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(54) **RE-CLOSABLE CONTAINER AND METHOD FOR ASSEMBLING THE CONTAINER**

(57) The re-closable container comprises a container body (1), a closure lid (2) and at least one lock mechanism (18, 9). The container body and the closure lid are each formed by a thermoformed sheet of plastic which also forms the lock mechanism. The container body (1) has a circumferential side wall (4) terminating in an outwardly directed peripheral flange (5). The closure lid (2) or the peripheral flange (5) has two opposite open hemmed edges (12, 13) having a return flange turned inwards whilst the other one of these two parts has two opposite

edges (14, 15) which are slidably received in the two opposite open hemmed edges. An advantage of the re-closable container is that it may be relatively large. It can also be produced by a relatively simple and economical production process. The product which is to be packed can be placed in the container body before placing the closure lid onto the container body and hemming the two opposite open hemmed edges of the closure lid around the two opposite edges of the peripheral flange of the container body.

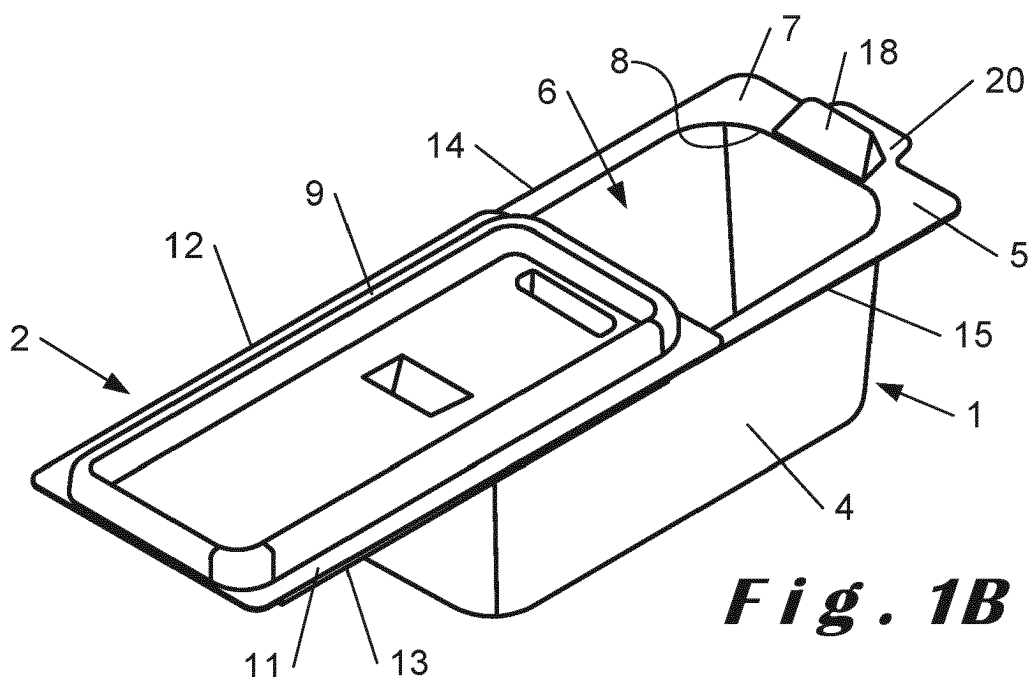


Fig. 1B

Description

[0001] The present invention relates to a re-closable container which comprises a container body, a closure lid and at least one lock mechanism formed on said container body and on said closure lid for locking the lid in its closed position on the container body. The container body has a circumferential side wall terminating in a first peripheral flange which has an upper surface that defines an access opening into an interior compartment of the container body. The closure lid is slidably mounted onto said first peripheral flange between a closed position, wherein said access opening is closed by means of the lid, and an open position, wherein said access opening is at least partially opened by said lid.

[0002] The re-closable container can be configured for packaging different products including for example powders or articles such as blocks or tablets. It may especially be suited for packaging detergent powders or powder tablets, such as laundry or dish washing detergents. The lock mechanism is preferably configured to be child-resistant so that the content of the re-closable container is not readily accessible to children.

[0003] The re-closable container of the present invention is a slide-lid container, i.e. it has a closure lid that is slidably mounted onto the container body. In practice there are also other types of containers, such as containers which have a lid that is connected by means of one or more hinges to the container body. An example of such containers is disclosed in EP 3 453 633 A and in US 2019/0344937 A. An advantage of slide-lid containers is that they are easier to fill automatically since the handling of the container body during the filling operation is not hampered by closure lids which are permanently connected to the container bodies.

[0004] GB 1 502 258 discloses relatively small slide-lid boxes which comprise a cover member slidably engaged with a tray member. The cover member has a first latching means adapted to engage with a second latching means incorporated in the tray member. The latching means can be unlocked by manually pressing the cover edges together. The cover comprises hooked edges retaining the cover in sliding engagement with the two sides of the tray. The slide-lid boxes are made of metal in order to enable to unlock the latching means and to hook the cover sufficiently strongly to the tray member. Due to the required stiffness, and the complex production process required to produce the boxes, they are quite expensive. Moreover, the size of the boxes that can be produced is limited. They are thus not suited for packaging for example laundry or dish washing detergent powders or tablets.

[0005] DE 8907662 U1 does disclose a re-closable container which may be of a larger size. The container comprises a cardboard box and a cover. After having filled the container, in particular with a laundry detergent powder, it is closed by means of the cover. The cover is fixed onto the upper edge of the cardboard box for example by means of a glue. The cover is provided with an

access opening which is closed off by means of a slide-lid. The cover is in the form of a ring which is fixed on top of the cardboard box and which has inwardly directed flanges forming a guide rail for the slide-lid. The lower flange is provided with two locking projections arranged at the free extremities of two resilient tongues cut out in the lower flange. In the closed position of the slide-lid, the two locking projections extend through holes in the slide-lid to lock the slide-lid in its closed position. Since both locking projections have to be depressed simultaneously to release the slide-lid, the lock mechanism is child-resistant. In the first embodiment illustrated in DE 8907662 U1, the slide-lid is inserted through a lateral slot into the guide rail of the cover. A drawback of this embodiment is that the slide-lid is easily pulled out of the cover. It is however not easy to insert the slide-lid back into the cover leaving so that the container may remain open. In the second embodiment, the cover has a peripheral upstanding edge so that the slide-lid cannot be removed from the cover. However, in this embodiment, the slide-lid has to be quite flexible to enable to slide it into the two opposite guide rails. Moreover, the slide-lid can only slide over a limited distance so that only about one third of the cover can be opened.

[0006] An overall disadvantage of the re-closable container disclosed in DE 8907662 U1 is that the container body has to be composed of two different parts, namely the cardboard box and the peripheral part of the cover. Both parts have to be made sufficiently strong so that they can be securely mounted onto one another. In practice they have to be glued onto one another in order to prevent children from easily opening the container. The peripheral part of the cover, showing the two opposite guide rails facing one another, has moreover a quite complex shape so that the cover has to be produced by an injection moulding process. Compared to a thermoforming process, an injection moulding process involves higher costs, in particular tooling costs and also material costs since an injection moulding process requires larger thicknesses of the thermoplastic layers. Moreover, after the injection moulding process the locking projections still have to be punched out of the injection moulded cover.

[0007] An object of the present invention is therefore to provide a new re-closable container which may be relatively large and which can be produced by a less complicated and more economical production process.

[0008] To this end, the re-closable container according to the invention comprises a container body having a circumferential side wall terminating in a first peripheral flange which has an upper surface defining an access opening into an interior compartment of the container body; a closure lid which is slidably mounted onto said first peripheral flange between a closed position, wherein said access opening is closed by means of the lid, and an open position, wherein said access opening is at least partially opened by said lid; and at least one lock mechanism formed on said container body and on said closure lid for locking the lid in its closed position on the container

body, and is characterised in that

said container body and said closure lid are each formed by a thermoformed sheet of plastic, and in that said first peripheral flange is outwardly directed from the circumferential side wall of the container body, one of said closure lid and said first peripheral flange having two opposite open hemmed edges having a return flange turned inwards and the other one of said closure lid and said first peripheral flange having two opposite edges which are slidably received in said two opposite open hemmed edges. The lock mechanism is preferably also formed by the thermoformed sheet of plastic forming the container body and by the thermoformed sheet of plastic forming the closure lid.

[0009] The re-closable container according to the present invention is economical to produce since the container body and the closure lid are each formed by a thermoformed sheet of plastic. This is possible due to the fact that the first peripheral flange on the container body is directed outwards. In this way, either the first peripheral flange of the container body or the closure lid can be provided with two opposite open hemmed edges which each form a guide rail for one of the two opposite edges of the closure lid or respectively of the first peripheral flange. With such a construction, the sheet of plastic does not need to be thick in order to achieve a reliable slidable connection between the container body and the closure lid. The re-closable container of the present invention can thus be made with a minimum amount of material by means of a relatively cheap thermoforming process. The container is preferably made of polyethylene terephthalate (PET) and/or of polypropylene (PP).

[0010] In an embodiment of the container according to the present invention said lock mechanism comprises an upstanding lock bulge which is thermoformed on an outwardly directed flange portion of one of said container body and said closure lid and which is movable between an extended and a retracted position by elastic bending of said outwardly directed flange portion, and the other one of said container body and said closure lid having a lock opening configured to receive said upstanding lock bulge, in its extended position, in the closed position of the closure lid, which lock opening gives preferably access to a lock recess in said other one of said container body and said closure lid.

[0011] In this embodiment, the lock bulge can be pulled or pushed out of the lock opening by bending the outwardly directed flange portion. The force required to unlock this lock mechanism can easily be controlled by selecting the most appropriate size of the lock bulge. The lock opening is preferably formed by a lock recess. In this way, when unlocking the lock mechanism, the top of the lock bulge slides along the inner wall of the lock recess thus enabling a smooth unlocking operation.

[0012] In an embodiment of the container according to the preceding embodiment, said outwardly directed flange portion is located between said two opposite open hemmed edges or between said two opposite edges.

[0013] An advantage of this embodiment is that the lock bulge does not have to be provided at the location of the open hemmed edges so that more space is available to increase the width of the outwardly directed flange portion to provide a bigger, more reliable lock bulge and to make it easier to bend the outwardly directed flange portion by the increased lever effect.

[0014] In an embodiment of the container according to any one of the preceding embodiments, said outwardly directed flange portion is part of said first peripheral flange and said closure lid has said lock opening which is configured to receive said upstanding lock bulge in the closed position of the closure lid.

