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(54) Device for pening a container for pourable products

(57) Device (1) for opening a container (6) for pourable products (100) of the type comprising a laminate (2) provided with at least one paper, or cardboard, layer (3), having at least one perforated portion (4), and with at least one aluminium layer (5) directly or indirectly applied to the inside of said at least one paper, or cardboard, layer, wherein said at least one paper, or cardboard, layer has at least two discrete pre-weakening lines (7, 8) extending from said at least one perforated portion of said at least one paper, or cardboard, layer, said opening device comprising at least one frame (9) which can be anchored to said container (6) around at least part of said at least one perforated portion and having at least one fixed portion (9a) and at least one removable portion (9b), wherein said at least one removable portion (9b) is provided with at least one grip portion (10), which can be grasped from outside, and with at least one constraining portion (11) comprising at least one first region (12) which is directly or indirectly constrained to at least part of said at least one aluminium layer at said at least one perforated portion, said at least one grip portion being adapted to separate, under the action of an external Force, at least partially, said removable portion from said at least one frame, and to lift, at said at least one first region, said at least one aluminium layer and, between said two pre-weakening lines, said at least one paper, or cardboard, layer.

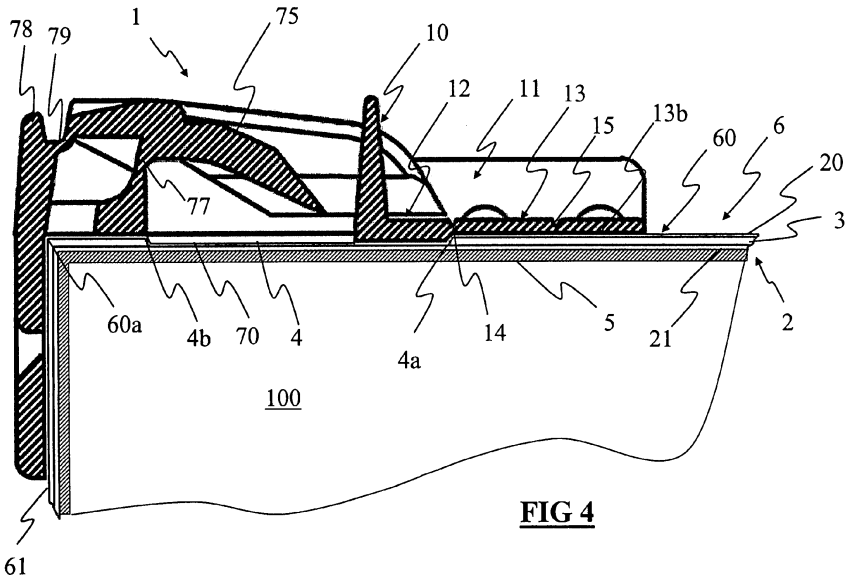

FIG 4

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Description

DESCRIPTION

FIELD OF THE INVENTION

[0001] The present invention concerns a device for opening a container for pourable products.

[0002] In particular, such a device can be applied to a container of the type comprising a laminate provided with at least one paper layer and one aluminium layer, and which is used for containing high density pourable food products, preferably, such as puddings, homogenized fruit, yogurt or the like, specifically to be consumed directly from the container by the use of a spoon or similar products.

KNOWN PREVIOUS ART

[0003] Such high density food products, usually, are packaged in glass or plastic containers, generally having the shape of pot, or tub, provided with an upper opening relatively large in size to allow a spoon or tea spoon to be introduced within the container, and with a screwed plastic lid or a tab welded to the edges of the opening of the container itself.

[0004] Next, for emptying the container, once the lid, or the tab, has been removed, a spoon, or tea spoon, is used, which because of the size of the opening, can deeply enter to collect the food product lying on the bottom of the container.

[0005] All along the manufacturers of containers comprising a laminate provided with at least one paper layer and one aluminium layer advised against using such a kind of containers for containing highly dense food products since it is known it is very difficult to realize such a container which is provided with an upper perforated portion, i.e. located on the upper base, dimensioned so to receive a spoon to empty the container itself and, in the meanwhile ensuring the sterility of the product and a suitable structural strength of the container. In fact, concerning this last aspect, when the perforated portion increases, which is made in the paper, or cardboard, layer, the stiffness offered by the container decreases significantly. Also by lowering the container such that the base and the bottom are wider, to obtain a larger opening portion, and consequently by reducing the height, the closing of the container itself would present problems because the side triangle foldings would be difficult to realize with enormous and unaffordable costs.

[0006] Moreover, a further drawback in the use of laminates for such containers is that the opening of the container is not easy at all because the layers composing the laminate are rather tenacious and resistant and they are prone to delamination problems, that is the detachment between two or more adjoining layers forming the container.

[0007] In order to avoid the above described drawbacks of the previous known art the Applicant filed an Italian patent application N° ITMI2011A002054, still in obligation of secrecy, which describes, however, a container for specifically high density pourable products, comprising a laminate provided with at least one paper, or cardboard, layer, having at least one perforated portion, and with one aluminium layer applied to the inside to said at least one paper, or cardboard, layer and a device for opening said container at said perforated portion. Advantageously, the paper, or cardboard, layer has two discrete pre-weakening lines extending from said perforated portion of the paper, or cardboard, layer, and the device for opening the container comprises a tab provided with a grip portion, which can be grasped from outside, and a constraining portion comprising a first region which is directly or indirectly constrained to a portion of the aluminium layer at the perforated portion. In practice, the grip portion is dragged by the user so to lift said aluminium layer at said at least one first region and, between said at least two pre-weakening lines, said paper, or cardboard, layer, under the action of the above mentioned dragging external force. Such a solution, in fact, insures that a large opening is created on the container which allows the user to introduce a spoon, or similar tools, to collect the food product contained in the container. In fact the tab, when pulled, drags with itself both a portion of the aluminium layer on which the first region is constrained, only indirectly too, and a portion of the paper, or cardboard, layer between said two pre-weakening lines. This allows using the container as if it was a jar and it allows the user to consume the food product directly from the container since it provides a large opening, obtained by lifting both part of the perforated portion and the above mentioned adjoining paper and aluminium layers.

[0008] The above mentioned solution, however, has some drawbacks, mainly relating to the opening device and the perforated portion of the container. In fact sometimes the container, at the perforated portion thereof, has been observed not to be always opened easily and, occasionally, the product contained inside the container, due to the external force exerted by the user on the grip portion and the side walls, or faces, of the container, can abruptly flow out during the opening, that is just during the dragging of the above mentioned tab and the following dragging of the paper, or cardboard, layer, comprised between the two pre-weakening lines and combined with the tab. Further, the perforated portion lacks of protection against possible perforations and/or outer strokes.

