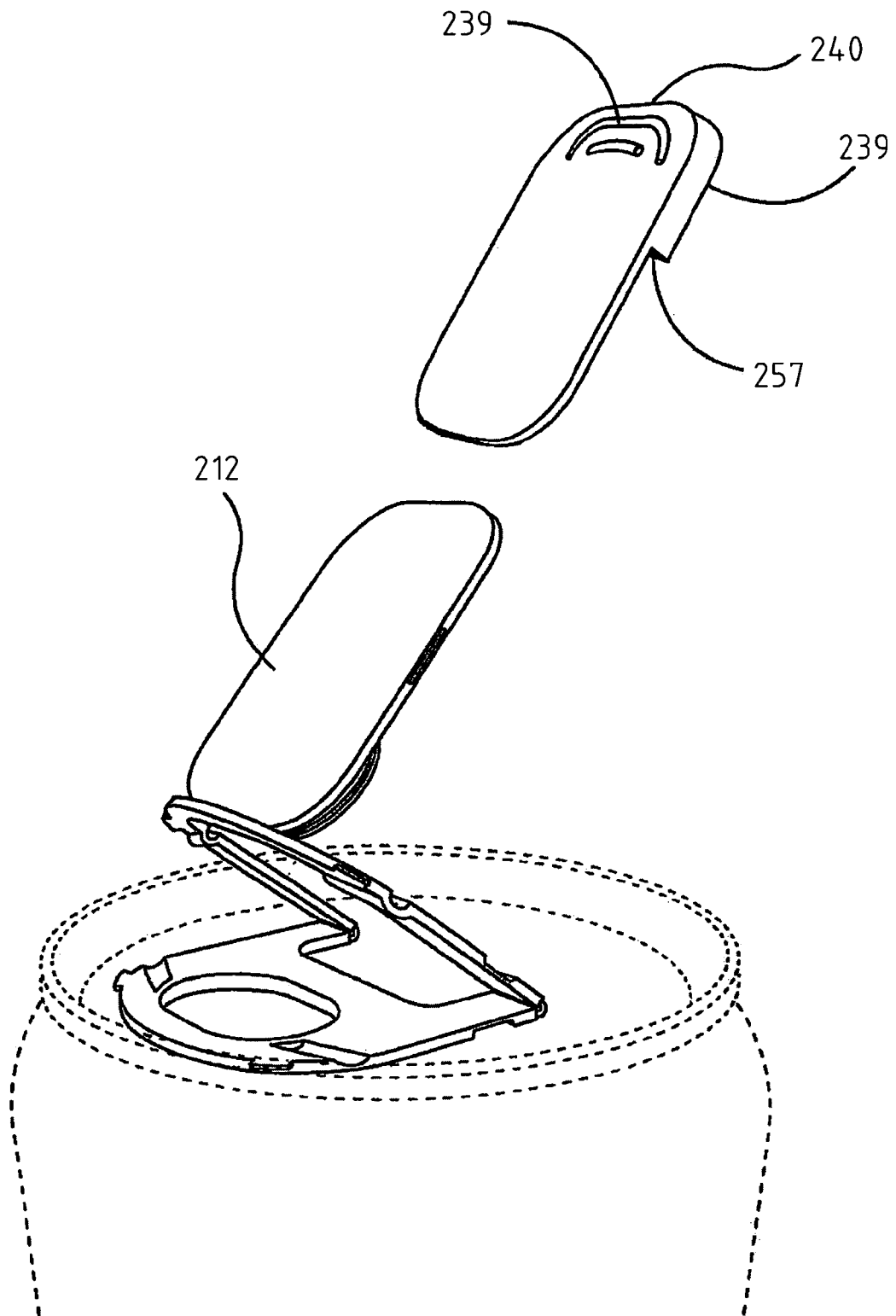
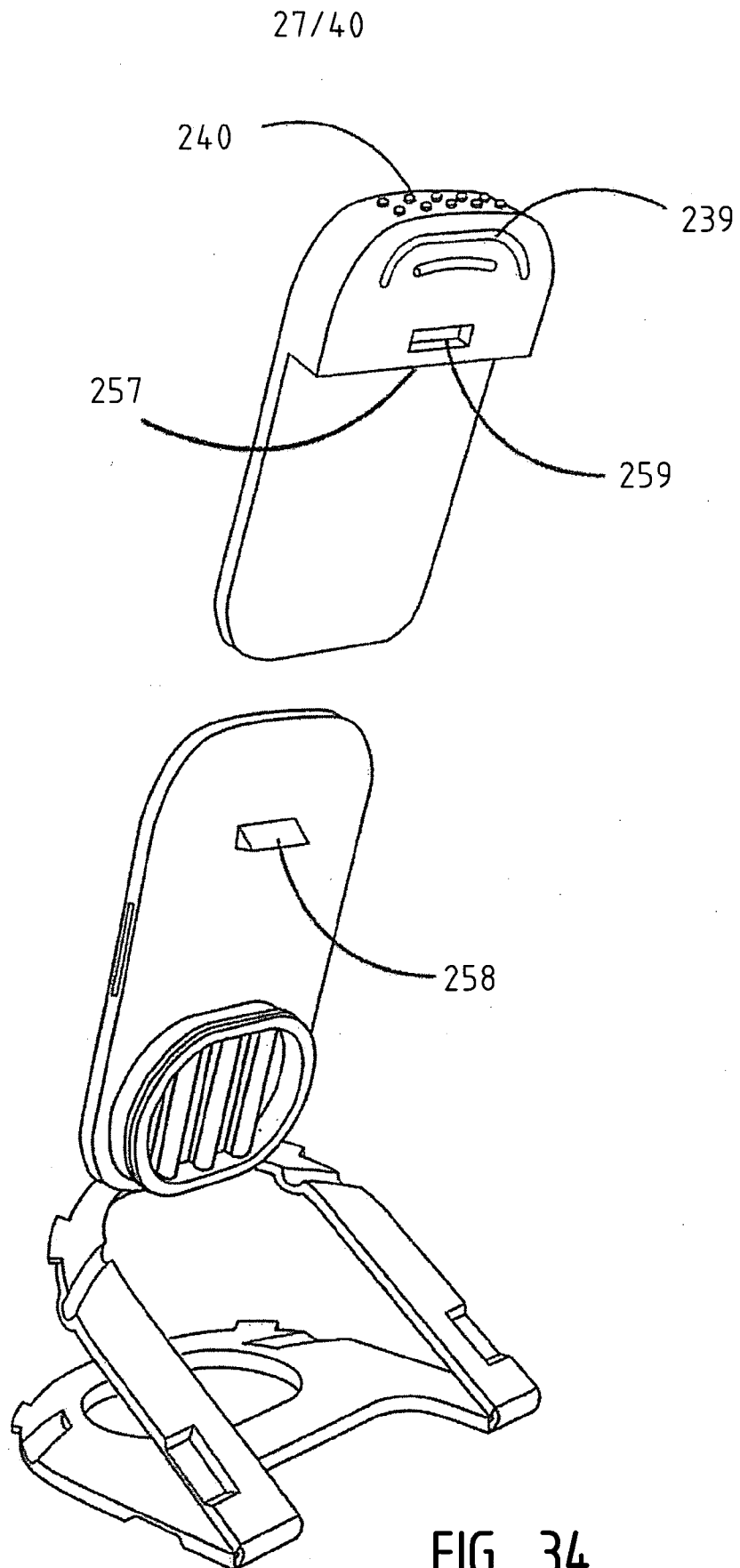