[0015] An advantage of this embodiment is that the container body is usually positioned onto a support surface, such as a table top, so that the container body automatically stays in place when the first peripheral flange is pushed or pulled down to push or pull the lock bulge out of the lock opening in the closure lid.

[0016] Alternatively, said closure lid comprises a second peripheral flange which is outwardly directed, and said outwardly directed flange portion is part of said second peripheral flange, said container body having said lock opening which is configured to receive said upstanding lock bulge in the closed position of the closure lid, said lock opening being in particular formed by the access opening of the container body.

[0017] In this embodiment, the lock bulge has to be pulled upwards out of the lock opening, in particular out of the access opening of the container body. The container body thus has to be immobilized with one hand while the other hand is used to pull the lock bulge upwards. This is less easy and may thus improve the safety of a child-resistant locking mechanism.

[0018] In an embodiment of the container according to any one of the preceding embodiments, said outwardly directed flange portion comprises a tab for elastically bending the outwardly directed flange portion to move the upstanding lock bulge from its extended to its retracted position, said tab protruding preferably outwards from said outwardly directed flange portion.

[0019] The presence of such a tab makes it immediately evident that it is intended for opening the container. It makes pushing or pulling the lock bulge out of the lock recess easier. In this way, the container can also be opened by less handy people.

[0020] In an embodiment of the container according to any one of the preceding embodiments, said lock mechanism is a latch mechanism wherein said upstanding lock bulge has a slanting surface configured to engage said other one of said container body and said closure lid to urge the upstanding lock bulge into its retracted position by elastically bending the outwardly directed flange portion when sliding the closure lid into its closed position.

[0021] This embodiment makes re-closing the container very easy. Especially when the closure lid projects from the container body in its open position, the user will normally always close the container quickly before

putting it away. This is very advantageous in view of the child's safety.

[0022] In an alternative embodiment of the container according to the present invention, said lock mechanism comprises a lock projection on each of said two opposite edges, which lock projections project laterally from the opposite edges and extend, in the closed position of the closure lid, through a lateral opening provided in the open hemmed edges wherein the opposite edges are received, the lock projections being operable in the closed position of the closure lid to be moved from an extended position, wherein they extend through said lateral openings into a retracted position, wherein the lock projections can slide along the open hemmed edges.

[0023] When the lock projections are provided on the opposite edges of the closure lid, they can be easily provided on these edges when cutting the closure lid out of the thermoformed sheet from which it is made, for example by die-cutting, whilst the lateral openings configured to receive the lock projections can easily be provided in the open hemmed edges of the container body when (die-)cutting the container body out of the thermoformed sheet from which it is made or by cutting the lateral openings in the open hemmed edges after having made these open hemmed edges. When the lock projections are provided on the opposite edges of the container body, i.e. on the opposite edges of the first peripheral flange, they can be easily provided on these edges when cutting the container body out of the thermoformed sheet from which it is made, for example by die-cutting, whilst the lateral openings configured to receive the lock projections can easily be provided in the open hemmed edges of the closure lid when (die-)cutting the closure lid out of the thermoformed sheet from which it is made or by cutting the lateral openings in the open hemmed edges after having made these open hemmed edges. In the closed position of the closure lid, the locking mechanism can be unlocked simply by pushing the lock projections inwards. Both lock projections have to be pushed inwards simultaneously and at the same time the closure lid has to be urged towards its open position in order to open the container. This is not so easy for children, especially not due to the relatively large size of the container so that the two lock projections cannot be depressed simultaneously with one hand.

[0024] Preferably, said lock projections have a slanting side configured to engage the open hemmed edges to urge the lock projections into their retracted position when sliding the closure lid from its open towards its closed position.

[0025] This embodiment makes re-closing the container very easy. Especially when the closure lid projects from the container body in its open position, the user will normally always close the container quickly before putting it away. This is very advantageous in view of the child's safety.

[0026] In an embodiment of the container according to the present invention, or according to any one of the pre-

ceding embodiments, said first peripheral flange comprises at least one upstanding guide bulge which is thermoformed in the first peripheral flange and which is received in a guide groove which is thermoformed in the closure lid.

[0027] In this embodiment, the cooperation between the upstanding guide bulge or bulges and the guide groove makes sliding the closure lid between its closed and its open position easier and smoother.

[0028] Preferably, said guide groove is a peripheral groove extending along the entire periphery of the closure lid.

[0029] The presence of such a guide groove along the periphery of the closure lid increases the structural rigidity of the closure lid without having to increase its weight. The peripheral groove can also function as lock recess receiving the lock bulge in the closed position of the closure lid.

[0030] In an embodiment of the container according to the present invention, or according to any one of the preceding embodiments, it comprises a first indent thermoformed in the closure lid, which first indent projects into the interior compartment of the container body and forms a first stop abutting the container body in the closed position of the closure lid.

[0031] Together with the lock bulge, the first stop immobilizes the closure lid in its closed position. Especially when the lock bulge has a slanting surface, the first stop may prevent the closure lid from being pushed beyond its closed position. This assures that the closure lid is always correctly locked in its closed position. Moreover, the closure lid can also not be removed from the container body by sliding it beyond its closed position away from the container body.

[0032] In an embodiment of the container according to the present invention, or according to any one of the preceding embodiments, it comprises a second indent thermoformed in the closure lid. This second indent projects into the interior compartment of the container body and forms a second stop abutting the container body in the open position of the closure lid.

[0033] In this embodiment, the closure lid can also not be removed from the container body by sliding it beyond its open position away from the container body.

[0034] Preferably, the closure lid projects in its open position over a distance from the container body. An advantage of this preferred embodiment is that the closure lid will always be slid by the user into its closed position before the container is put in its place.

[0035] In an embodiment of the container according to the preceding embodiment or the preceding preferred embodiment, said second indent has a first side engaging the container body in the open position of the closure lid and a second side which is situated opposite the first side and which has a slanting surface configured to enable to slide the closure lid onto the container body with the two opposite edges sliding in the two opposite open hemmed edges.

[0036] In this embodiment the open hemmed edges can be provided either on the container body or onto the closure lid before putting the closure lid onto the container body. The closure lid can be slid onto the container body but can subsequently no longer be removed from the container body.

[0037] When the closure lid comprises said first indent, the open hemmed edge is located preferably at such a distance from the edge of the proximal edge of the container body that the closure lid can first be put onto the container body with the first indent extending into the interior compartment of the container before the opposite edges slide into the open hemmed edges.

[0038] In an embodiment of the container according to the present invention, or according to any one of the preceding embodiments, said container body is formed by one single thermoformed sheet of plastic and said closure lid is formed by one single thermoformed sheet of plastic.

[0039] The container is thus composed of only two thermoformed parts so that only two parts need to be assembled onto one another to obtain the re-closable container. Not only the closure lid but also the container body is easy to produce since it is formed during the thermoforming operation and does not need to be composed by assembling for example an injection moulded part onto a cardboard box.

[0040] The present invention also relates to a method for assembling a re-closable container according to the invention. This method comprises the steps of providing said container body and said closure lid, with at least one of the two opposite open hemmed edges of said one of said closure lid and said first peripheral flange being still unhemmed; placing the closure lid in its closed position onto the container body; and hemming said at least one of the two opposite open hemmed edges around one of said two opposite edges.

[0041] In the method the container body can easily be handled and filled since the closure lid is not attached to the container body. As at least one of the two opposite open hemmed edges is initially still unhemmed the closure lid can easily be positioned onto the container body. Subsequently, the edge which was not yet hemmed can then be hemmed around one of the opposite edges of the other part of the container in order to fix the closure lid slidably onto the container body.

[0042] Preferably, in said providing step the two opposite open hemmed edges are still unhemmed and in said hemming step said two opposite open hemmed edges are hemmed each around one of said opposite edges.

[0043] In this embodiment, the closure lid can be placed easily onto the container body by simply lowering the closure lid onto the container body. When one of the open hemmed edges would still be unhemmed, a somewhat more complex movement of the closure lid is required to place it onto the container body.

[0044] In an embodiment of the method according to the present invention, or according to the preceding pre-

ferred embodiment, a product is packed in the re-closable container, and this product is placed into the interior compartment of the container body before placing the closure lid in its closed position onto the container body.

[0045] In this embodiment the product can easily be placed in the container body since there is still no closure lid which may hamper the filling operation. The access opening is moreover still completely open as the closure lid is not yet mounted onto the container body. Once mounted onto the container body, the closure lid will usually still cover a portion of the access opening of the container body.

[0046] Other advantages and particularities of the present invention will become apparent from the following description of some particular embodiments of the re-closable container and the method for assembling it according to the invention. This description is only given by way of example and is not intended to limit the scope of the invention. The reference numerals used in the description relate to the annexed drawings wherein:

Figures 1A to 1C show perspective views of a re-closable container according to a first embodiment in its closed, open and nearly closed positions;

Figures 2A to 2C show side views of the re-closable container illustrated in the previous Figures in its closed, open and nearly closed positions;

Figures 3A to 3D show a front, a side, a top and a perspective view of the container body of the re-closable container illustrated in the previous Figures;

Figures 4A to 4D show a front, a side, a top and a perspective view of the closure lid of the re-closable container illustrated in the previous Figures;

Figure 5 shows a cross-sectional view of the detail showing the open hemmed edge of the closure lid receiving the peripheral edge of the container body; Figures 6A and 6B show, in a perspective and in a side view, the first step of applying the closure lid having pre-hemmed opposite edges as illustrated in Figure 5 onto the container body;

Figure 7 shows a perspective view of an alternative embodiment wherein the closure lid is not pre-hemmed and is only hemmed after being put onto the container body;

Figure 8 shows a perspective view of an alternative container body which has a peripheral edge which is configured to be hemmed around the opposite edges of the closure lid;

Figure 9 shows a schematic sectional view through an alternative re-closable container wherein the lock bulge is provided on the closure lid and the lock recess on the container body;

Figure 10 shows a side view of an alternative embodiment wherein the lock opening is formed by a through hole instead of by a lock recess; and

Figure 11 shows, in a perspective view, a re-closable container according to the present invention having an alternative lock mechanism.

[0047] The present invention generally relates to a re-closable container which is made of a thermoplastic material, in particular from polypropylene (PP) or polyethylene terephthalate (PET), and which can be made by a thermoforming process. The re-closable container comprises a container body 1 and a closure lid 2 which is slidably mounted onto the container body 1 between a closed position and an open position. The re-closable container also comprises a lock mechanism for locking the closure lid 2 in its closed position onto the container body 1. The container body 1 and the closure lid 2 are each formed by a thermoformed sheet of plastic.