[0009] Such a protection, in the known art laminate containers, but free from the pre-weakening lines, is usually ensured by using opening devices provided with a frame which is arranged around the perforated portion and which, in case of need, is used not only to house a protective lid, but also to house a dragging tab and a cutter, integral - according to the employed opening device - either with the frame of the opening device or the perforated portion of the container. For example, the doc-

ument EP0558946B1 in name of TETRA LAVAL describes an opening arrangement in which the frame of the opening device, which is welded to the container and surrounds the perforated portion, houses both an opening tab and a cutter. In this case the cutter is integral with the frame of the opening device, whereas the tab is constrained to the container at the perforated portion. Such an opening is also known as a pull-tab opening. According to other embodiments of the known art, for example described in EP1867571 in name of IPI srl, said opening device comprises both a cutter and a tab integrally constrained to the frame of the opening device. As in the document in name of TETRA LAVAL, in this case too such a frame surrounds the perforated portion of the paper layer, but differently from this the opening tab is constrained to the frame of the opening device.

[0010] In the known opening devices further advantage of the presence of such a frame surrounding the perforated portion of the container is because that it ensures as well a certain stiffness to the container - opening device couple, thus promoting the use of the container opening means.

[0011] The above described solutions, however, would be unsuitable for a container of the type described in the above mentioned Patent ITMI2011A002054, i.e. provided with pre-weakening lines along the paper layer adjoining to the perforated portion, since the presence of a frame wholly surrounding the perforated portion would not allow the paper, or cardboard layer, to be lifted, which is comprised between the above mentioned two pre-weakening lines since such pre-weakening lines are located outside of the perforated portion and, therefore, the fame of the opening device, whereas the opening means of the aluminium layer located at the perforated portion are house inside the frame itself of the opening device.

[0012] It is therefore an object of the present invention to implement an opening device which is able to ease the opening of a container provided with perforated portion and pre-weakening lines, as above described in the Patent ITMI2011A002054, which however is provided with a frame surrounding the perforated portion itself of the container such to offer all the advantages offered by this kind of opening device. Further object of the present invention is to realize an opening device which is easy to implement and which is, at the same time, effective and functional over than able to ensure a high protection degree to the perforated portion of the container.

[0013] These and other object are obtained by means of device for opening a container for pourable products of the type comprising a laminate provided with at least one paper, or cardboard, layer, having at least one perforated portion, and with at least one aluminium layer directly or indirectly applied to the inside of said at least one paper, or cardboard, layer, wherein said at least one paper, or cardboard, layer has at least two discrete pre-weakening lines extending from said at least one perforated portion of said at least one paper, or cardboard, layer, said opening device comprising a frame which can be anchored to said container around at least part of said at least one perforated portion and having at least one fixed portion and at least one removable portion, wherein said at least one removable portion is provided with at least one grip portion, which can be grasped from outside, and at least one constraining portion comprising at least one first region which is directly or indirectly constrained to at least part of said at least one aluminium layer at said at least one perforated portion. Advantageously said at least one grip portion of said at least one constraining portion is adapted to separate, under the action of an external force, said removable portion from said at least one frame, and to lift, at said at least one first region, said at least one aluminium layer and, between said at least two pre-weakening lines, said at least one paper, or cardboard, layer.

[0014] Such a solution allows to ease the opening of the above mentioned containers of the known art, that is to say provided with pre-weakening lines on the paper layer, since it increases the overall stiffness of the container - opening device couple. In fact, since said device comprises a frame which substantially surrounds the perforated portion of the container, the user can firstly exert a high tear force on the grip portion of the removable element without taking care of possible flowing out of the product contained in the container and, in the meanwhile, since the frame comprises a removable portion, the lift of the paper layer comprised between two pre-weakening lines which, however, when the container is closed, lies outside of the frame of the opening device, is allowed. Further, all of this significantly increases the protection degree of the perforated portion since the presence of such a shaped frame would allow arranging a lid over it as well just for protecting the perforated portion itself. Again, said at least one tab - shaped removable portion is constrained to said at least one frame by a plurality of breakable bridges. In particular, said breakable bridges are located at the two sides of said removable portion.

[0015] Still according to the invention, said at least one first region of said removable portion, or said tab, substantially delimits an edge of said perforated portion comprised between said at least two pre-weakening lines. Further, said opening device comprises, as well, at least one cutter rotatably constrained to said at least one frame, at said fixed portion, for at least partially severing said at least one aluminium layer arranged at said perforated portion of said at least one paper, or cardboard, layer. Thus this allows to sever the aluminium layer present at the perforated portion of the container, not occupied by said first region of said removable portion, then without the need of employing an outer cutter.

[0016] Further, said at least one cutter is arranged at least at one second edge of said perforated portion opposite to said first edge comprised between said at least two pre-weakening lines and, preferably, said at least one second edge is arranged in proximity of at least one corner of said container. Such a solution allows the user

to exert a significant force to sever the perforated portion of the container while avoiding possible bowing of the container during this step.

[0017] Still according to the invention, said at least one constraining portion comprises, as well, at least one second region directly or indirectly constrained, between said at least two pre-weakening lines, on at least part of said at least one paper, or cardboard, layer, wherein said at least one first region and said at least one second region are continuously connected one to another and able to be plastically rotated one to another. This way the opening action obtained by dragging and lifting said at least one removable portion is associated with a simultaneous rotation between said first region and said second region of the removable portion thus resulting in the bending of the tab which, as the aluminium layer and the paper, or cardboard, layer are lifted, follows the curvature of the above mentioned two laminate layers comprised between the two pre-weakening lines.

[0018] According to a preferred embodiments of the invention, said at least one first region and/or said at least one second region extend widthwise substantially between said at least two pre-weakening lines.

[0019] Again, said at least one frame and/or said at least one cutter are realized in a single piece and they are made of plastic material.

[0020] Finally, according to a further embodiment of the invention, said frame is folded at about 90° and is constrained on two adjoining faces of said container. This significantly increases the force the user can exert during the opening steps of the container. Further, such a solution allows the perforated portion to be shifted in proximity of a corner of the container, even more increasing the available gap for opening the container itself.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] For purposes of illustrations and not limitative, more particular preferred embodiments of the present invention will be now provided with reference to the accompanying figures, in which:

figures 1a, 1b and 1c show a container of the known art during the various opening steps;

figure 1d shows a longitudinal section of the container of the known art depicted in figures 1a to 1c;

figure 2 shows a perspective view of the opening device according to the invention;

figure 3 is a further top view of the device of figure 2;

figure 4 is a longitudinal sectional view of the device in figure 2 combined with a container of the known art shown in figures 1a to 1d;

figures 5a to 5g show the different opening steps of a container by the opening device of figure 2.

DETAILED DESCRIPTION OF SOME EMBODIMENTS OF THE PRESENT INVENTION

[0022] Referring particularly to these figures, with numeral 1 an opening device according to the invention is shown.