FIG. 33



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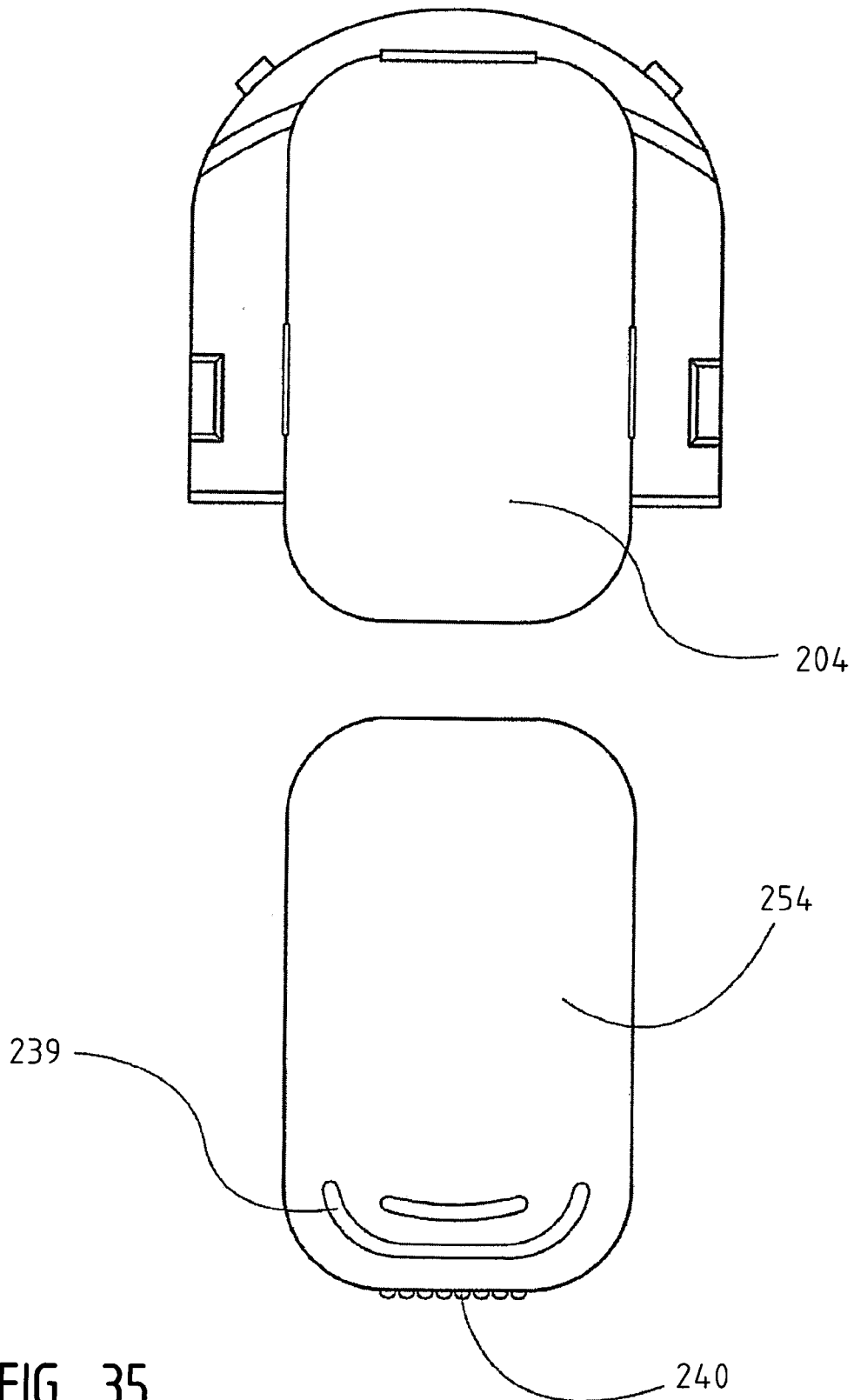


FIG. 35

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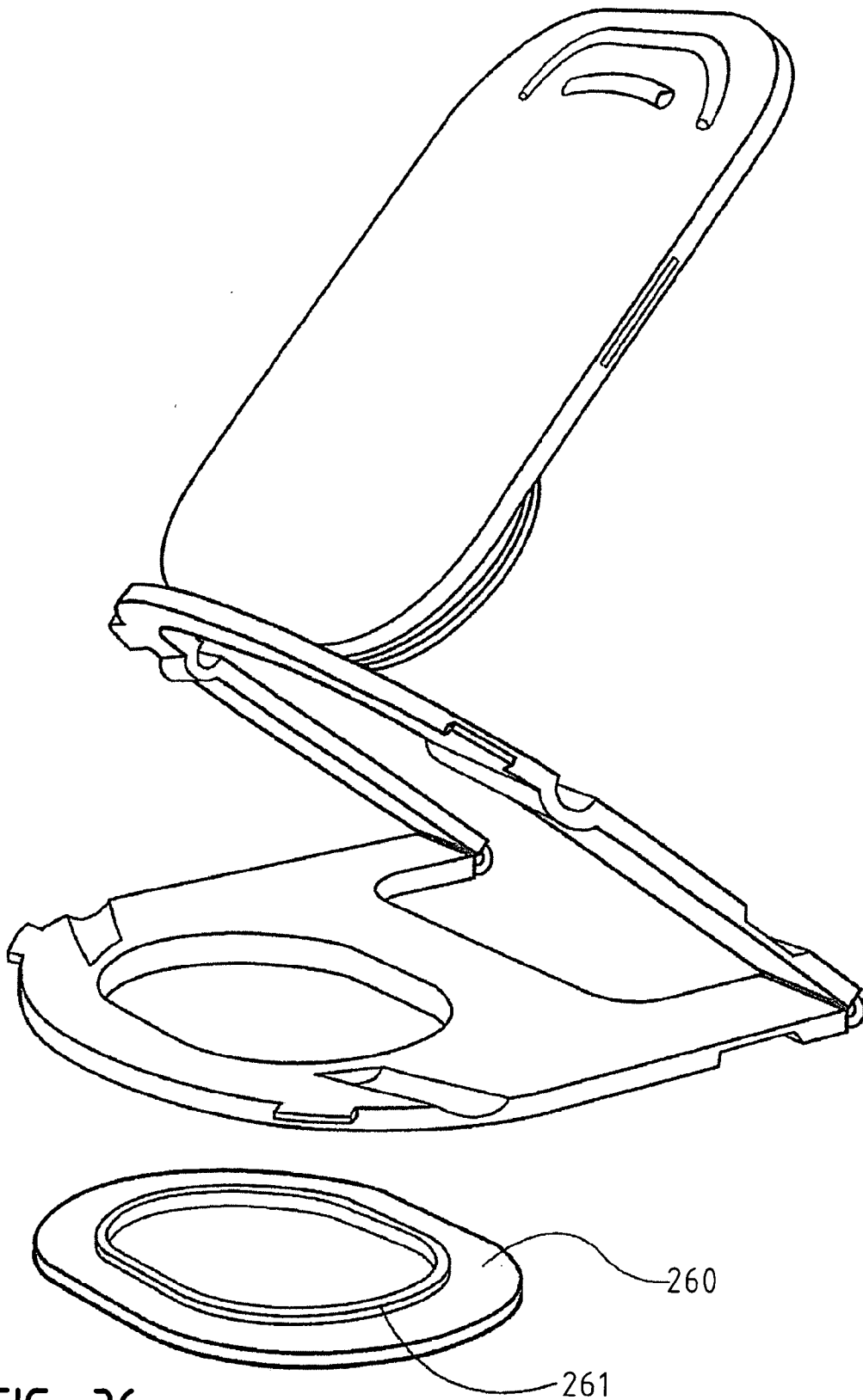