[0048] An embodiment of the re-closable container according to the present invention is illustrated schematically in Figures 1 to 5. Figures 1A and 2A shows the container in its closed position, Figures 1B and 2B in its open position and Figures 1C and 2C in its position wherein it is almost closed and wherein the lock mechanism is activated to lock the closure lid 2 when it arrives in its closed position on the container body 1.

[0049] The container body of this embodiment is illustrated in Figures 3A to 3D. It has a bottom 3 and a circumferential side wall 4 which terminates, at its top, in a peripheral flange 5 which is outwardly directed from the circumferential side wall 4. The bottom 3 and the circumferential side wall 4 define the interior compartment 6 of the container body 1. The peripheral flange 5 has an upper surface 7 that defines the access opening 8 into the interior compartment 6. The peripheral flange 5 increases the rigidity of the container body 1 at the top of its side wall 4.

[0050] In the embodiment illustrated in the drawings the interior compartment 6 is formed by one single compartment. It is not divided in sub-compartments. In an alternative embodiment, the bottom 3 may be shaped to form upstanding ridges or partition walls within the interior compartment 6 so that it is divided up into two or more sub-compartments.

[0051] The closure lid 2 which fits onto this container body 1 is illustrated in Figures 4A to 4D. The closure lid 2 has a circumferential ridge 9 which is thermoformed in the closure lid 2. The ridge 9 is situated on the upper side of the closure lid 2 so that a corresponding circumferential groove 10 is present on the underside of the closure lid 2. The presence of this groove and ridge increases the rigidity of the closure lid 2. The closure lid 2 also has a peripheral flange 11 which extends around the ridge 9. Two opposite edges 12, 13 of this peripheral flange 11 are configured to mount the closure lid 2 slidably onto the container body 1, more particularly onto the peripheral flange 5 thereof.

[0052] The peripheral flange 5 of the container body 1 has two opposite edges 14, 15 which act as guides for the sliding movement of the closure lid 2 and cooperate with the two opposite edges 12, 13 of the closure lid 2. These two opposite edges 12, 13 are hemmed to form open hems. The open hemmed edges 12, 13 each have a return flange 16, 17 which is turned inwards to form the

open hems. The opposite edges 14, 15 of the container body 1 are slidably received in the open hems of the closure lid 2 so that the closure lid 2 can slide between its open and its closed position on the peripheral flange 5 of the container body 1. The different edges 12 to 15 are all substantially parallel to one another. In this embodiment, the return flanges 16, 17 are situated underneath the peripheral flange 5 of the container body 1 and are thus hidden from view.

[0053] In an alternative embodiment, which is not shown in the figures, the opposite edges 14, 15 of the flange 5 of the container body 1 could be open hemmed and could slidably receive the opposite edges 12, 13 of the closure lid 2. In this embodiment, the return flanges of the open hemmed edges of the container body are situated on the upper side of the closure lid 2.

[0054] In order to avoid an inadvertent opening of the re-closable container, or even in order to prevent children from opening the container, the re-closable container is provided with a lock mechanism. This lock mechanism is preferably formed by the thermoformed sheet of plastic that forms the container body 1 and by the thermoformed sheet of plastic that forms the closure lid 2. In other words, the lock mechanism is preferably also thermoformed.

[0055] In the embodiment illustrated in the drawings, the lock mechanism comprises an upstanding lock bulge 18 which is thermoformed on the peripheral flange 5 of the container body 1, more particularly on the portion of this peripheral flange 5 which is situated between the two opposite edges 14, 15 thereof. The lock mechanism further comprises a lock opening 33 giving access to a lock recess 19 which is configured to receive the upstanding lock bulge 18 in the closed position of the closure lid 2. The lock recess 19 is in particular formed by a portion of the circumferential groove 10 in the underside of the closure lid 2.

[0056] At the location of the lock bulge 18 the peripheral flange 5 comprises a tab 20, projecting outwards from the lock bulge 18, for elastically bending the outwardly directed flange portion 5 onto which the lock bulge 18 is situated downwards to move the lock bulge 18 from its extended position, wherein it extends into the lock recess 19, to its retracted position, wherein it is retracted out of the lock recess 19 and thus also out of the lock opening 33. For unlocking the closure lid 2, the lock bulge 18 can thus be retracted out of the lock recess 19 by pushing or pulling the tab 20 downwards.

[0057] In the embodiment illustrated in the drawings, the lock mechanism is a latch mechanism wherein the lock bulge 18 is brought automatically into its retracted position when bringing the closure lid 2 into its closed position. The lock bulge 18 has indeed a slanting surface 21 which engages the leading side of the closure lid 2 to be pressed downward when the leading side of the closure lid 2 passed the lock bulge 18. This can be seen in Figures 1C and 2C. Once the leading side of the closure lid 2 has passed the lock bulge 18, the lock bulge 18 snaps resiliently upwards into the lock recess 19, i.e. in

the groove 10, in the underside of the closure lid 2.

[0058] When opening and closing the closure lid 2, it is guided on the container body 1 by its open hemmed edges 12, 13 which are hemmed around the opposite edges 14, 15 of the container body 1. In order to enable to slide the closure lid 2 even more smoothly onto the container body 1, two upstanding guide bulges 22 are thermoformed onto the peripheral flange 5 of the container body 1, more particularly in or near the corners thereof which are the farthest removed from the lock bulge 18. The upstanding guide bulges 22 fit into the groove 10 in the underside of the closure lid 2 and slide in this groove 10 when opening or closing the closure lid 2 to additionally guide the sliding movement of the closure lid 2.

[0059] To prevent the closure lid 2 from being moved past its closed position, an indent 23 is thermoformed in the closure lid 2, which indent 23 projects into the interior compartment 6 of the container body 1 and forms a first stop abutting the container body 1 in the closed position of the closure lid 2. The closure lid 2 is thus locked in its closed position by the straight surface 24 of the lock bulge 18 which is situated opposite its slanting surface 21 and which engages the inner side of the groove 10 and by the indent 23 which engages the inner side of the container body 1.

[0060] In the embodiment illustrated in the drawings, a further indent 25 is thermoformed in the closure lid 2. This further indent 25 also projects into the interior compartment 6 of the container body 1 but is situated more in or towards the centre of the closure lid 2. The further indent 25 has a slanting surface 26 directed towards the lock bulge 18 and a straight surface 27 on its opposite side. When opening the closure lid 2, the further indent 25 abuts with its straight surface 27 against the inner side of the container body 1 to form a stop limiting the opening movement of the closure lid 2. In its open position, illustrated in Figures 1A and 2A, the closure lid 2 projects over a considerable distance from the container body 1, but cannot be removed therefrom. Due to this extended size of the container, the user will always close the closure lid 2 before putting the container away. This is an advantageous effect in view of the intended child resistant properties of the re-closable container.

[0061] In case the open hemmed edges are preformed onto the closure lid 2 or onto the container body 1, the slanting surface 26 of the further indent 25 enables to mount the closure lid 2 easily onto the container body 1. As illustrated in Figures 6A and 6B, the closure lid 2 can indeed be positioned, in a first step, with its indent 23 on one side inside the interior compartment 6 of the container body 1. In a next step, the closure lid 2 can then be pushed further onto the container body 1 until it reaches its open position, illustrated in Figures 1B and 2B. In order to reach that position, the slanting surface 26 of the further indent 25 will cooperate with the peripheral flange 5 of the container body 1 to lift the central part of the closure lid 2 so that the further indent 25 can pass this peripheral

part 5 and snap into the interior compartment 6 of the container body 1. Once in that position, the closure lid 2 can no longer be removed from the container body 1.

[0062] In the embodiment illustrated in Figure 7, the further indent 25 does not need to have a slanting surface 26 to be able to mount the closure lid 2 onto the container body 1. In this embodiment, the indent 23 and the further indent 25 are formed by one single large indent or a U-shaped groove 28 in the closure lid 2 extending from the leading side of the closure lid 2 to the centre or nearly to the centre thereof. Such a single indent 28 has been illustrated in Figure 7. In order to enable to mount the closure lid 2 in this embodiment onto the container body 1, the closure lid 2 is not pre-hemmed (or at least one edge thereof is not pre-hemmed). The closure lid 2 can thus be placed very simply vertically onto the container body 1, after having filled the container body 1. In this way, there is no risk on spilling product out of the container body 1 when placing the closure lid 2 thereon. In a next step, the thermoplastic material of the closure lid 2 can simply be heated along the fold lines 29, 30, for example with a heating wire, and the outwardly projecting parts of the peripheral flange 11 of the lid 2 can be folded back to form the return flanges 16 and 17 underneath the peripheral flange 5 of the container body 1. This folding step can be done easily, in an automated way, without risk of spilling the content from the interior compartment 6 of the container body 1.

[0063] In an alternative embodiment, illustrated in Figure 8, the hemmed edges 14, 15 are formed on the peripheral flange 5 of the container body 1, after having closed its interior compartment 6 with the closure lid 2. The thermoplastic material of the peripheral flange 5 can simply be heated along the fold lines 31, 32, for example with a heating wire, and the outwardly projecting parts of the peripheral flange 5 of the container body 1 can be folded upwards to form the return flanges 16 and 17 above the peripheral flange 11 of the closure lid 2. This folding step can be done easily, in an automated way, without risk of spilling the content from the interior compartment 6 of the container body 1.

[0064] In a further alternative embodiment, illustrated in Figure 9, the lock bulge 18, and the tab 20, is provided on the peripheral flange 11 of the closure lid 2 whilst the lock opening 33 is formed by the access opening 8, or in other words the lock recess 19 is formed by the interior compartment 6 of the container body 1, with the lock bulge 18 engaging one inner side of the container body 1. The indent 23 configured to stop the closure lid 2 when closing it, engages the opposite inner side of the container body 1. The closure lid 2 is also provided with the further indent 25 more to the centre of the closure lid 2 to limit the sliding movement of the closure lid 2 when opening it.

[0065] In a variant of the embodiment illustrated in Figure 9, the peripheral flange 5 of the container body 1 could be made wider and could be provided with the lock opening 33 or lock recess 19, so that the lock bulge 18

does not have to project into the interior compartment 6 of the container body 1 but may be locked to the peripheral flange 11 of the container body 1, outside the interior 6 thereof. In this embodiment, the locking mechanism could not only be unlocked by lifting the lock bulge 18 but also, or alternatively, by pulling down the lock recess 18 on the peripheral flange 11.