[0023] Figures 1a to 1d illustrate a known art container 6 described in the application ITMI2011A002054 in the name of IPI Srl, still in obligation of secrecy, on which an opening device 90 is applied, that is a tab, different from the opening device subject matter of the present invention. In particular, such a container 6, apart from the opening device 90 applied thereon, is the same as the container described in figure 4 and on which the opening device 1 according to the invention is applied. Such a container 6 for pourable products 100, preferably high density products such as, for example, homogenized baby foods, comprises a laminate 2 provided with a paper layer 3, having a perforated portion 4, and with an aluminium layer 5 applied to the inside directly to said paper layer 3. Note that for high density pourable products, products which can be more advantageously collected from the container by means of a spoon, due to their semi-solid consistency, are meant. Semi-solid consistency pourable products, or however high density products, falling in such a definition are puddings, yogurts, homogenized baby food or other like products.

[0024] Further, said laminate 2 comprises an outer layer 20 made of thermoplastic material applied outside of said paper layer 3 and an intermediate layer 21 made of thermoplastic material applied between said paper layer 3 and said aluminium layer 5. In practice, such an intermediate layer 21 is directly welded to said outside layer 20 at said perforated portion 4. Note that, although not described herein, a container comprising a laminate 2, further provided with a plurality of layers made of thermoplastic material or the like applied on the inner face of the aluminium layer 5, still falls within the scope of protection of the present invention. Further, as shown in figure 4, the opening device 1 according to the invention is combined with said container 6 at the above mentioned perforated portion 4. Therefore, such an opening device 1 replaces the above mentioned opening device 90 shown in figures 1a to 1d and not object of the present invention. Again, said paper layer 3 has two discrete pre-weakening lines 7 and 8 extending from said perforated portion 4 of said paper layer 3 and they are straight and parallel one to another. An alternative embodiment in which said pre-weakening lines 7 and 8 were not parallel and not straight would still fall in the protection scope of the present invention.

[0025] Further, as can be seen from the figures 4 and 5a to 5g, the perforated portion 4 is arranged on the front side face 60 of said container 6. In this way two advantages can be obtained. For one thing a greater area can be exploited, with respect to the area offered by the upper side 61 of the container 6, and for another the depth of the container 6, when used by the user, is smaller than

the area that would be available in case of opening obtained on the upper face 61. Also, said perforated portion 4 has a substantially rectangular shape. In this way the dimensions of the perforated portion 4 larger than the classical circular dimensions are exploited.

[0026] According to the invention, as can be seen in figures 2, 3, 4 and 5a-5g, said opening device 1 of the container 6 comprises a frame 9 which can be anchored to said container 6 around the afore mentioned perforated portion 4 and having a fixed portion 9a and a removable portion 9b. As can be seen in figures 2, 3, and 4, the fixed portion 9a is substantially U-shaped and it surrounds, partially, the perforated portion 4, except the portion of the paper layer 3 comprised between the two pre-weakening lines 7 and 8. Substantially, the fixed portion 9a of the frame 9 is constrained to the container 6 outside of the above mentioned perforated portion 4. Conversely, the above mentioned removable portion 9b, which is tab-shaped and connected to the fixed portion 9a by a plurality of breakable bridges 9c, substantially closes the U shape of the fixed portion 9a and is provided with a grip portion 10, which can be grasped from outside by the user, and a constraining portion 11 comprising a first region 12 constrained at said perforated portion 4 indirectly on a portion of the aluminium layer 5. Said grip portion 10 is adapted to separate, under the action of an external force, said removable portion 9b from said fixed portion 9a and to lift, at said first region 12, said at least one aluminium layer 5 and, between said two pre-weakening lines 7 and 8, said paper layer 3.

[0027] In practice, said first region 12 is glued or - according to alternative embodiments-heat welded on the outer layer 20 of the laminate 2, but at the end of the welding it remains substantially constrained both to the intermediate layer 21 and the aluminium layer 5, thus remaining firmly constrained to the latter. According to the invention, therefore, said grip portion 10 is adapted to lift said paper layer 3 under the action of an external force exerted by the user, at said first region 12, said aluminium layer 5 and, between said at least two pre-weakening lines 7 and 8. Meanwhile the aluminium layer 5 starts lifting, the removable portion 9b starts to be separated from the fixed portion 9a, with the breaking of said breakable bridges 9c and, further, the cuts produced in said aluminium layer 5 propagate towards said paper layer 3 comprised between said two pre-weakening lines 7 and 8, thus causing said paper layer 3 comprised between said two pre-weakening lines to be lifted too. Next, the aluminium layer 5, arranged under the paper layer 3, keeps being severed along the direction of the two pre-weakening lines 7 and 8 such that an opening 200, much wider than the one that can be obtained simply severing the perforated portion 4 initially present in the container 1, before the opening step, can be obtained.

[0028] At the end of the lifting of the paper layer 3 comprised between said two pre-weakening lines 7 and 8, not only the removable portion 9b is completely severed from the fixed one 9a, but the paper, or cardboard, layer 3 comprised between the two pre-weakening lines 7 and 8, as well as the underlying aluminium layer, are completely lifted (see figure 5g).

[0029] According to the invention, as it will be more evident from the hereinafter description, the opening of the container 6 can be facilitated by severing the aluminium layer 5 arranged at the available region 70 of said perforated portion 4 by means of a cutter 75 . Note that said available region 70 corresponds to the zone of the perforated portion 4 which is not constrained to said first region 12 of the removable portion 9b of the opening device 1. In particular, still according to the invention, and as also shown in figure 4, said first region 12 substantially delimits the edge 4a of said perforated portion 4 comprised between said two pre-weakening lines 7 and 8, whereas said cutter 75 is arranged at a second edge 4b of said perforated portion 4 opposite to said first edge 4a comprised between said two pre-weakening lines 7, 8, for facilitating the severing of a part of the available region 70 of said perforated portion 4. Note that an embodiment wherein the cutter 75 would not be constrained to the frame of the device would still fall within the protection scope of the present invention.

[0030] According to a preferred embodiment of the invention, the cutter 75 is rotatably constrained around a plastic hinge 77 to said frame 9, at said fixed portion 9a, for severing, at least partially, and as already described hereinabove, said aluminium layer 5 arranged at the available region 70 of said perforated portion 4 of said at least one paper layer 3. Note that said cutter 75 lies, substantially, on the side of the frame 9 opposite to the side wherein the removable portion 9b is present.