FIG. 36

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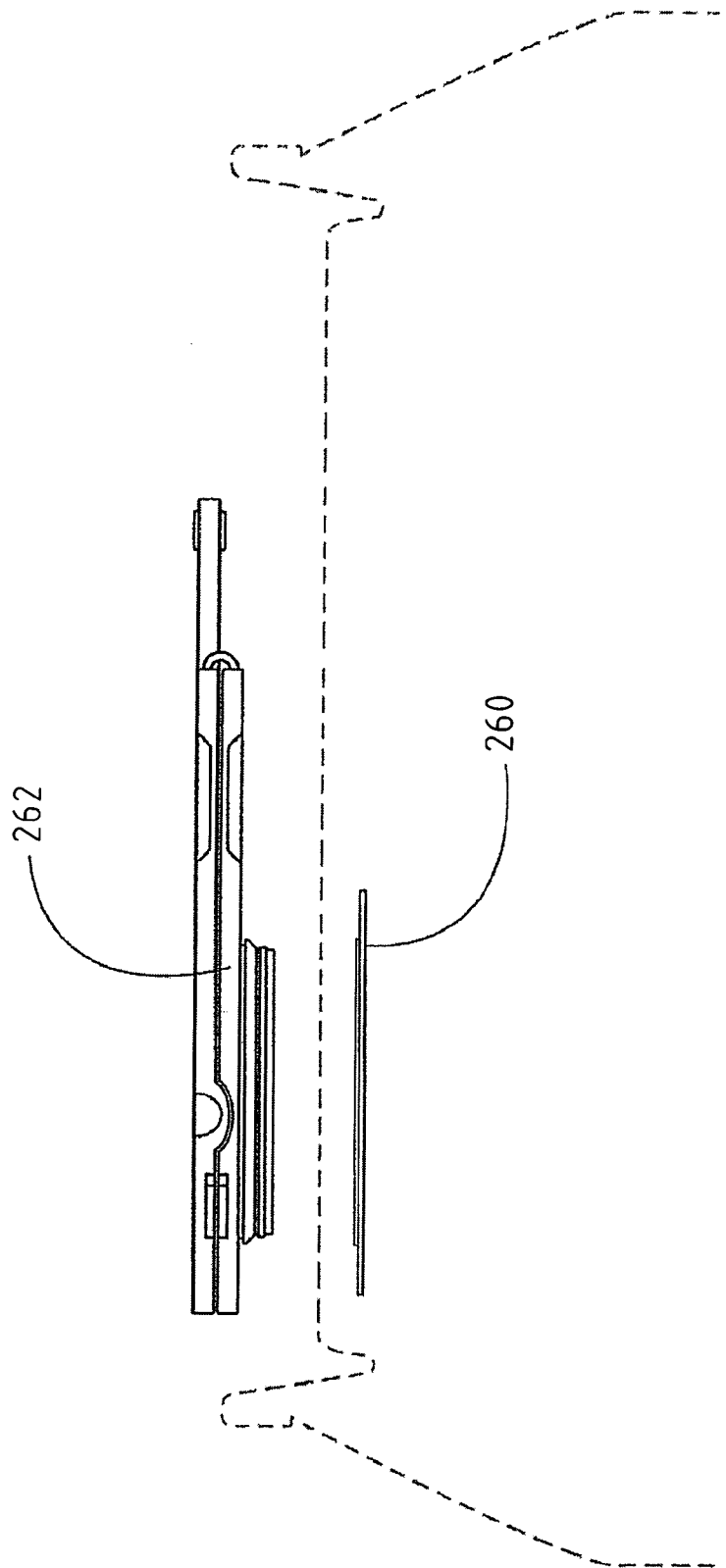


FIG. 37

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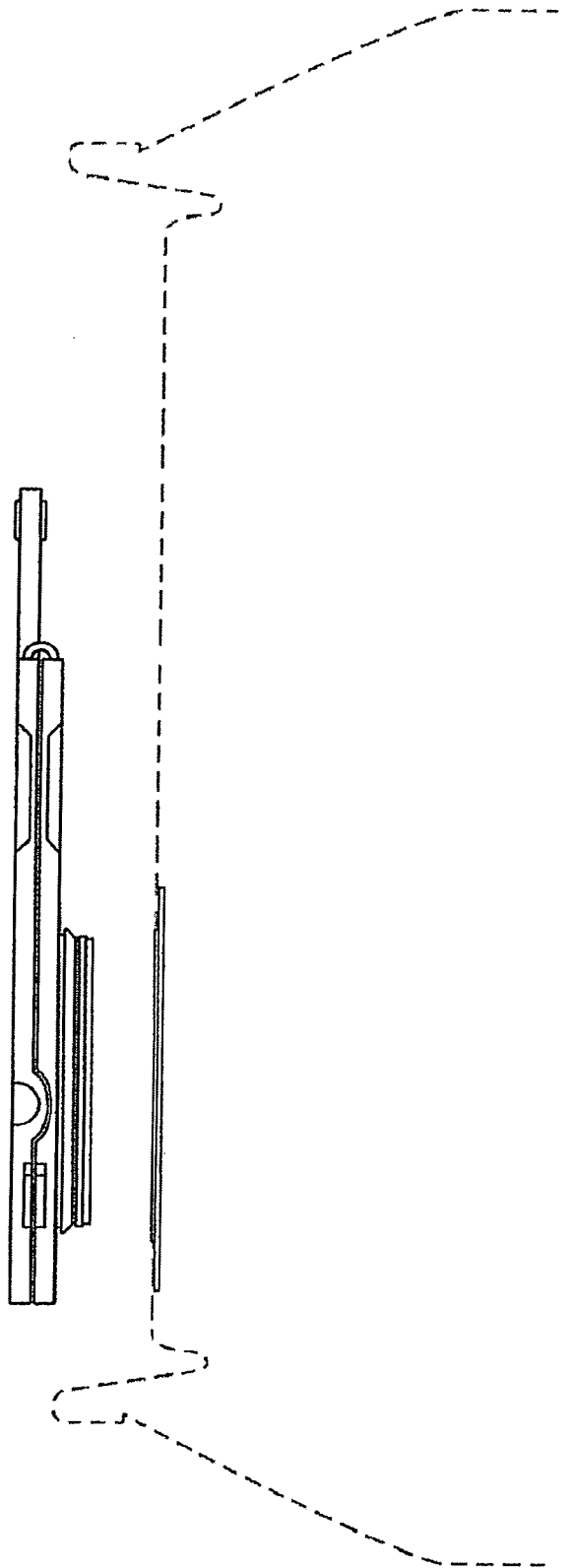