[0066] Figure 10 a same view as Figure 2A but shows a somewhat different embodiment. This embodiment differs from the embodiment illustrated in Figure 2A only in that the lock opening 33 is formed by a through hole in the lid 2 instead of by a lock recess 19 in this lid 2. The through hole forming the lock opening 33 is more particularly cut in the peripheral flange 11 of the lid 2.

[0067] Figure 11 shows another lock mechanism which can be used to lock the closure lid 2 in its closed position. This lock mechanism comprises a lock projection 34, 35 on each of the two opposite edges 14, 15 of the peripheral flange 5 of the container body 1. The lock projections 34, 35 project laterally from the opposite edges 14, 15 and can easily be produced by cutting them out of the thermoformed sheet from which the container body 1 is made, in particular at the same time as when the container body 1 is cut, in particular die-cut, out of this thermoformed sheet. The lock projections 34, 35 are provided in a central area of the opposite edges 14, 15 so that they can be moved to one another, i.e. into their retracted positions, by bending the opposite sides of the side wall 4 of the container body towards one another. The lock projections 34, 35 have a slanting side 38, 39 so that when sliding to closure lid 2 from its open towards its closed position, the lock projections 34, 35 are moved automatically towards their retracted position when they enter into the open hemmed edges 12, 13 of the closure lid 2.

[0068] The lock mechanism further comprises two opposite lateral openings 36, 37 which are provided in the open hemmed edges 14, 15, more particularly as such a location that when the closure lid 2 reaches its closed position, the lock projections 34, 35 snap into the lateral openings 36, 37 to return to their extended position wherein they lock the closure lid 2 in its closed position. To unlock the closure lid 2, the lock projections 34, 35 have to be depressed, i.e. pushed into the lateral openings 36, 37, to such an extent that they are entirely situated within the open hemmed edges 14, 15. In these retracted positions of the lock projections 34, 35 the closure lid 2 can be moved towards its open position.

[0069] In the embodiment illustrated in Figure 11, the open hemmed edges 14, 15 with the lateral openings 36, 37 formed therein are provided on the closure lid 2 whilst the lock projections 34, 35 are provided on the peripheral flange 5 of the container body 1. In an alternative embodiment, the open hemmed edges 12, 13 with the lateral openings 36, 37 formed therein could be provided on the container body 1 whilst the lock projections 34, 35 could be provided on the peripheral flange 11 of the closure lid 2. The closure lid 2 is also flexible so that the lock pro-

jections 34, 35 provided thereon can be pushed towards one another to enable to open or close the closure lid 2.

5 Claims

1. A re-closable container comprising:

- a container body (1) having a circumferential side wall (4) terminating in a first peripheral flange (5) which has an upper surface (7) defining an access opening (8) into an interior compartment (6) of the container body (1);
- a closure lid (2) which is slidably mounted onto said first peripheral flange (5) between a closed position, wherein said access opening (8) is closed by means of the lid (2), and an open position, wherein said access opening (8) is at least partially opened by said lid (2); and
- at least one lock mechanism formed on said container body (1) and on said closure lid (2) for locking the lid (2) in its closed position on the container body (1),

characterised in that

said container body (1) and said closure lid (2) are each formed by a thermoformed sheet of plastic, and **in that** said first peripheral flange (5) is outwardly directed from the circumferential side wall (4) of the container body (1), one of said closure lid (2) and said first peripheral flange (5) having two opposite open hemmed edges (12, 13 or 14, 15) having a return flange (16, 17) turned inwards and the other one of said closure lid (2) and said first peripheral flange (5) having two opposite edges (14, 15 or 12, 13) which are slidably received in said two opposite open hemmed edges (12, 13 or 14, 15).

2. The re-closable container according to claim 1, **characterised in that** said lock mechanism comprises an upstanding lock bulge (18) which is thermoformed on an outwardly directed flange portion of one of said container body (1) and said closure lid (2) and which is movable between an extended and a retracted position by elastic bending of said outwardly directed flange portion, and the other one of said container body (1) and said closure lid (2) having a lock opening (33) configured to receive said upstanding lock bulge (18), in its extended position, in the closed position of the closure lid (2), which lock opening (33) gives preferably access to a lock recess (19) in said other one of said container body (1) and said closure lid (2).
3. The re-closable container according to claim 2, **characterised in that** said outwardly directed flange portion is located between said two opposite open hemmed edges or between said two opposite edges

(12, 13 or 14, 15).

4. The re-closable container according to claim 2 or 3, **characterised in that** said outwardly directed flange portion is part of said first peripheral flange (5) and said closure lid (2) has said lock opening (33) which is configured to receive said upstanding lock bulge (18) in the closed position of the closure lid (2). 5
5. The re-closable container according to claim 2 or 3, **characterised in that** said closure lid (2) comprises a second peripheral flange (11) which is outwardly directed, and said outwardly directed flange portion is part of said second peripheral flange (11), said container body (1) having said lock opening (33) which is configured to receive said upstanding lock bulge (18) in the closed position of the closure lid (2), said lock opening (33) being in particular formed by the access opening (8) of the container body (1). 10
6. The re-closable container according to any one of the claims 2 to 5, **characterised in that** said outwardly directed flange portion comprises a tab (20) for elastically bending the outwardly directed flange portion to move the upstanding lock bulge (18) from its extended to its retracted position, said tab (20) protruding preferably outwards from said outwardly directed flange portion. 25
7. The re-closable container according to any one of the claims 2 to 6, **characterised in that** said lock mechanism is a latch mechanism wherein said upstanding lock bulge (18) has a slanting surface (21) configured to engage said other one of said container body (1) and said closure lid (2) to urge the upstanding lock bulge (18) into its retracted position by elastically bending the outwardly directed flange portion when sliding the closure lid (2) into its closed position. 30
8. The re-closable container according to claim 1, **characterised in that** said lock mechanism comprises a lock projection (34, 35) on each of said two opposite edges (14, 15 or 12, 13), which lock projections (34, 35) project laterally from the opposite edges (14, 15 or 12, 13) and extend, in the closed position of the closure lid (2), through a lateral opening (36, 37) provided in the open hemmed edges (12, 13 or 14, 15) wherein the opposite edges (14, 15 or 12, 13) are received, the lock projections (34, 35) being operable in the closed position of the closure lid (2) to be moved from an extended position, wherein they extend through said lateral openings (36, 37) into a retracted position, wherein the lock projections (34, 35) can slide along the open hemmed edges (12, 13 or 14, 15). 40
9. The re-closable container according to claim 8, **characterised in that** said lock projections (34, 35) have a slanting side (38, 39) configured to engage the open hemmed edges (12, 13 or 14, 15) to urge the lock projections (34, 35) into their retracted position when sliding the closure lid (2) from its open towards its closed position. 45
10. The re-closable container according to any one of the claims 1 to 9, **characterised in that** said first peripheral flange (5) comprises at least one upstanding guide bulge (22) which is thermoformed in the first peripheral flange (5) and which is received in a guide groove (10) which is thermoformed in the closure lid (2). 50
11. The re-closable container according to claim 10, **characterised in that** said guide groove (10) is a peripheral groove extending along the entire periphery of the closure lid (2). 55
12. The re-closable container according to any one of the claims 1 to 11, **characterised in that** it comprises a first indent (23) thermoformed in the closure lid (2), which first indent (23) projects into the interior compartment (6) of the container body (1) and forms a first stop abutting the container body (1) in the closed position of the closure lid (2).
13. The re-closable container according to any one of the claims 1 to 12, **characterised in that** it comprises a second indent (25) thermoformed in the closure lid (2), which second indent (25) projects into the interior compartment (6) of the container body (1) and forms a second stop abutting the container body (1) in the open position of the closure lid (2).
14. The re-closable container according to claim 13, **characterised in that** said second indent (25) has a first side (27) engaging the container body (1) in the open position of the closure lid (2) and a second side (26) which is situated opposite the first side (27) and which has a slanting surface (26) configured to enable to slide the closure lid (2) onto the container body (1) with the two opposite edges (14, 15 or 12, 13) sliding in the two opposite open hemmed edges (12, 13 or 14, 15).
15. The re-closable container according to any one of the claims 1 to 14, **characterised in that** said container body (1) is formed by one single thermoformed sheet of plastic and said closure lid (2) is formed by one single thermoformed sheet of plastic.
16. The re-closable container according to any one of the claims 1 to 15, **characterised in that** said lock mechanism is formed both by the thermoformed sheet of plastic forming the container body (1) and by the thermoformed sheet of plastic forming the closure lid (2).

17. A method for assembling a re-closable container according to any one of the claims 1 to 16, which method comprises the steps of:

- providing said container body (1) and said closure lid (2), with at least one of the two opposite open hemmed edges (12, 13 or 14, 15) of said one of said closure lid (2) and said first peripheral flange (5) being still unhemmed; 5
- placing the closure lid (2) in its closed position onto the container body (1); and 10
- hemming said at least one of the two opposite open hemmed edges (12, 13 or 14, 15) around one of said two opposite edges (14, 15 or 12, 13). 15

18. The method according to claim 17, **characterised in that** in said providing step the two opposite open hemmed edges (12, 13 or 14, 15) are still unhemmed and in said hemming step said two opposite open hemmed edges (12, 13 or 14, 15) are hemmed each around one of said opposite edges (14, 15 or 12, 13). 20

19. The method according to claim 17 or 18 wherein a product is packed in the re-closable container, **characterised in that** before placing the closure lid (2) in its closed position onto the container body (1), said product is placed into the interior compartment (6) of the container body (1). 25