[0031] Said first region 12 also extends in width L between said two pre-weakening lines 7 and 8. Said perforated portion 4 also extends in width L between said two pre-weakening lines 7 and 8. In view of what said, therefore, the above mentioned available region 70 is on the opposite side of the edge 4a of said perforated portion 4. In accordance with the embodiment herein described and available in figures 3 and 4, said constraining portion 11 comprises, as well, a second region 13 constrained between said two pre-weakening lines 7 and 8, indirectly on part of said paper layer 3. In practice said second region 13 of the tab 9 is glued, or - according to alternative embodiments - heat-welded on the outer layer 20 of the laminate 2, but at the end of the welding it remains substantially constrained to the paper layer 3, to the intermediate layer 21 made of thermoplastic material and to the underlying aluminium layer 5. Further, said second region 13 is also connected to the fixed portion 9a of the frame 9 by the above mentioned breakable bridges 9c. According to a preferred embodiment of the invention, said first region 12 and said second region 13 are continuously connected one to another and can be plastically rotated one to another by a plastic hinge 14. According to the embodiment shown in figures 2, 3, 4 and 5a-5g, said constraining portion 11 comprises a further second region 13b constrained between said two pre-weakening

lines 7 and 8, indirectly on part of said paper layer 3, and arranged adjoining to said second region 13. In this case too, said further second region 13b is connected to the fixed part 9a of the frame 9 by the above mentioned breakable bridges 9c and, further, said second region 13 and said further second region 13b are continuously connected one to another and they can be plastically rotated one to another by a plastic hinge 15.

[0032] This way the opening action obtained by dragging and lifting the removable portion 9b is added to a simultaneous rotation between said first region 12, said second region 13 and said further second region 13b of the removable portion 9b which, thereby, slightly folds as the aluminium layer 5 and the paper, or cardboard, layer 3 are lifted, then following the curvature of the paper layer 3 comprised between the two pre-weakening lines 7 and 8.

[0033] Also, each of said first region 12 and said second region 13 and said further second region 13b extend widthwise L substantially between said two pre-weakening lines 7 and 8.

[0034] In practice, in this way, when a force is exerted on the grip portion 10, this is released on the two end sides of the first region 12, and therefore, at the two pre-weakening lines 7 and 8, significantly facilitating the lifting of the paper layer 3 comprised between said two pre-weakening lines 7 and 8. In fact, the force exerted by the user on the grip portion 10 is transmitted and shared on the first region 12 and on the second region 13 and on the further second region 13b and, from there to the layers of laminate 2 to which said first 12, second 13 regions and said further second region 13b are constrained. Further, the same force exerted by the user allows to separate the removable portion 9b of the frame 9 from the fixed portion 9a, by severing the frangible portions 9c. The Applicant tested that such a solution facilitates significantly the opening of the container 6 without creating delamination problems of the laminate, without bowing problems of the container and following outflow of the product contained in the container 6, and without the user having to use an excessive force to open the container 6.

[0035] Note that an embodiment of the device 6 comprising more than a first region 12, per example, two, and/or a different number of second regions 13, 13', for example in the number of three, still falls within the protection scope of the present invention. Said opening device 1 comprises, as mentioned, a cutter 75 to sever, outside of said first region 12, from a side opposite to the edge 4a of said perforated portion 4, each of said aluminium 5 layer and said outer layer 20 and said intermediate layer 21, both of the latter layers made of thermoplastic material such as, for example, LDPE, arranged at said perforated portion 4 of said paper layer 3. In practice the severing occurs at the available region 70 of said perforated portion 4.

[0036] More in detail and as already mentioned above, said cutter 75 is arranged at a second edge 4b of said perforated portion 4, opposite to said first edge 4a comprised between said two pre-weakening lines 7 and 8. Further, said second edge 4b is advantageously arranged in proximity of a corner 60a of the container 6. Such a solution allows the user to exert a significant force to sever the perforated portion of the container while avoiding possible bowing of the container during this step.

[0037] According to the herein illustrated embodiment, said cutter 75, besides comprising a central toothed portion 80, comprises a pair of projecting teeth 76a, 76b arranged at the two ends 75a, 75b of said cutter for severing said aluminium layer 5, arranged at the perforated portion 4 of said paper layer 3, in proximity of the two pre-weakening lines 7 and 8. Substantially, when the cutter 75 is rotated by the user around the plastic hinge 77 for severing the available region 70 located at the perforated region 4, the two projecting teeth 76a, 76b of the cutter 75 come in proximity of the two pre-weakening lines 7 and 8. This way, at the above mentioned available region 70, two tears are created, easily propagating towards the two pre-weakening lines 7 and 8, thus facilitating the next step of dragging the removable portion 9b and lifting the paper layer 3 comprised between the two pre-weakening lines 7 and 8. Note that, in this case, said first region 12 has a width slightly smaller than the width L comprised between the two pre-weakening lines 7 and 8 to allow the two projecting teeth 76a and 76b to get closer to the starting ends of the two pre-weakening lines 7 and 8.

[0038] In accordance with the herein described embodiment, said frame 9 and said cutter 75 are realized in a single piece and of plastic material.

[0039] Still according to the embodiment depicted in the attached figures, said frame 9 if folded of about 90° and is constrained to two faces 60 and 61 adjoining to said container 6. This significantly increases the force the user can exert during the opening steps of the container 6. Further, such a solution allows the perforated portion 4 to be shifted in proximity of a corner 60a of the container 6, even more increasing the available gap for opening the container 6 itself.

[0040] Note that, although herein it has been described an embodiment wherein the frame 9 of the opening device 1 is folded of 90 degrees, anyway an embodiment wherein the frame 9 is not folded and completely lies on the front face 60 of the container 6, still falls within the protection scope of the present invention.

[0041] The operation of the opening device 1 according to the invention is depicted in figures 5a to 5g.

[0042] In figure 5a the opening device 1 is in its starting condition, therefore the container 6 is still closed.

[0043] In figure 5b the cutter 75 is activated for severing the aluminium layer 5 located at the available region 70 of said perforated portion 4 of the paper layer 3. Such an operation is preceded by the lifting of an activating element 78 to activate the cutter located on the opposite side of said pair of projecting teeth 76a and 76b. Such an activating element 78 is turned around a plastic hinge

79, between a starting rest position and a final engagement position with said cutter 75, rotating said cutter 75 around the above mentioned plastic hinge 77. In figure 5c, the completed rotation of the cutter 75 around said plastic hinge 77 is shown and the following severing of then available region 70 of the aluminium layer 5 due both to the central toothing 80 and the pair of projecting teeth 76a and 76b. This way, at the above mentioned available region 70, two tears are created, easily propagating towards the two pre-weakening lines 7 and 8, thus facilitating the next step of dragging the removable portion 9b and lifting the paper layer 3 comprised between the two pre-weakening lines 7 and 8. Figure 5d shows the lifting of the above mentioned first region 12 of the removable portion 9b of the frame 9 of the opening device 1. In practice, on the grip portion 10 a force is exerted able to both lift the grip element 10 and the aluminium layer 5 indirectly constrained to such first region 12, and to break the breakable bridges 9c which removably connect the fixed portion 9a of the frame 9 with the removable portion 9b.