FIG. 38

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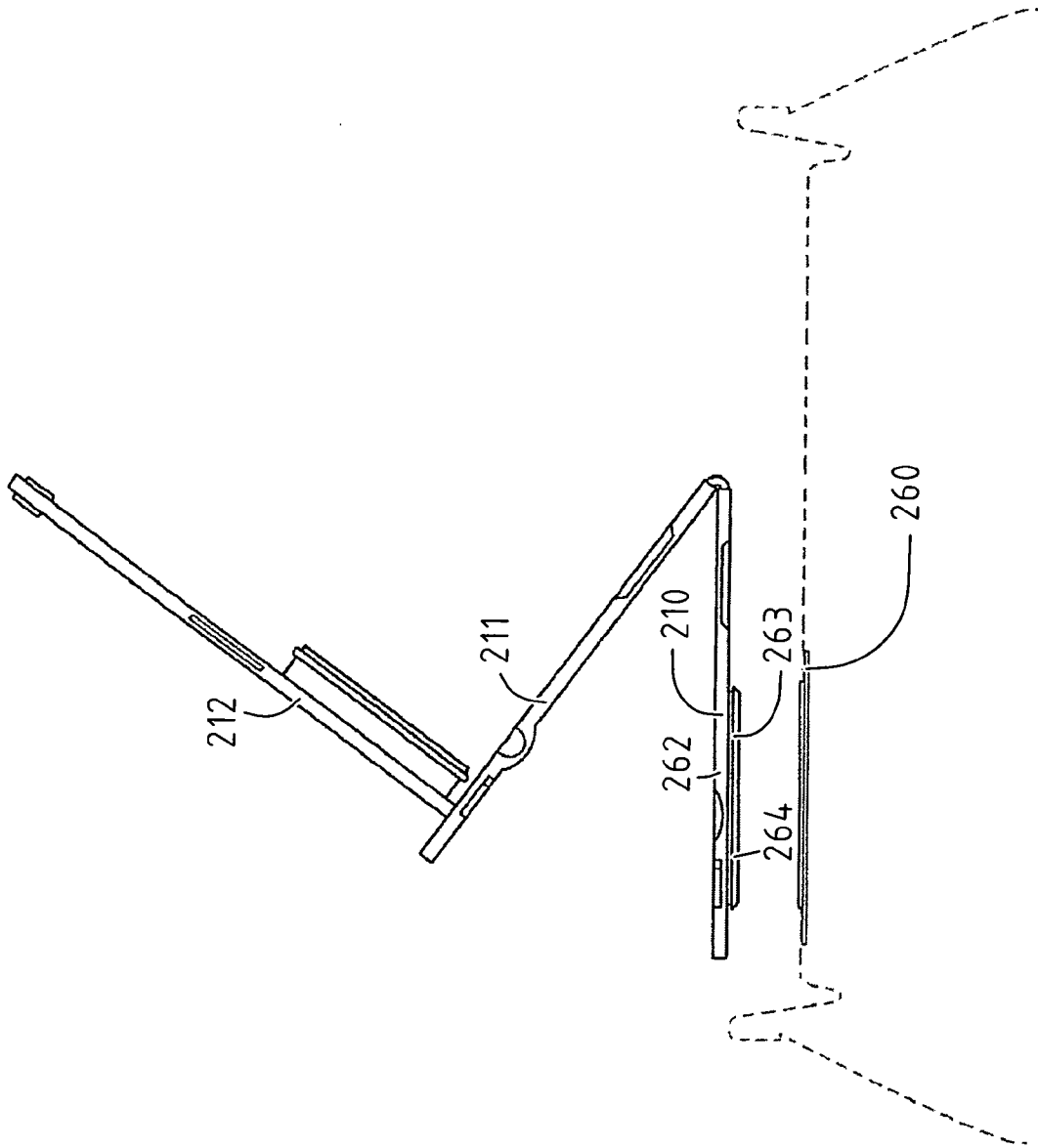