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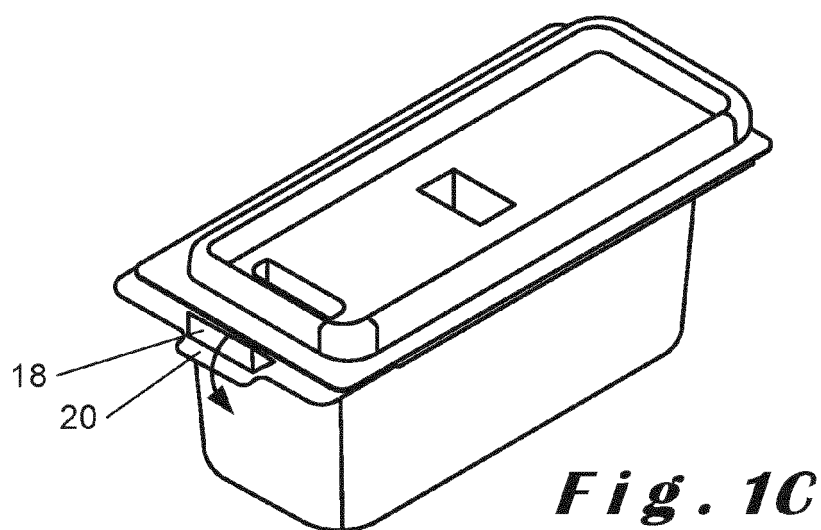
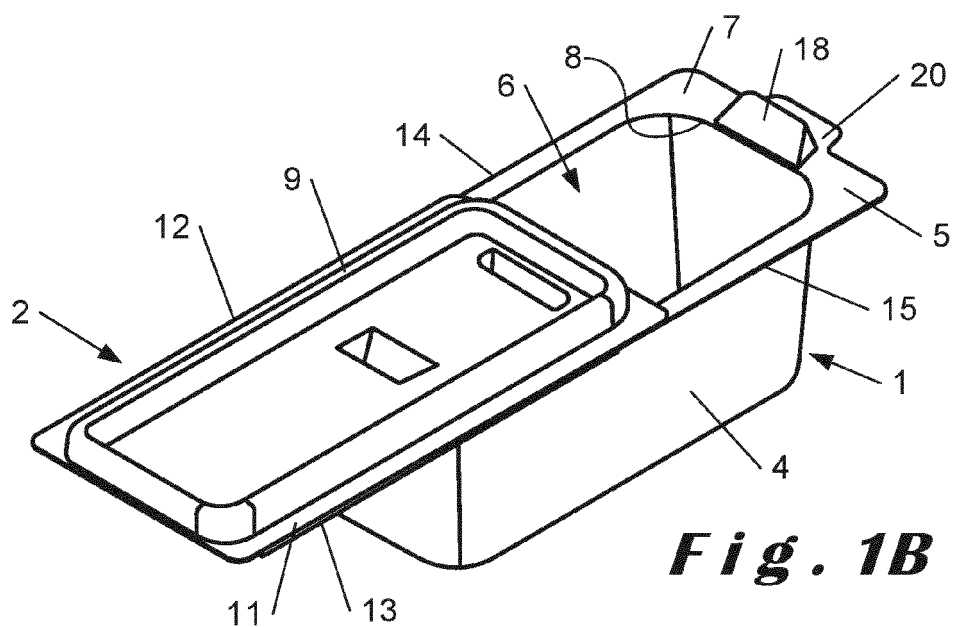
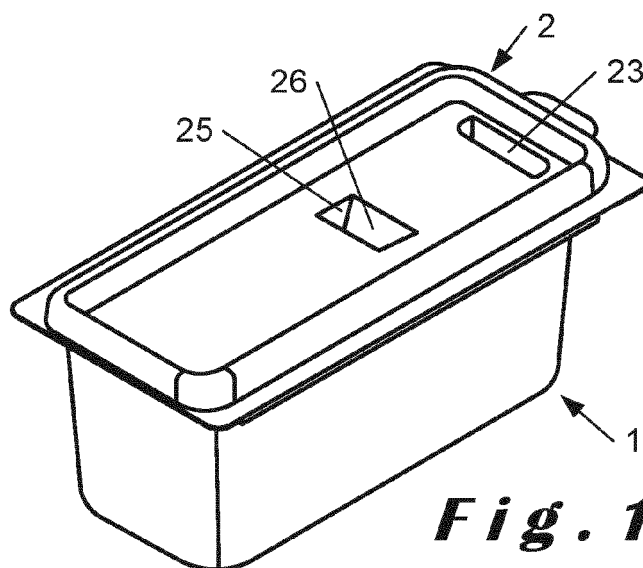
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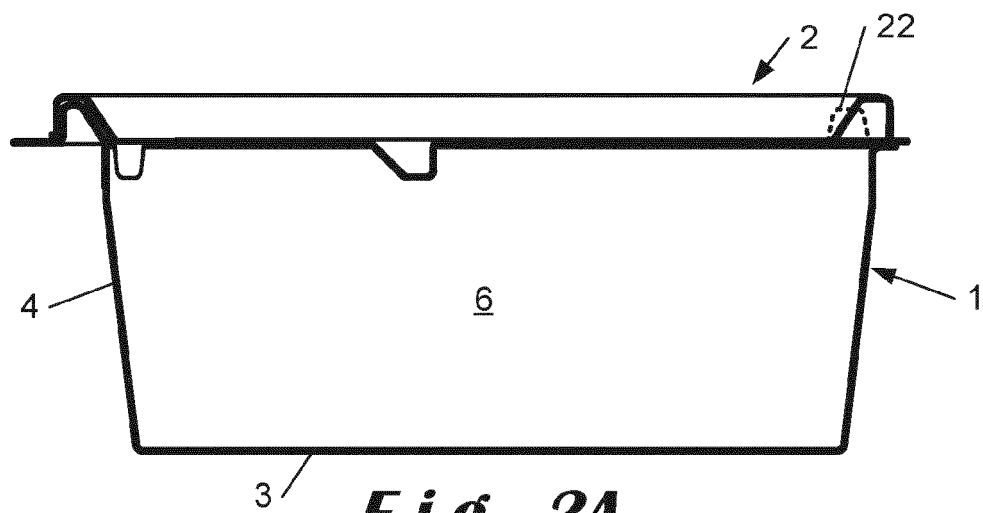