[0044] In figure 5e the opening device 1 is still in its lifting step. In said step the grip portion 10 still undergoes the action of an external force leading to the lifting of said second region 13 as well. In practice, said second region 13 drags along the paper layer 3 comprised between the two pre-weakening lines 7 and 8 and located, in a constrained condition, under said second region 13. During such an action a partial rotation of the first region 12 occurs, with the second region 13 also around the above mentioned plastic hinge 14. This facilitates and aids the lifting of the paper layer 3 since the tab 9b follows the curvature of the paper layer 3. Of course, during the lifting of the paper layer 3 comprised between the two pre-weakening lines 7 and 8, the simultaneous lifting of the underlying aluminium layer constrained to the lifted paper layer 3 occurs. Such an underlying aluminium layer, initially severed due to the above mentioned cutter 75, still keeps on severing towards the pre-weakening lines 7 and 8 of the paper layer 3.

[0045] In figure 5f the opening device 1 goes on in its lifting step. In said last step the grip portion 10 still undergoes the action of an external force leading to the lifting of the further second region 13b as well. In practice, said further second region 13b drags along the paper layer 3 comprised between the two pre-weakening lines 7 and 8 and located, in a constrained condition, under said further second region 13b. During such an action a partial rotation of the second region 13 occurs, with the further second region 13b also around the above mentioned plastic hinge 15. This, as in the above case, facilitates and aids the lifting of the paper layer 3 since the tab 9b is allowed following the curvature of the paper layer 3.

[0046] In figure 5g the opening device 1 is in its final condition, i.e. in which the complete opening of the container 6 and the complete lifting of the paper layer 3 comprised between the two pre-weakening lines 7 and 8 occurred. This allows a highly wide opening 200 on the front face 60 of the container 6 to be formed. This way the possibility of using a spoon, or tea spoon, for collecting from the container 6 the food product contained therein is ensured.

Claims

1. Device (1) for opening a container (6) for pourable products (100) of the type comprising a laminate (2) provided with at least one paper, or cardboard, layer (3), having at least one perforated portion (4), and with at least one aluminium layer (5) directly or indirectly applied to the inside of said at least one paper, or cardboard, layer, wherein said at least one paper, or cardboard, layer has at least two discrete pro-weakening lines (7, 8) extending from said at least one perforated portion of said at least one paper, or cardboard, layer, said opening device comprising a frame (9) which can be anchored to said container (6) around at least part of said at least one perforated portion and having at least one fixed portion (9a) and at least one removable portion (9b), wherein said at least one removable portion (9b) is provided with at least one grip portion (10), which can be grasped from outside, and at least one constraining portion (11) comprising at least one first region (12) which is directly or indirectly constrained to at least part of said at least one aluminium layer (5) at said at least one perforated portion.

2. Device according to the preceding claim 1, **characterized in that** said at least one removable portion (9) is constrained to said at least one frame by a plurality of breakable bridges.

3. Device according to claim 1 or 2, **characterized in that** said at least one first region (12) substantially delimits a first edge (4a) of said perforated portion (4) between said at least two pre-weakening lines.

4. Device according to one or more of the preceding claims, **characterized by** comprising, as well, at least one cutter (75) rotatably constrained to said at least one frame (9), at said at least one fixed portion (9a), for at least partially severing said at least one aluminium layer (5) arranged at said perforated portion (4) of said at least one paper, or cardboard, layer (3).

5. Device according to claim 4, **characterized in that** said at least one cutter (75) is arranged at least at one second edge (4b) of said perforated portion (4) opposite to said first edge (4a) comprised between said at least two pre-weakening lines.

6. Device according to claim 5, **characterized in that**

said at least one second edge (4b) is arranged in proximity of at least one corner (60a) of said container (6).

7. Device according to one or more of the claims 1 to 6, **characterized in that** said at least one constraining portion (11) comprises, as well, at least one second region (13) directly or indirectly constrained to at least part of said at least one paper, or cardboard, layer (3) between said at least two pre-weakening lines (7, 8), wherein said at least one first region (12) and said at least one second region (13) are continuously connected one to another.

8. Device according to claim 7, **characterized in that** said at least one first region (12) and said at least one second region (13) can be plastically rotated one to another.

9. Device according to one or more of the claims 1 to 8, **characterized in that** said at least one first region (12) and/or said at least one second region (13) extend widthwise (L) substantially between said at least two pre-weakening lines (7, 8).

10. Device according to one or more of the claims 1 to 9, **characterized in that** said at least one cutter (75) comprises at least a pair of projecting teeth (76a, 76b) arranged at the two ends (75a, 75b) of said cutter (75) for severing, at least partially and in proximity of said at least two pre-weakening lines, said at least one aluminium layer (5) located at said perforated portion (4) of said at least one paper, or cardboard, layer (3).

11. Device according to one or more of the claims 1 to 10, **characterized in that** said at least one frame (9) and/or said at least one cutter (75) are made in a single piece.

12. Device according to one or more of the claims 1 to 11, **characterized in that** said at least one frame (75) and said at least one cutter (75) are made of plastic material.

13. Device according to one or more of the claims 1 to 12, **characterized in that** said at least one frame (9) is folded of about 90° and it is constrained onto two adjoining faces (60, 61) of said container (6).

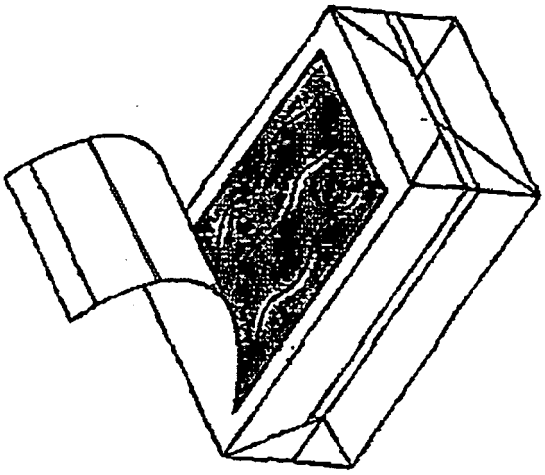

FIG. 1c (PRIOR ART)