FIG. 39

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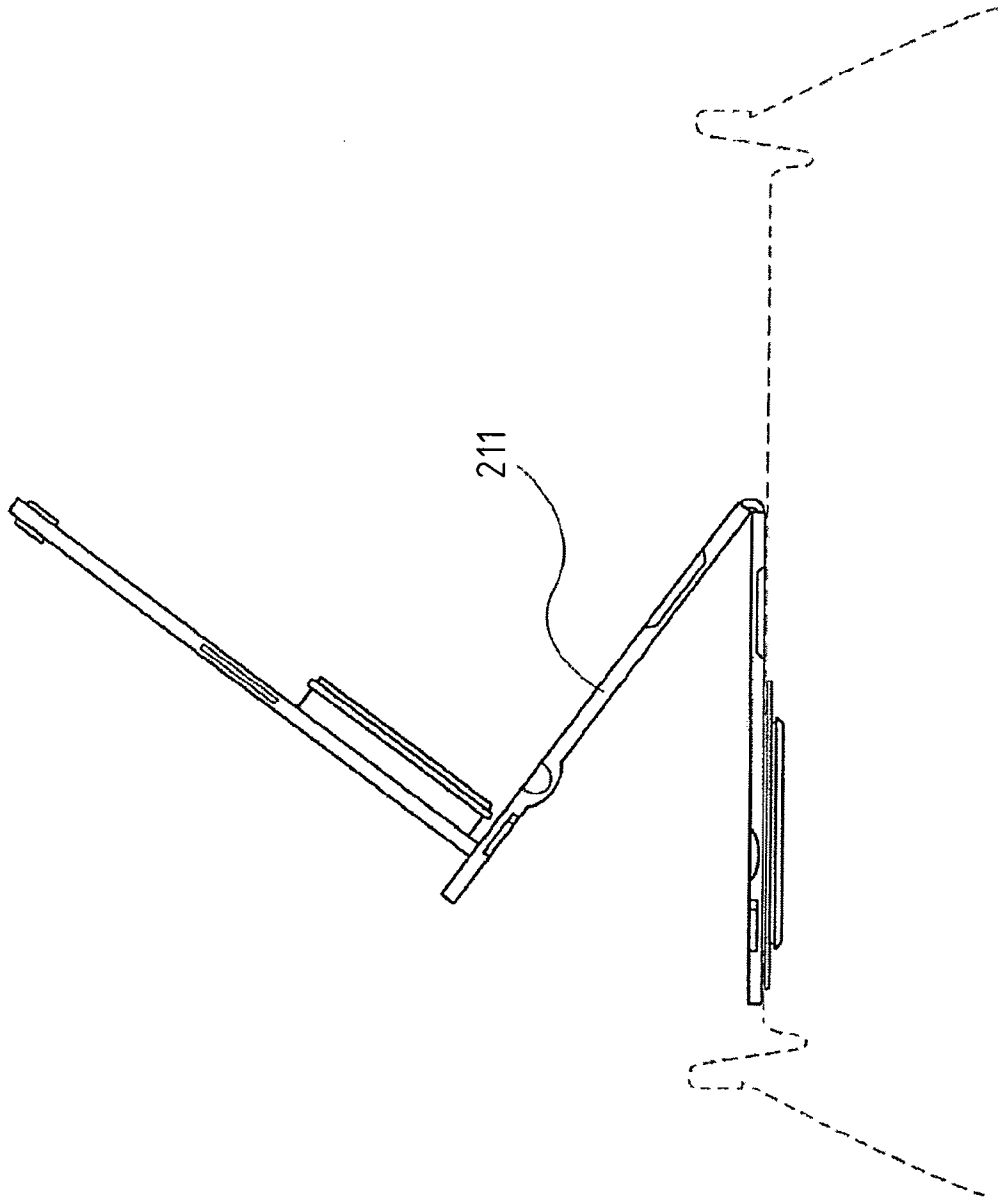
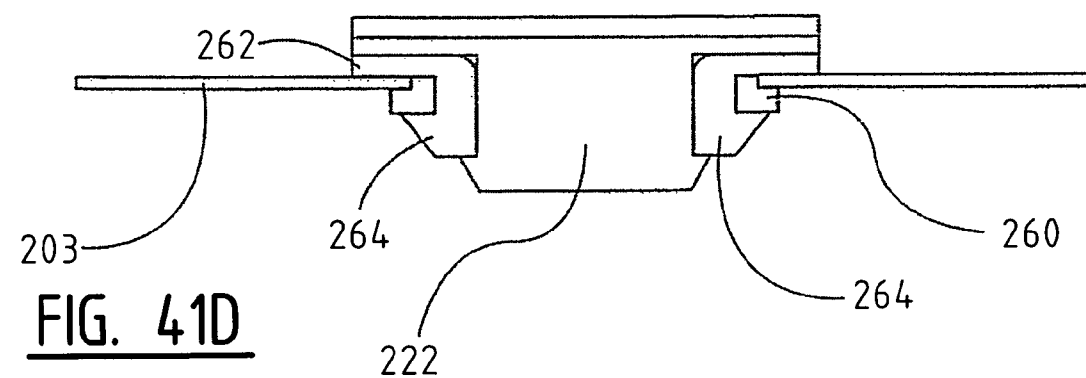
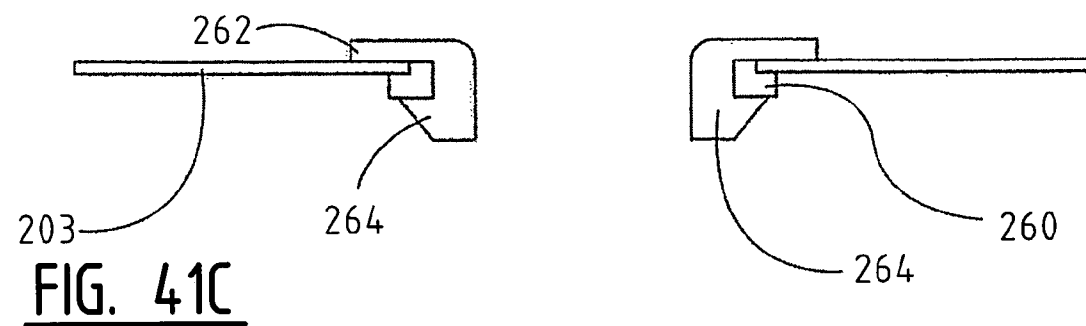
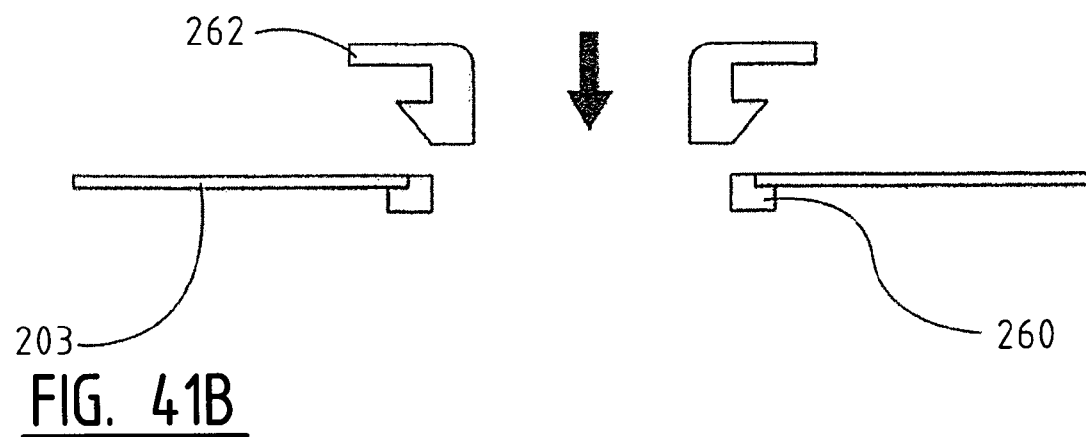
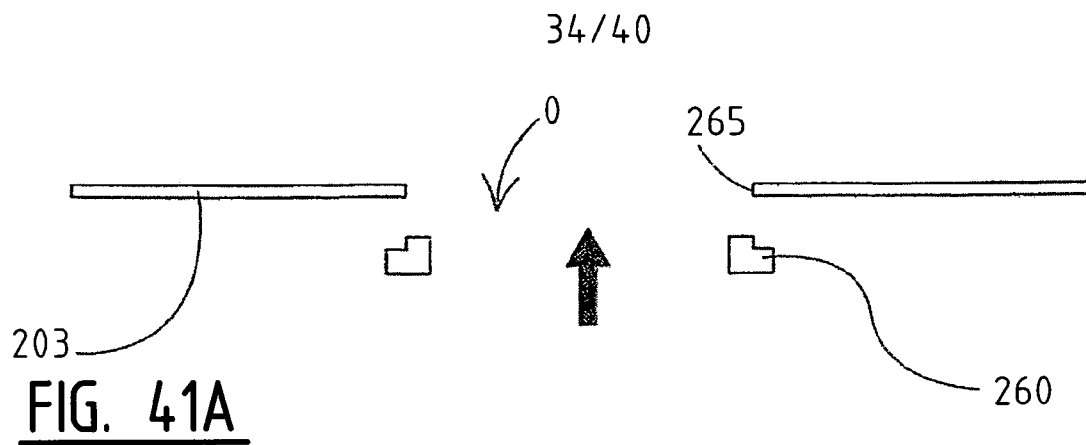