Fig. 2A

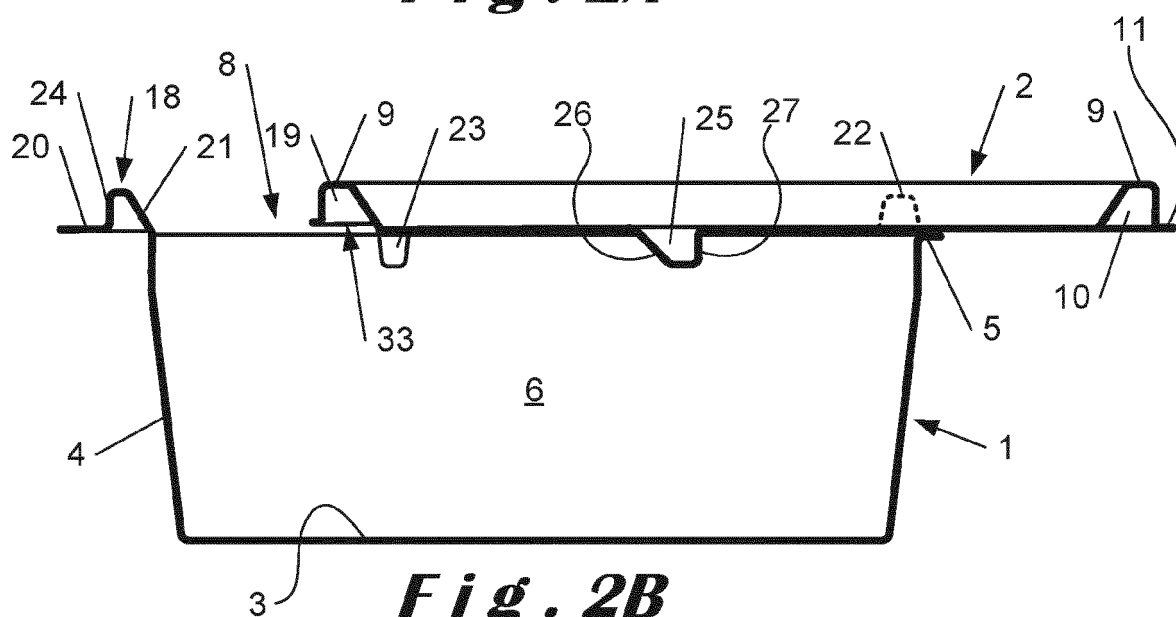


Fig. 2B

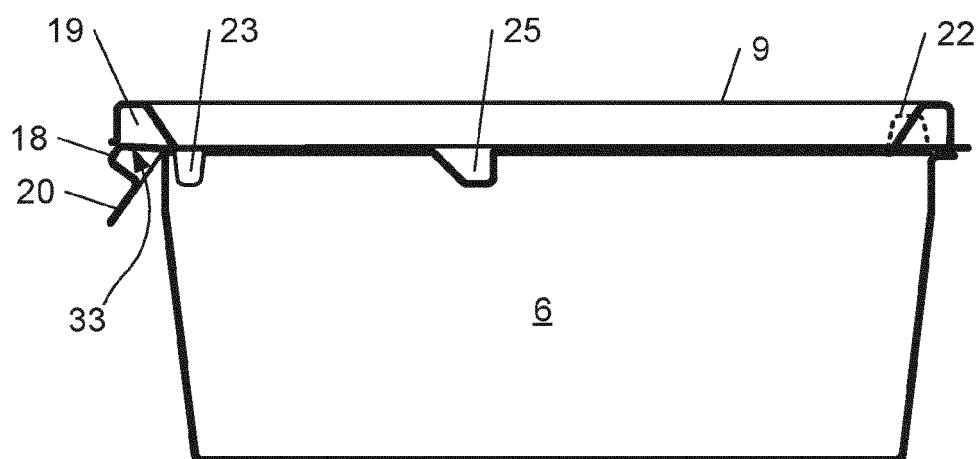


Fig. 2C

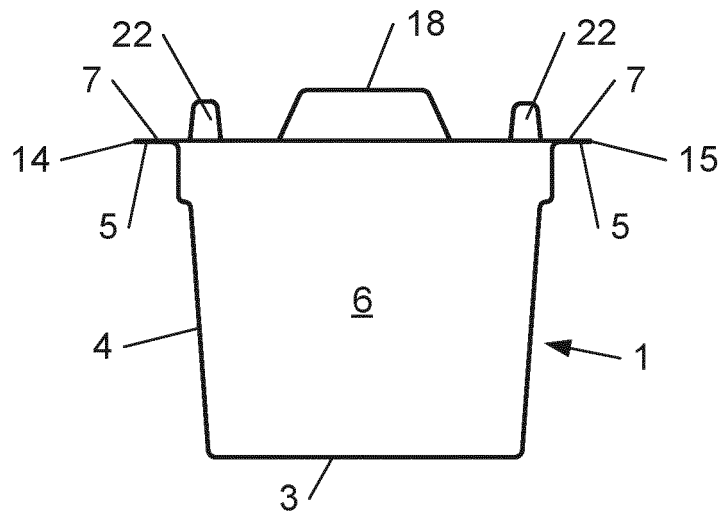


Fig. 3A

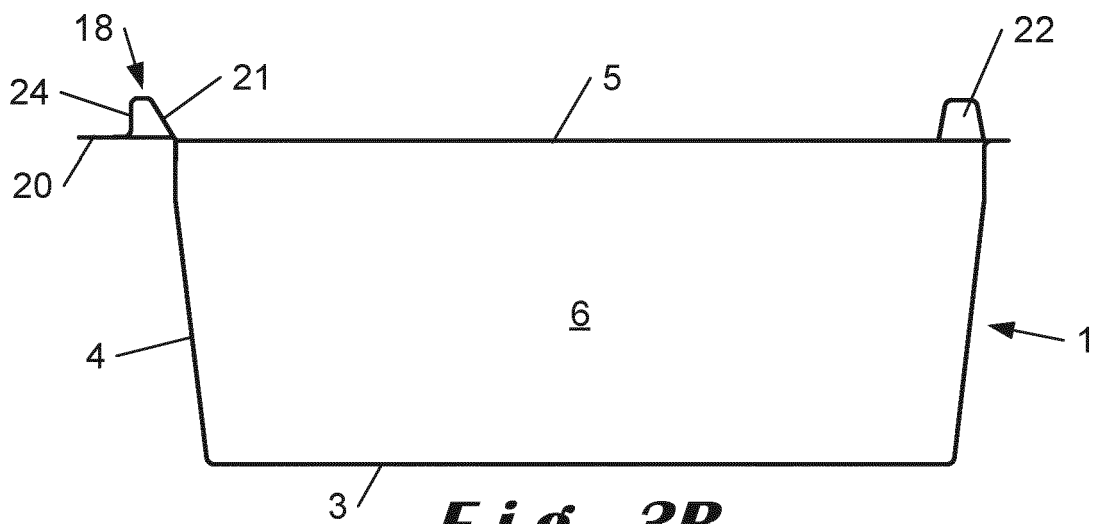


Fig. 3B

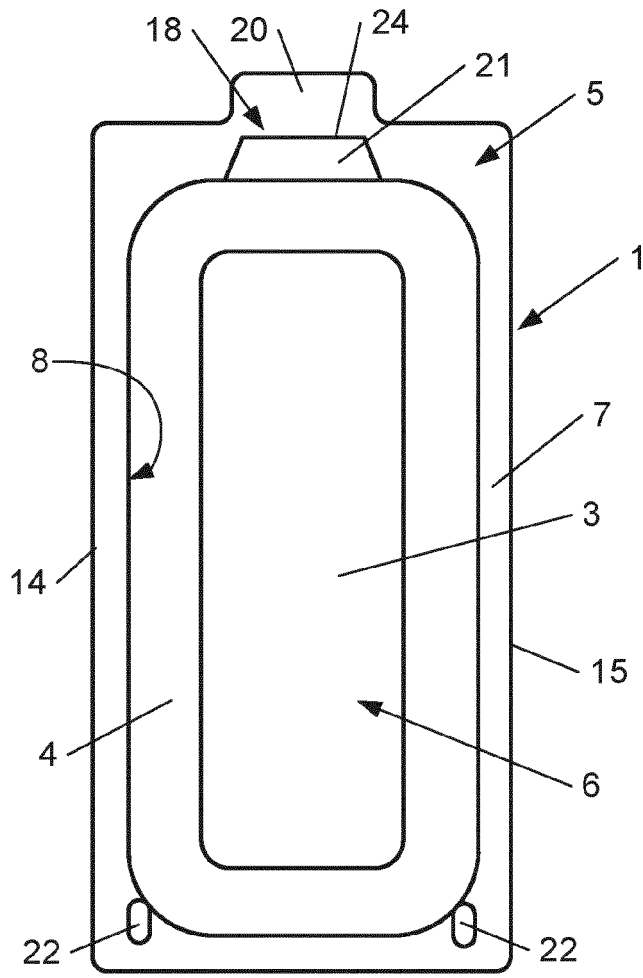


Fig. 3C

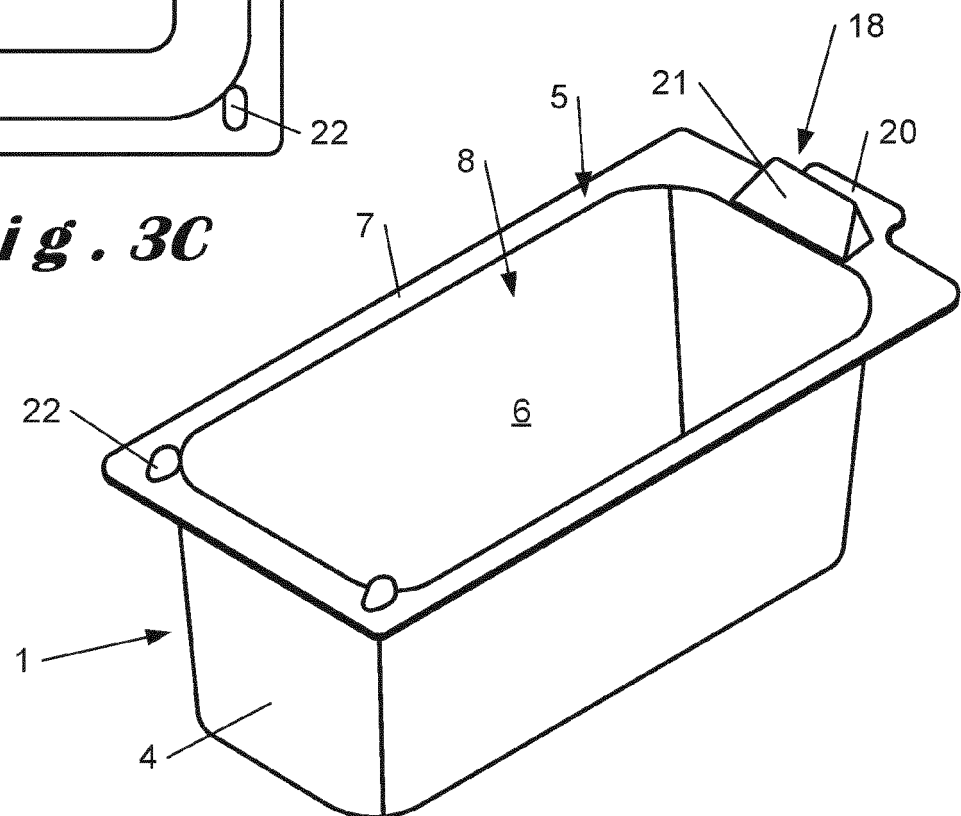


Fig. 3D

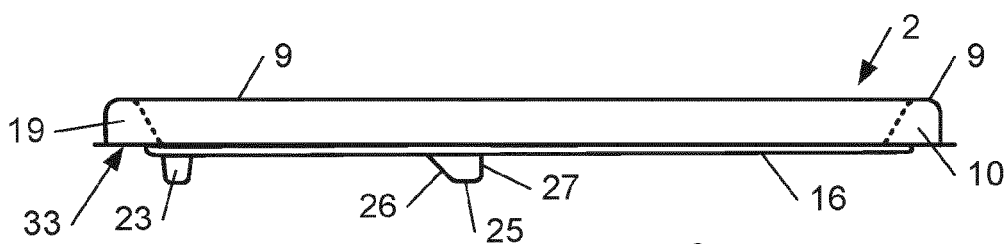


Fig. 4B

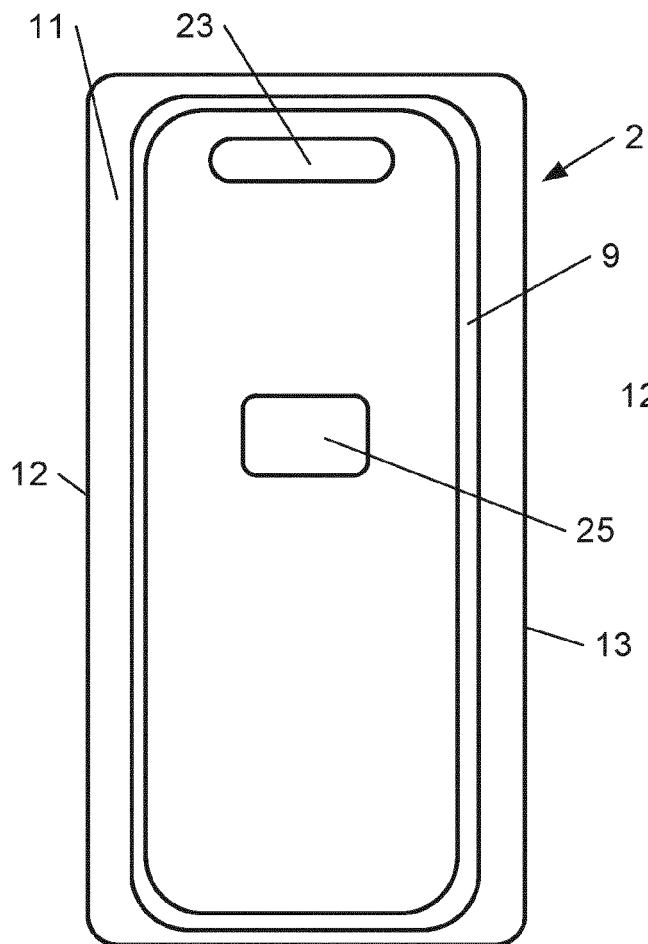


Fig. 4C