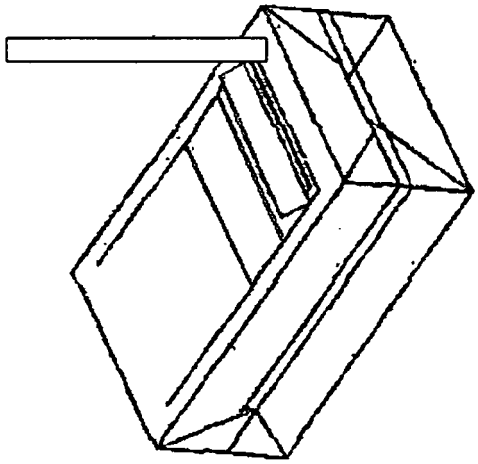

FIG. 1b

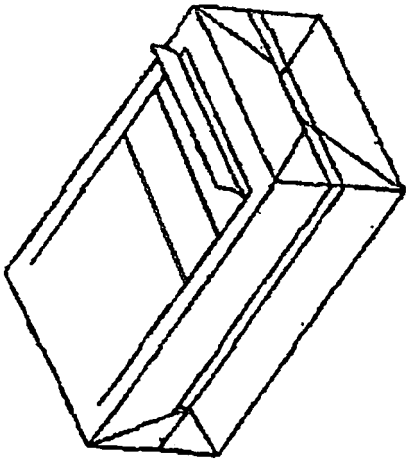

FIG. 1a

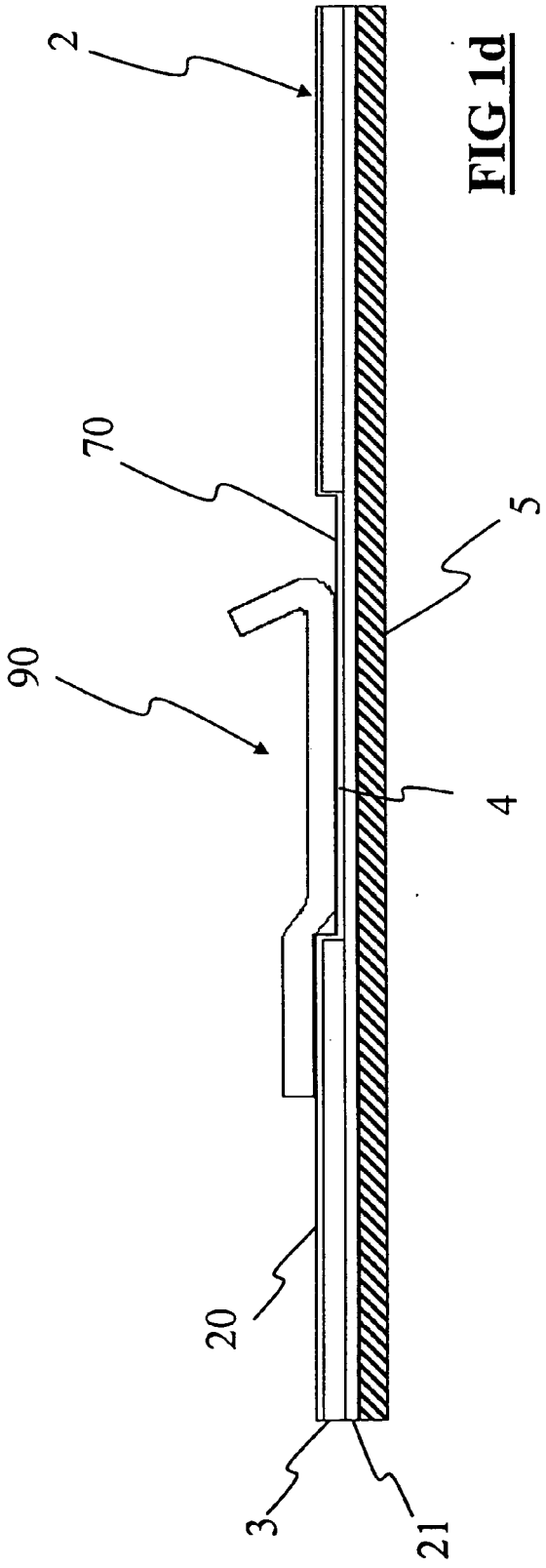

FIG 1d

(PRIOR ART)