FIG. 40



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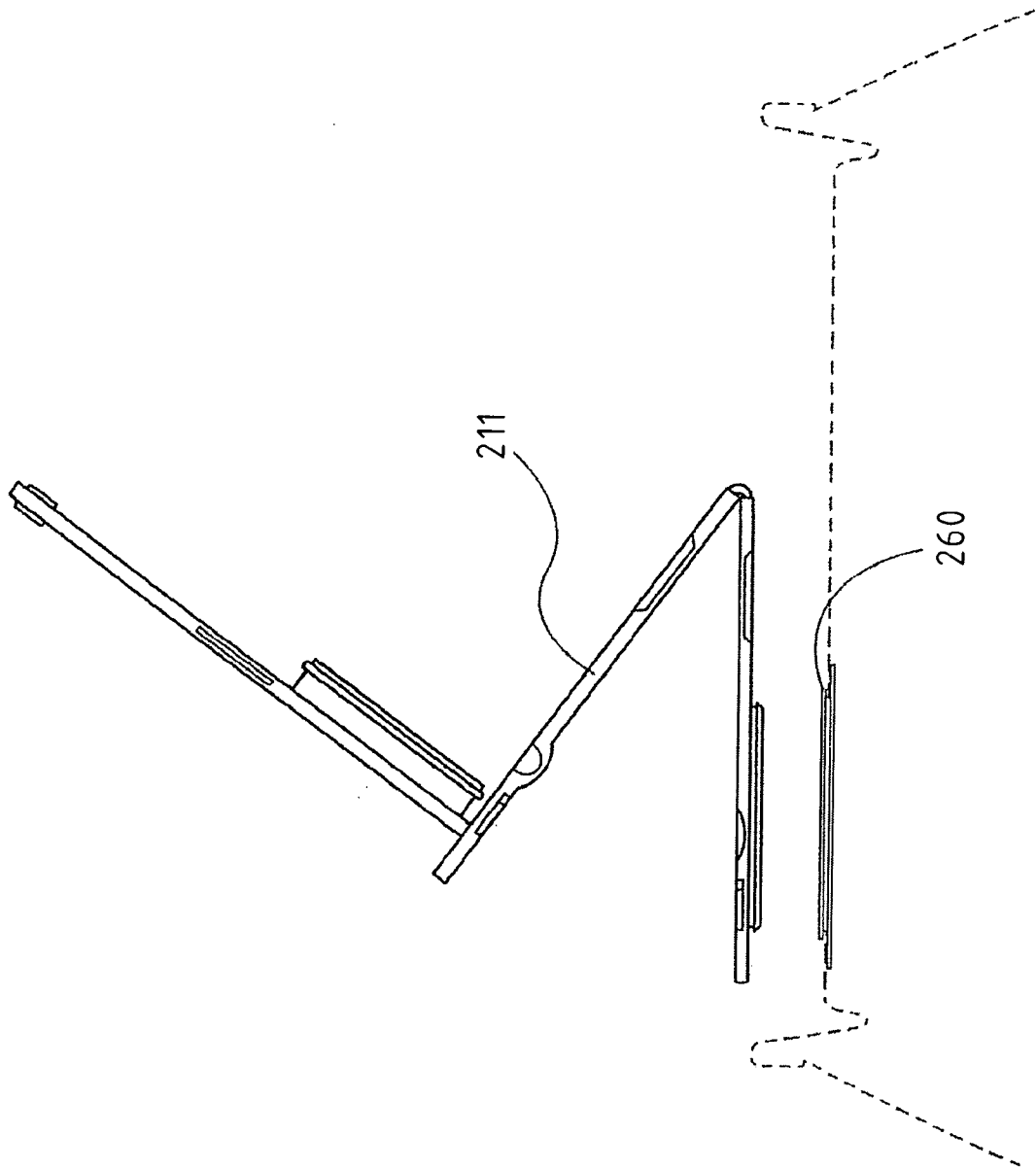