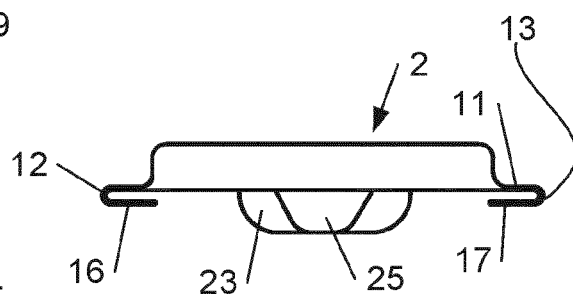


Fig. 4A

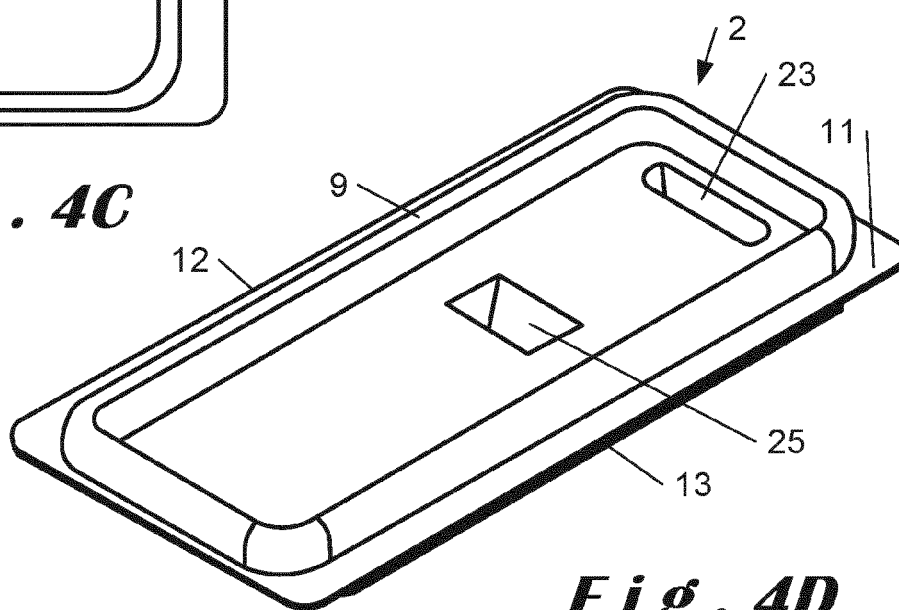


Fig. 4D

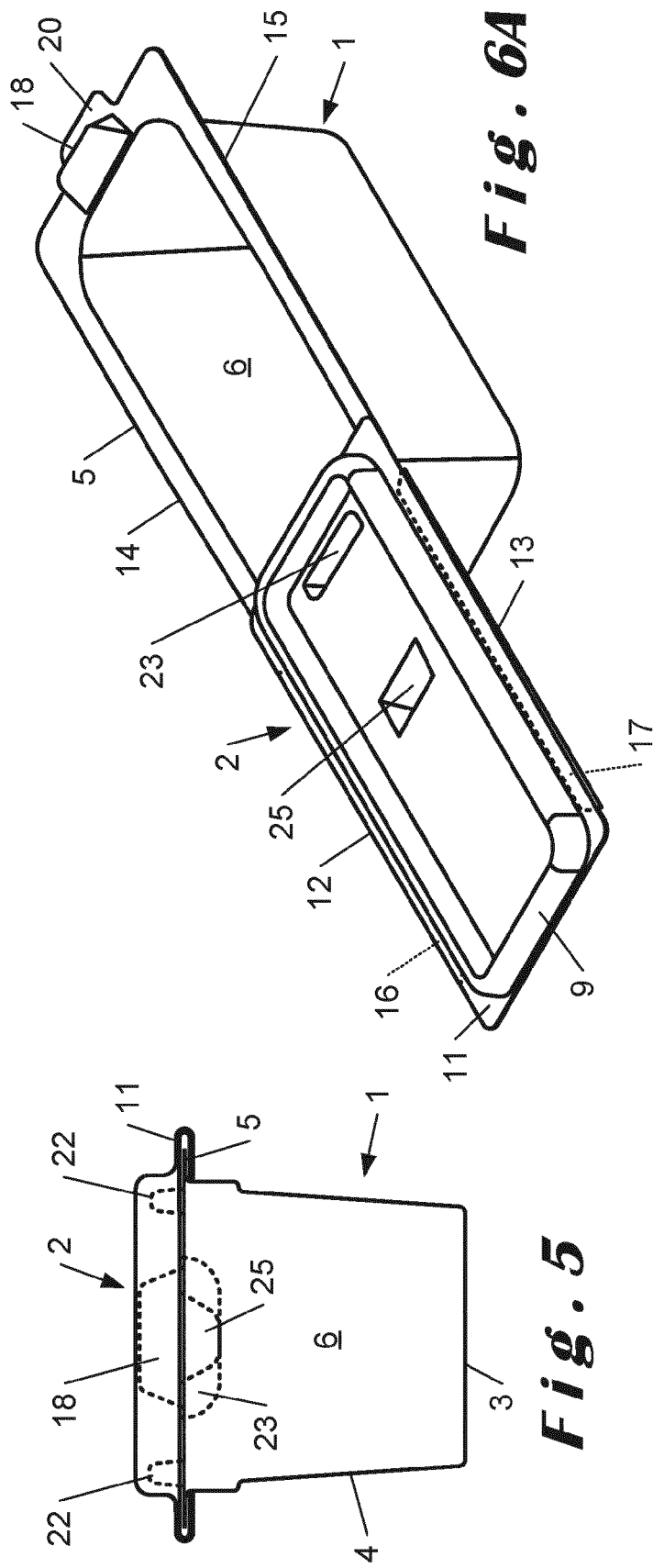


Fig. 5

Fig. 6A

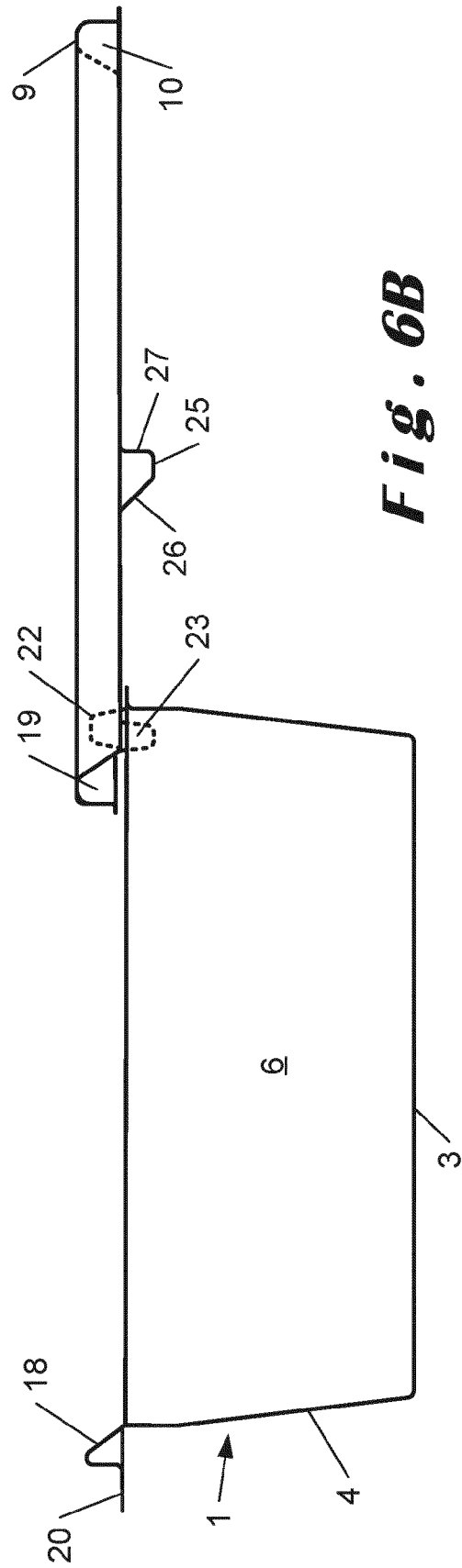


Fig. 6B

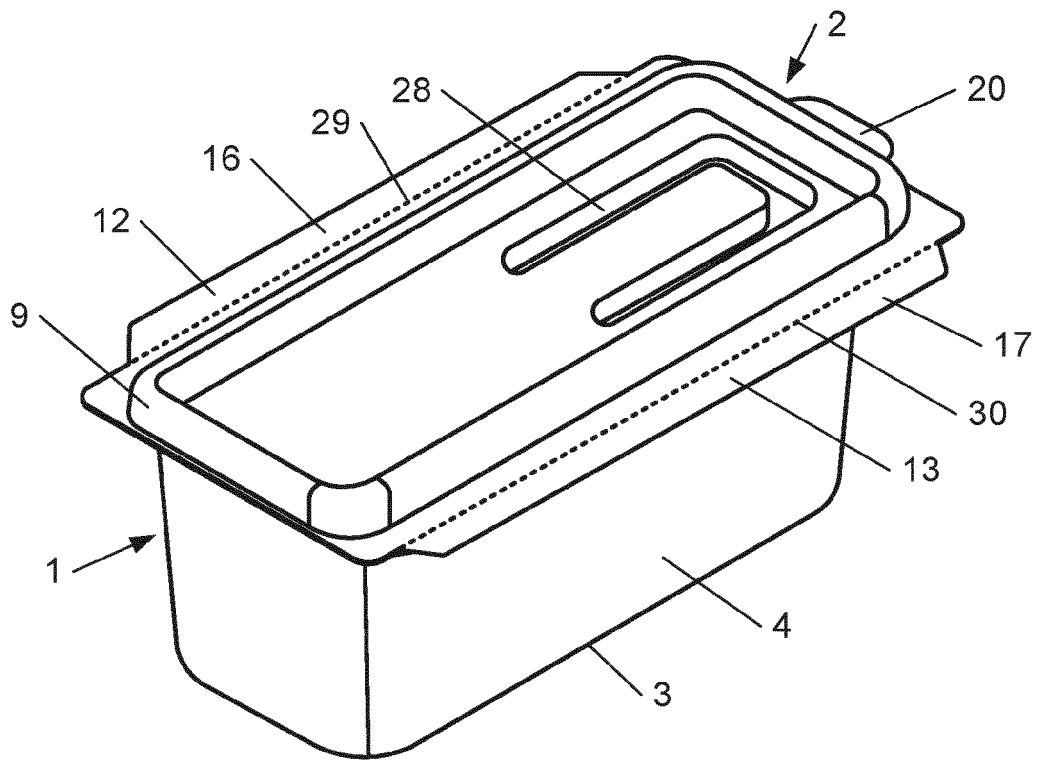


Fig. 7

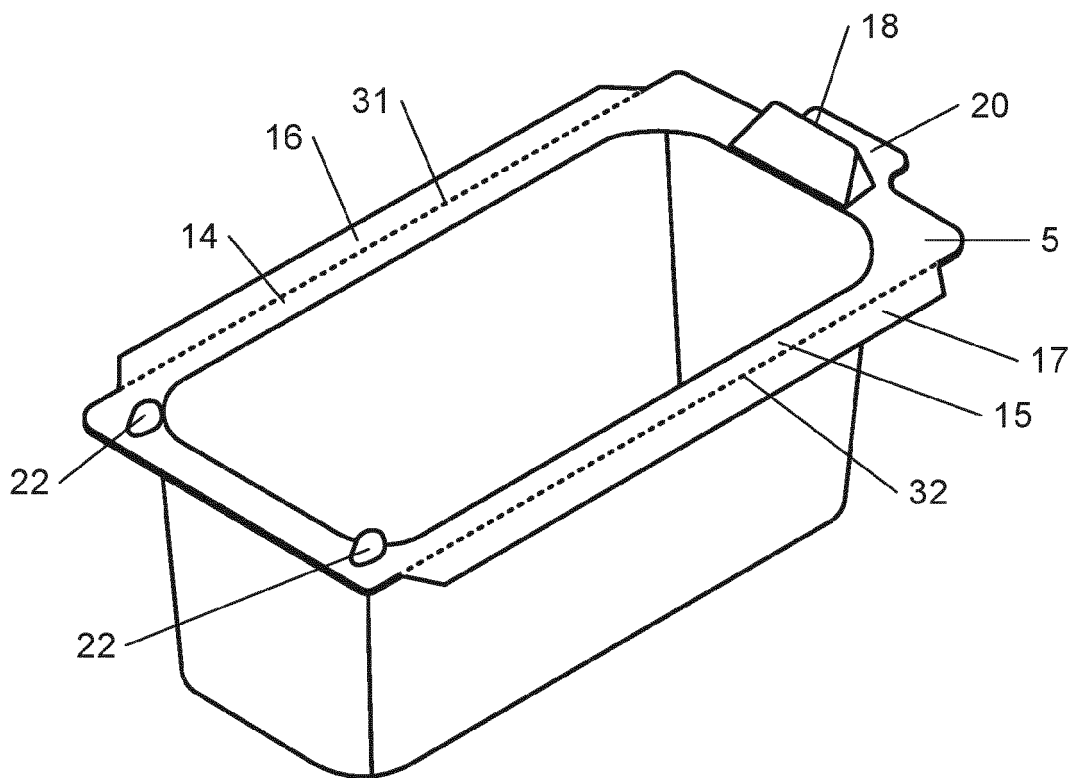


Fig. 8

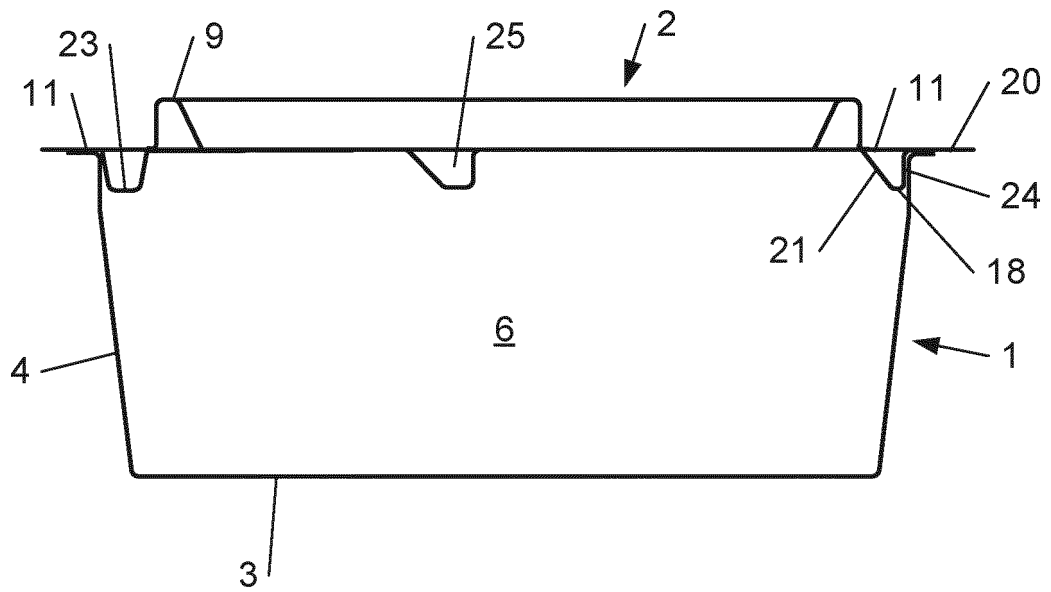


Fig. 9

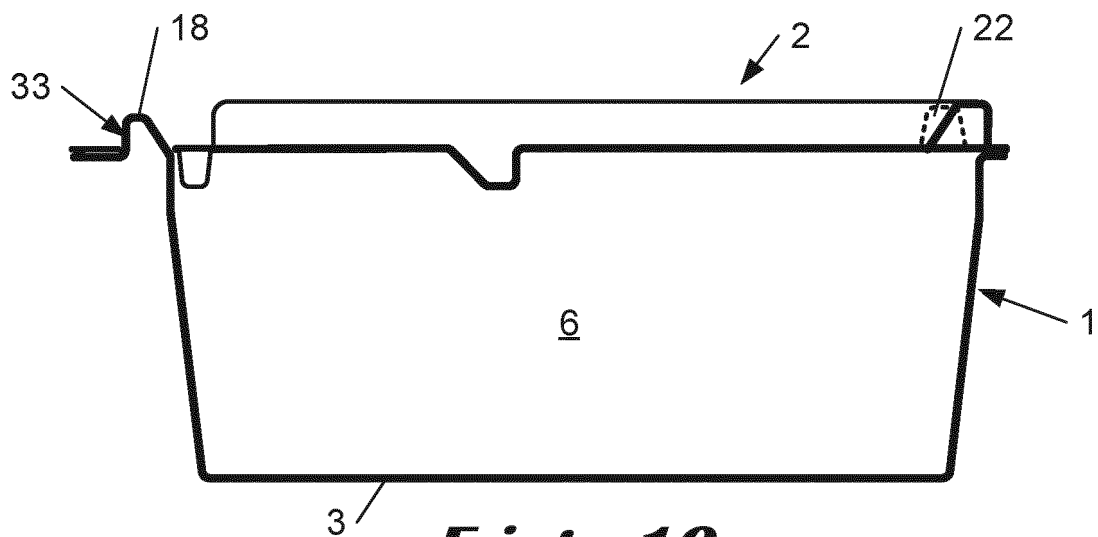


Fig. 10