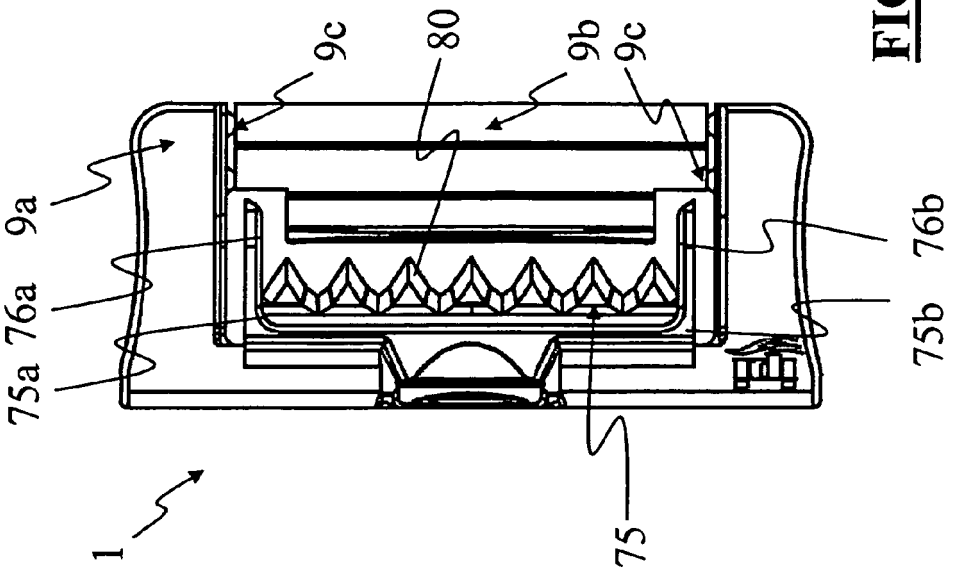

FIG 3

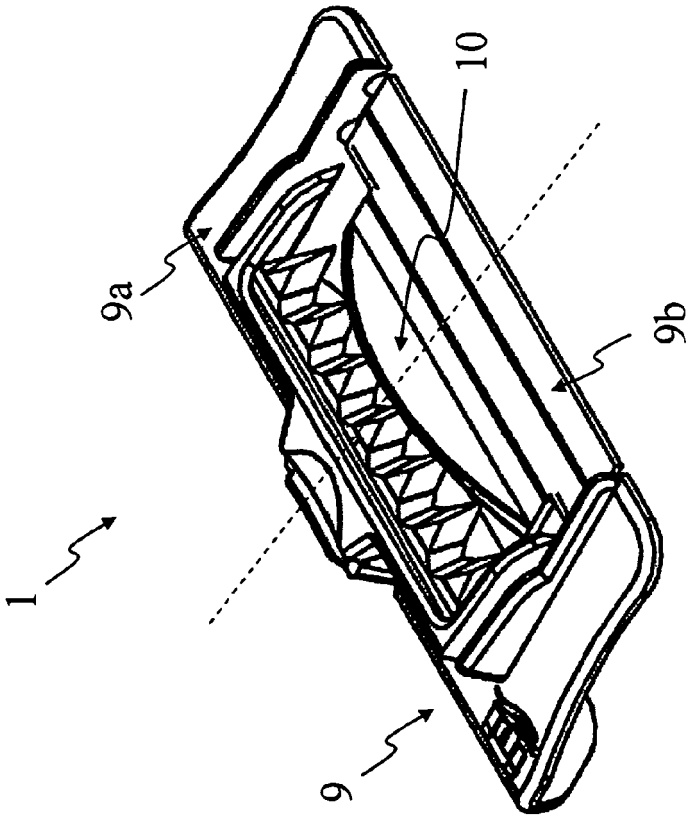

FIG 2

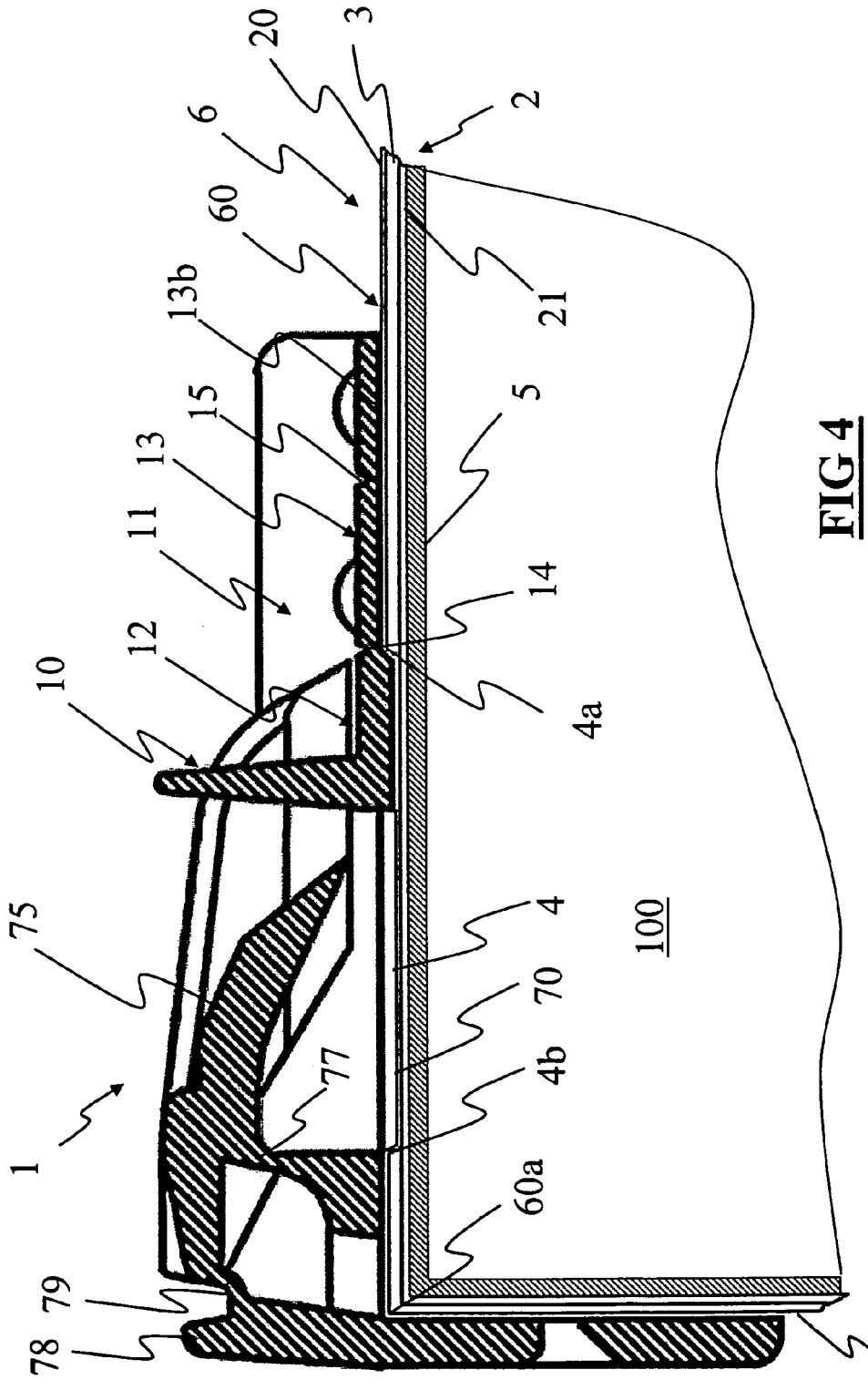

FIG 4

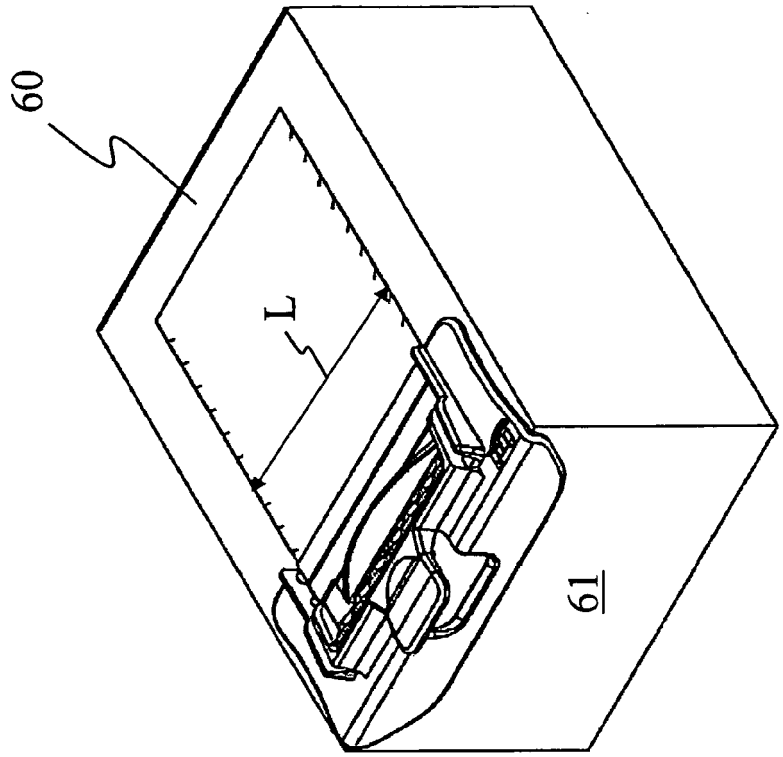

FIG 5b