FIG. 42

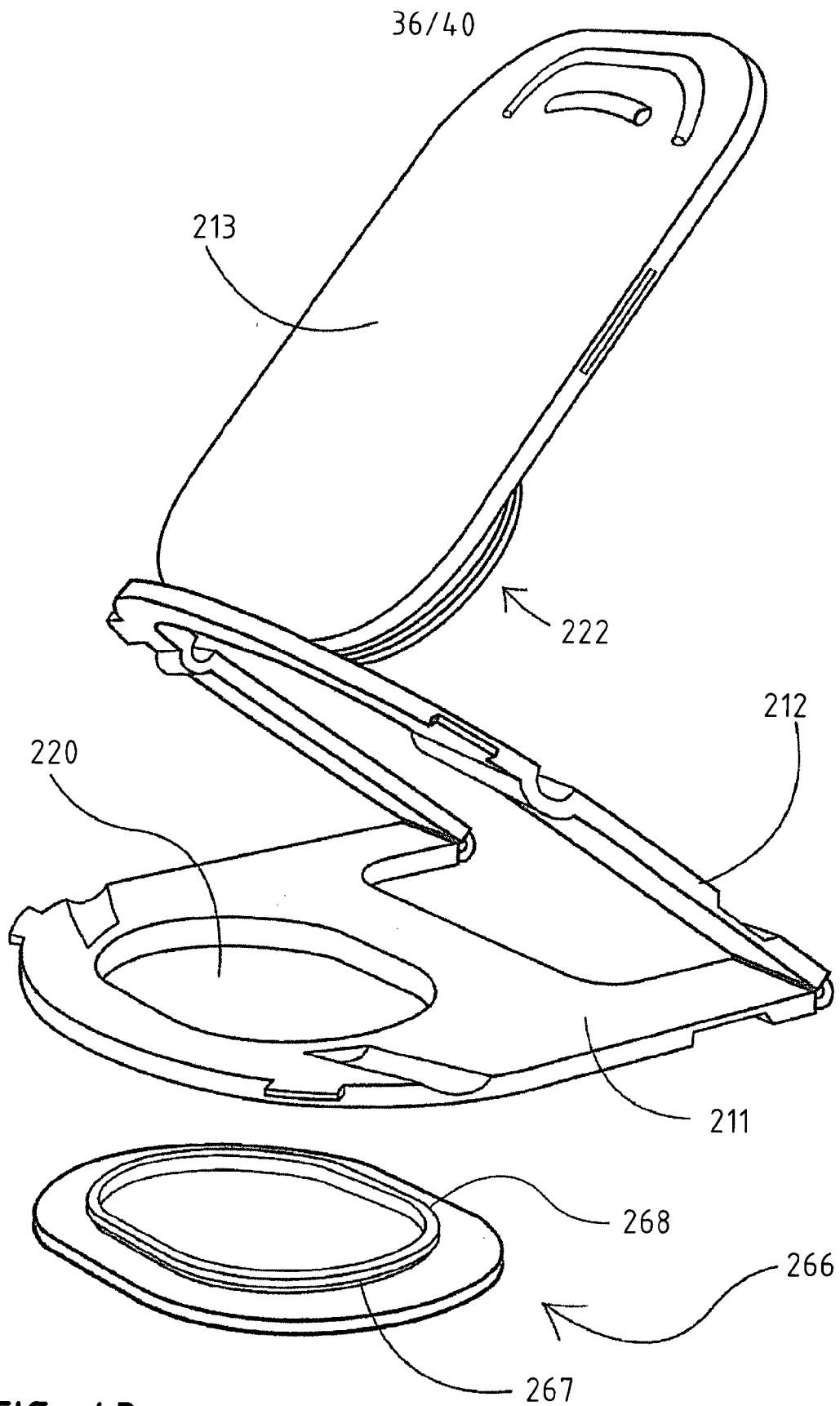
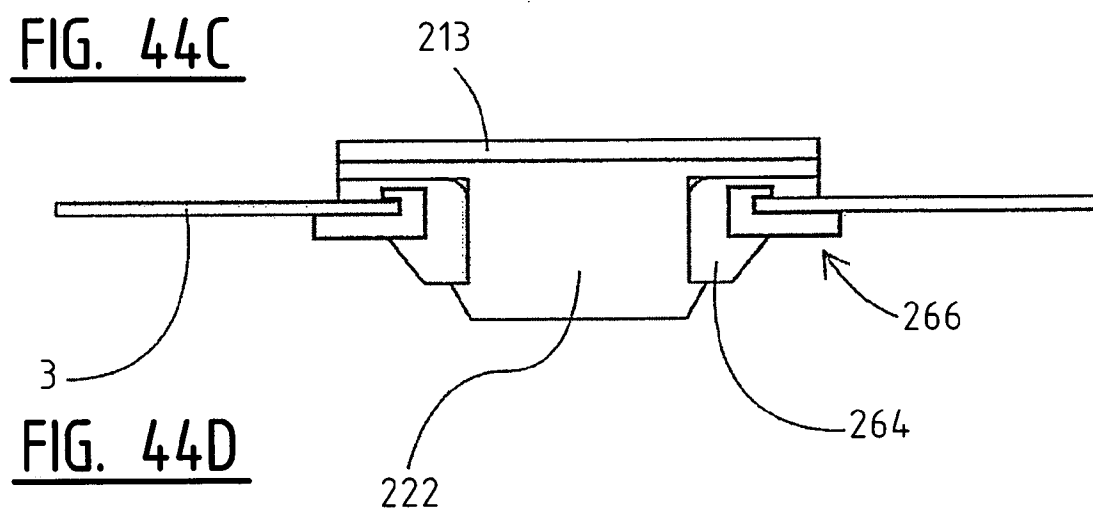
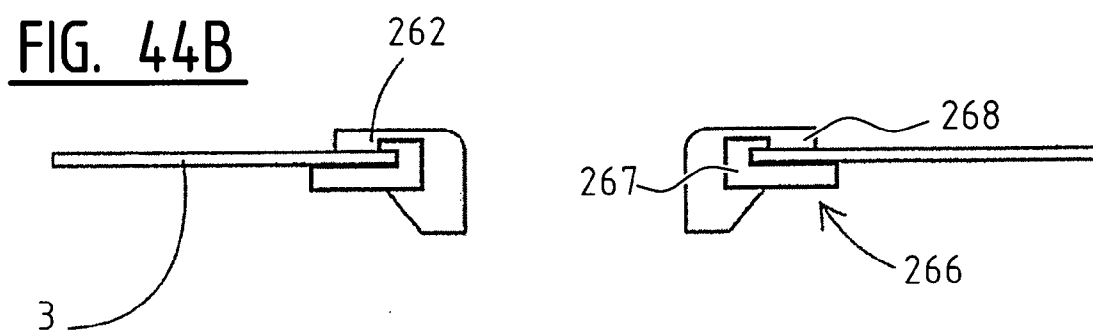
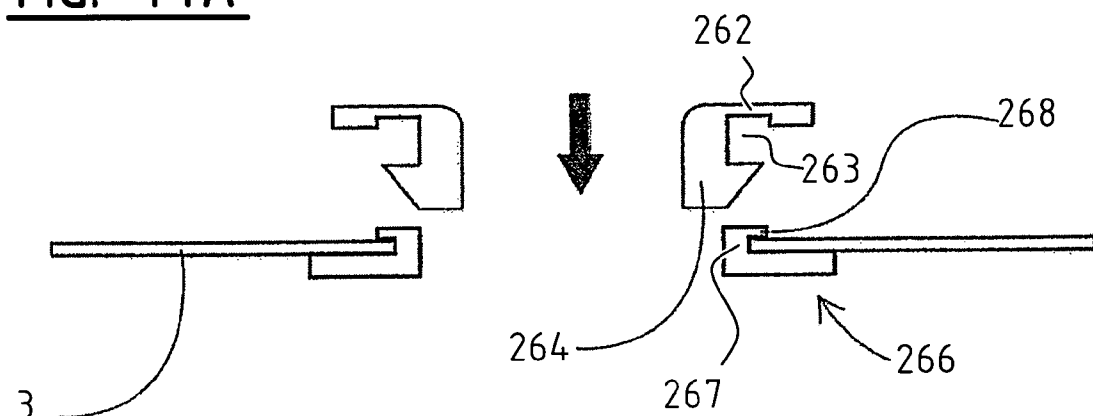
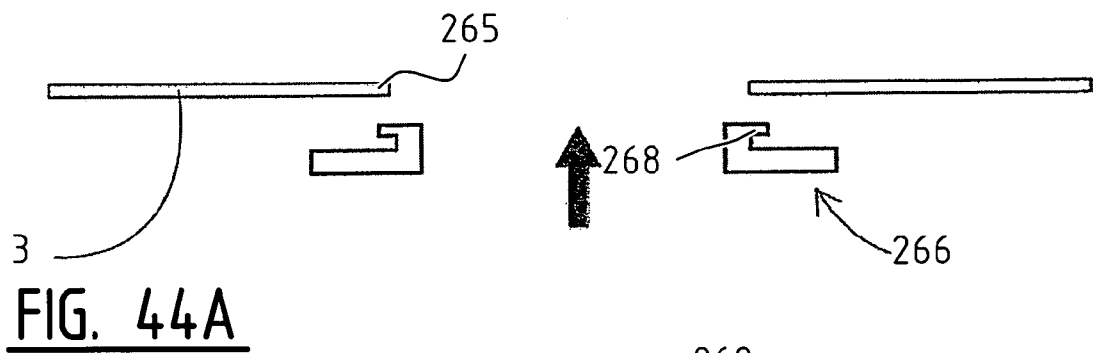


FIG. 43

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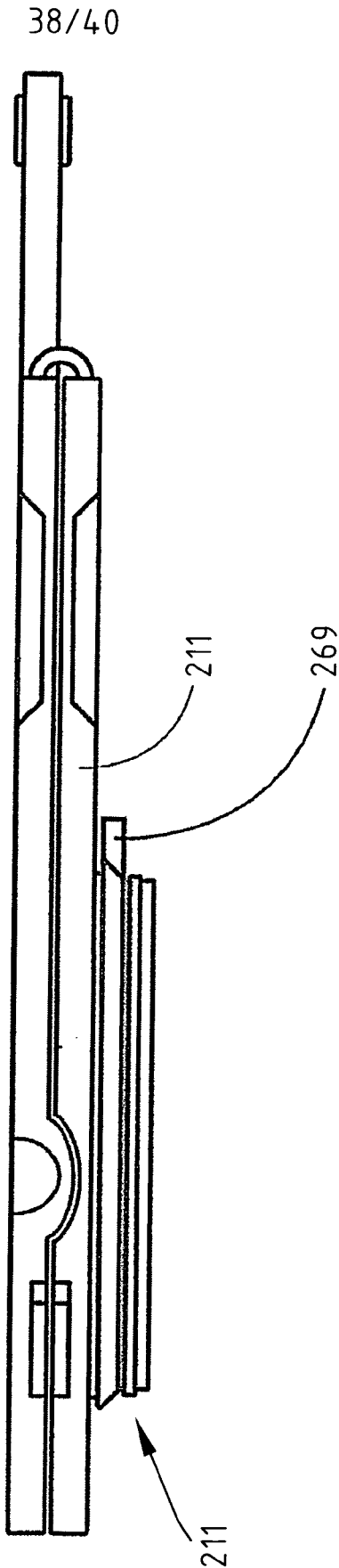