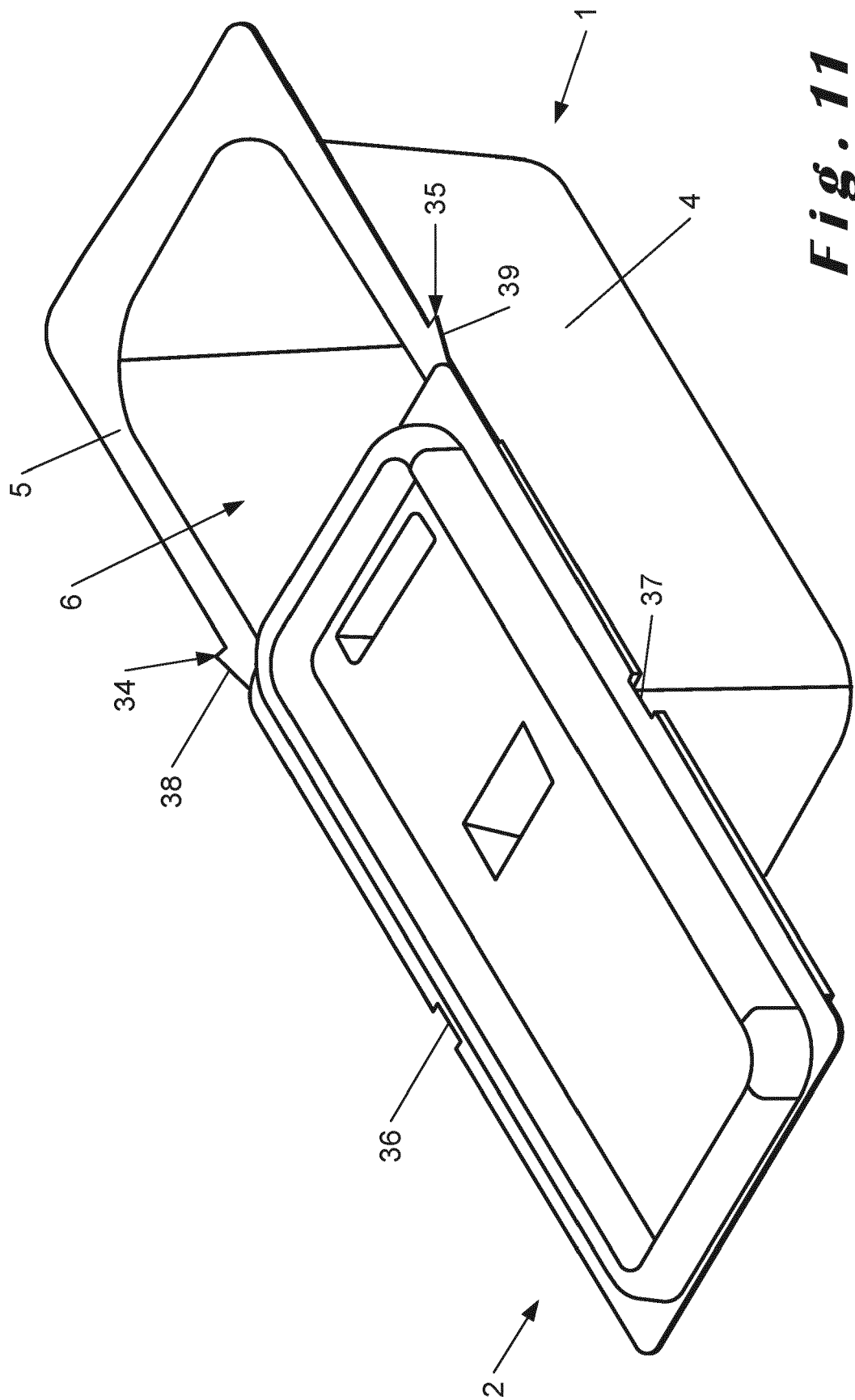


Fig. 11



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A	* page 2, line 14 - line 30 * * page 3, line 23 - line 32 * * page 5, line 4 - line 9; figures 1-3 *	2, 5, 9, 10, 12, 13	

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Place of search The Hague		Date of completion of the search 11 October 2022	Examiner Mans-Kamerbeek, M
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