FIG. 45

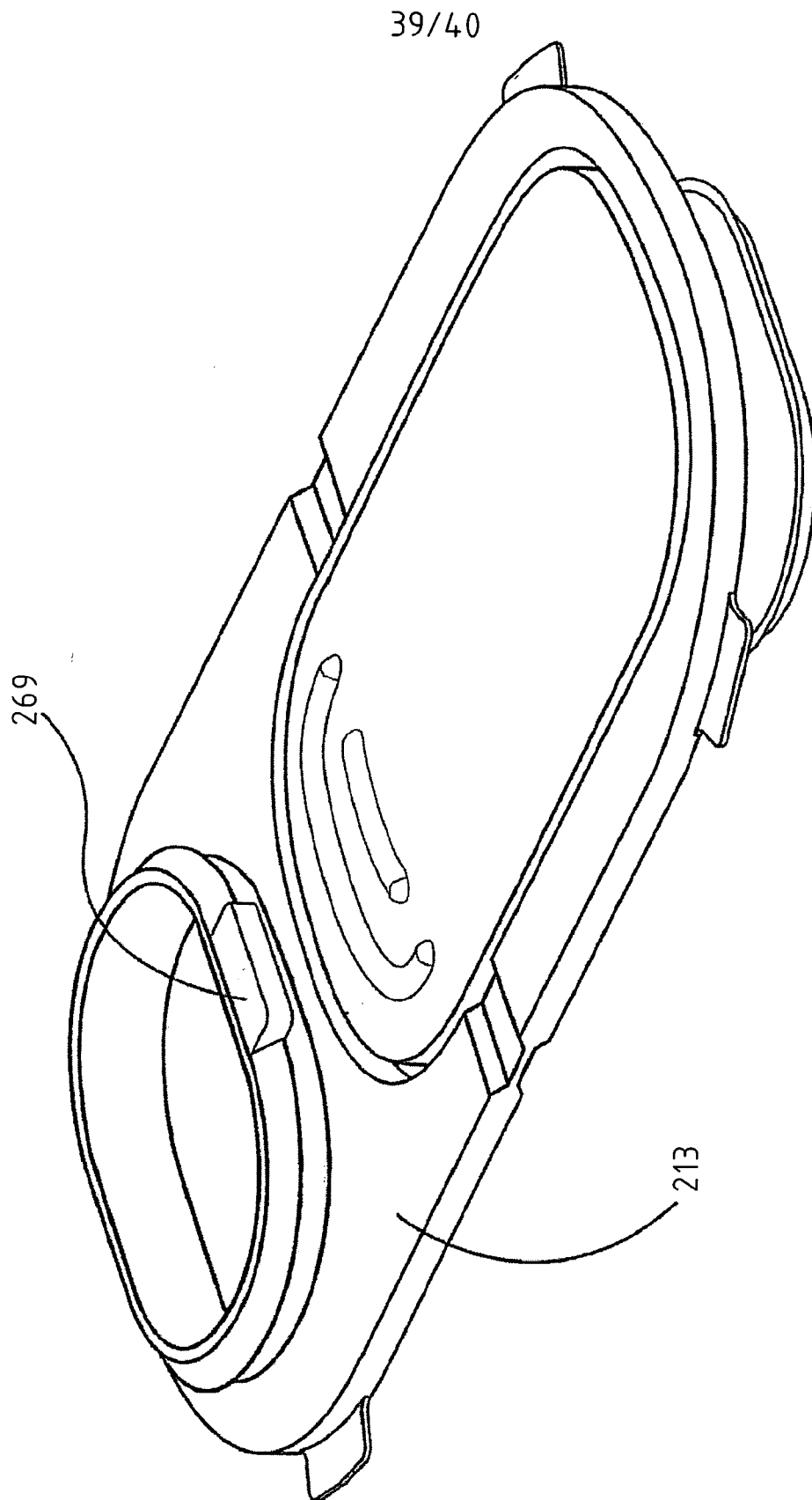


FIG. 46

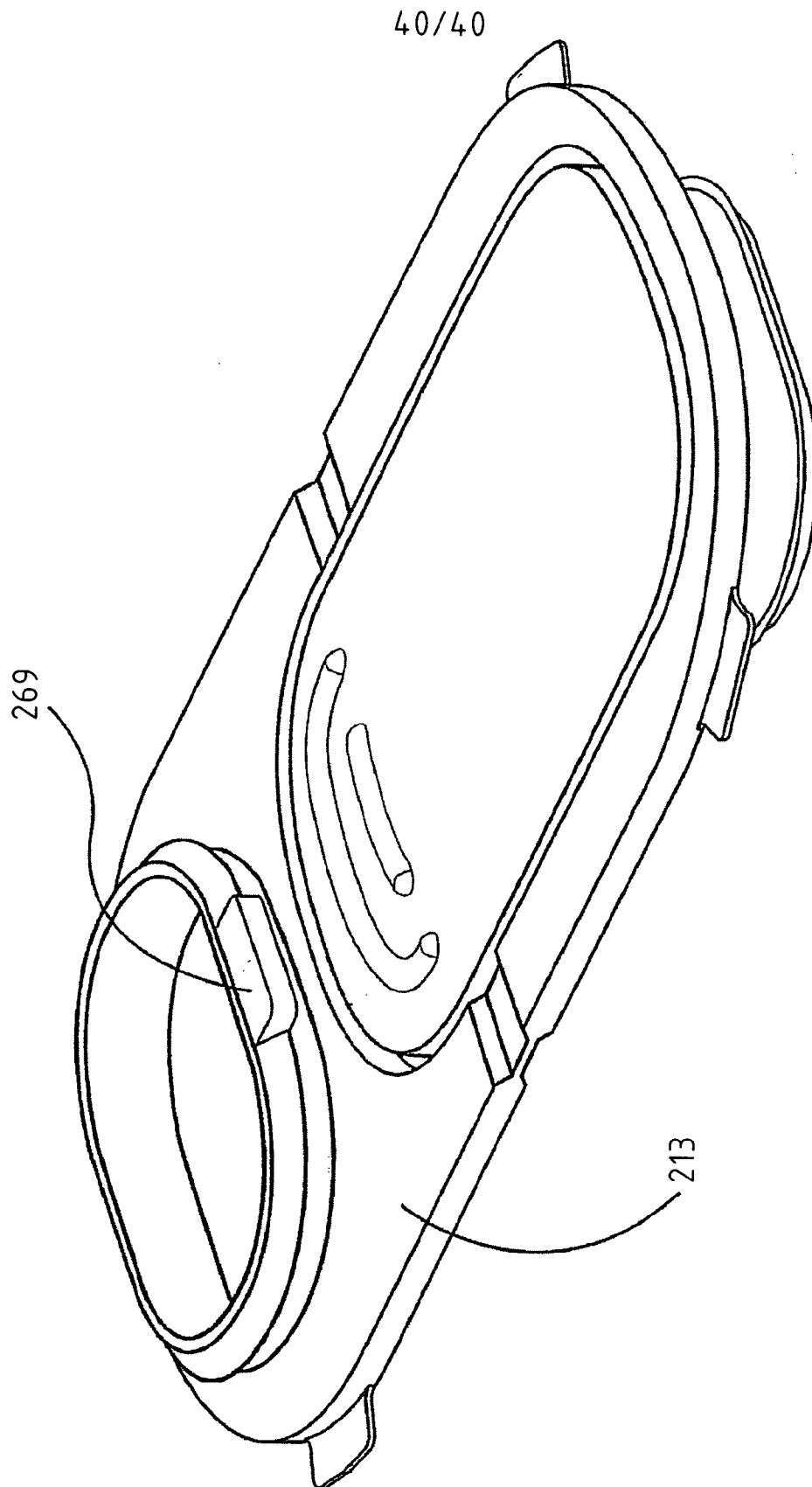


FIG. 47