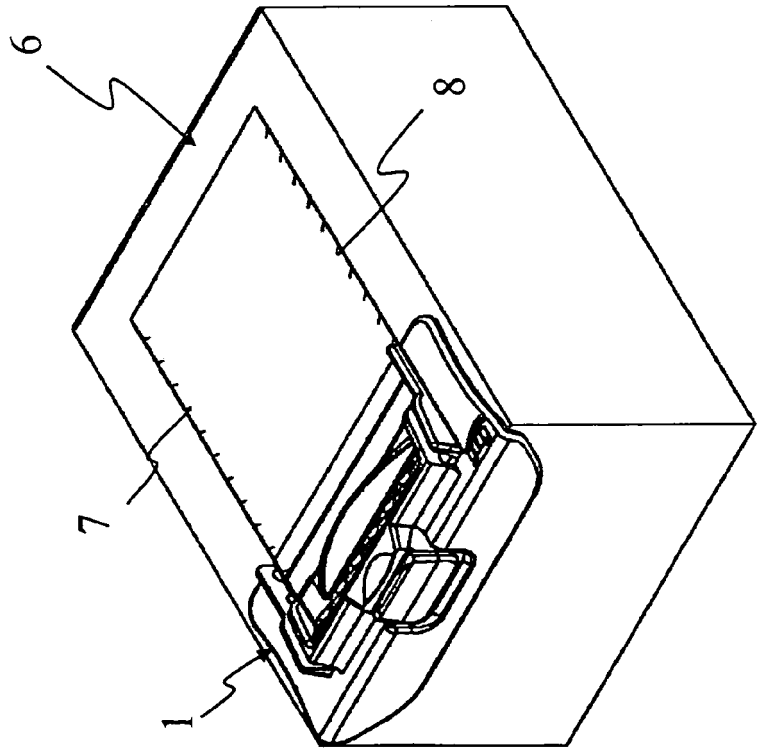

FIG 5a

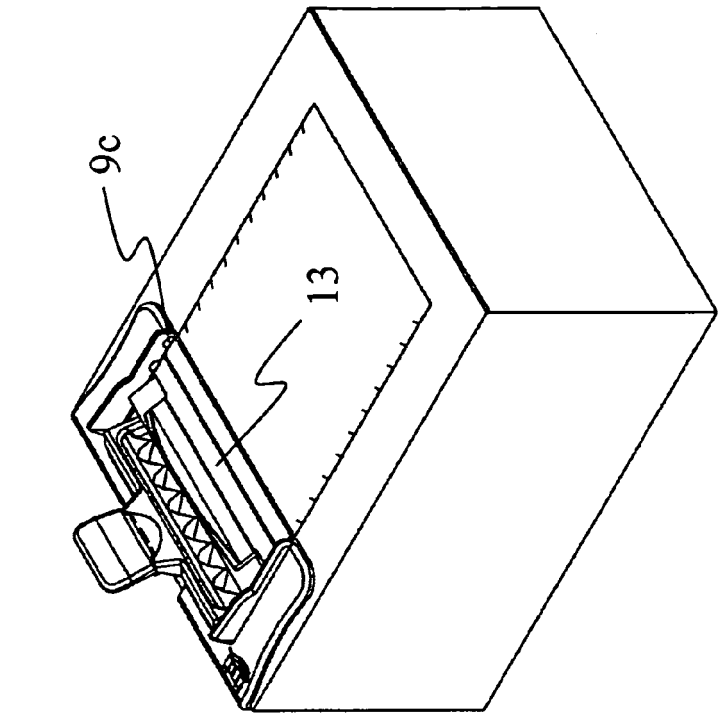

FIG 5d

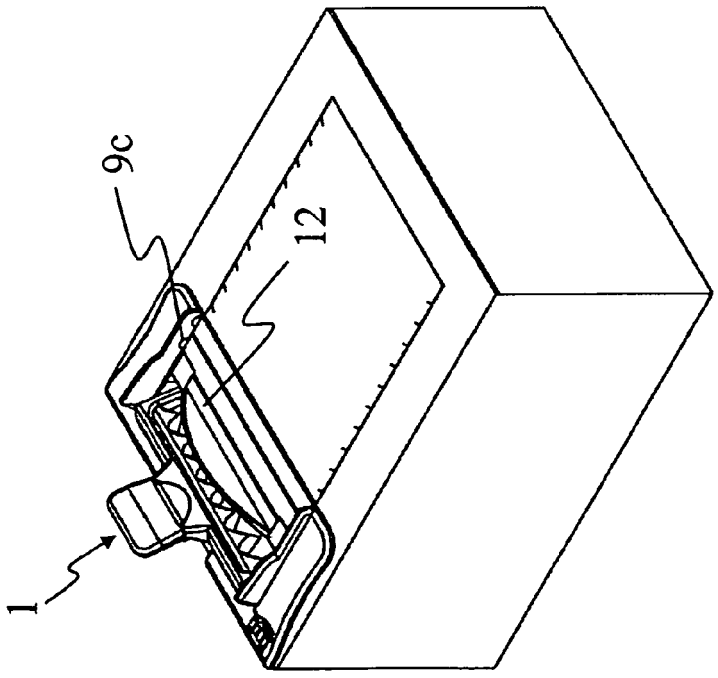

FIG 5c

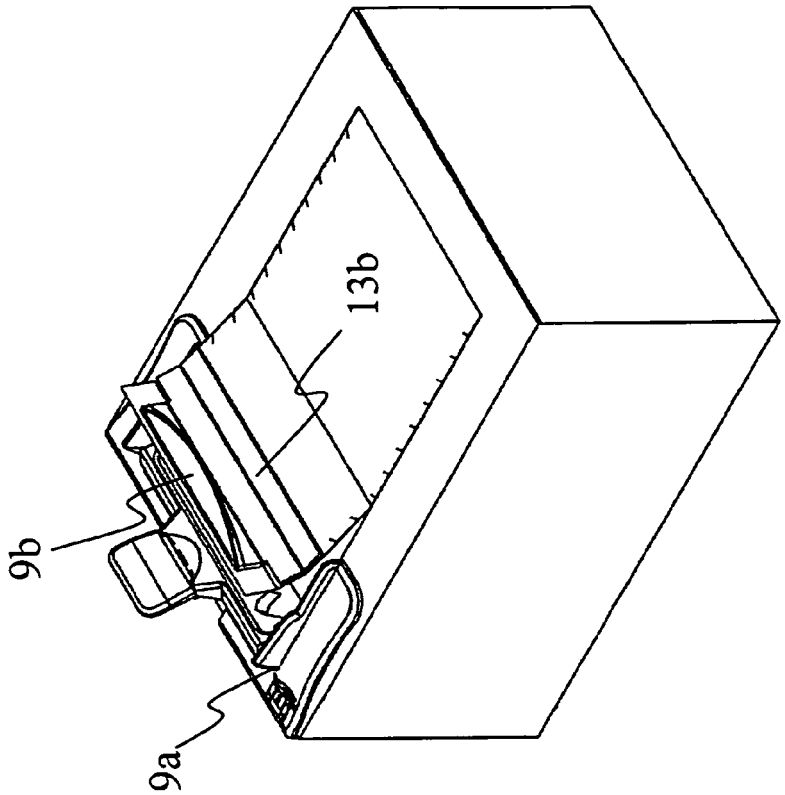

FIG 5f

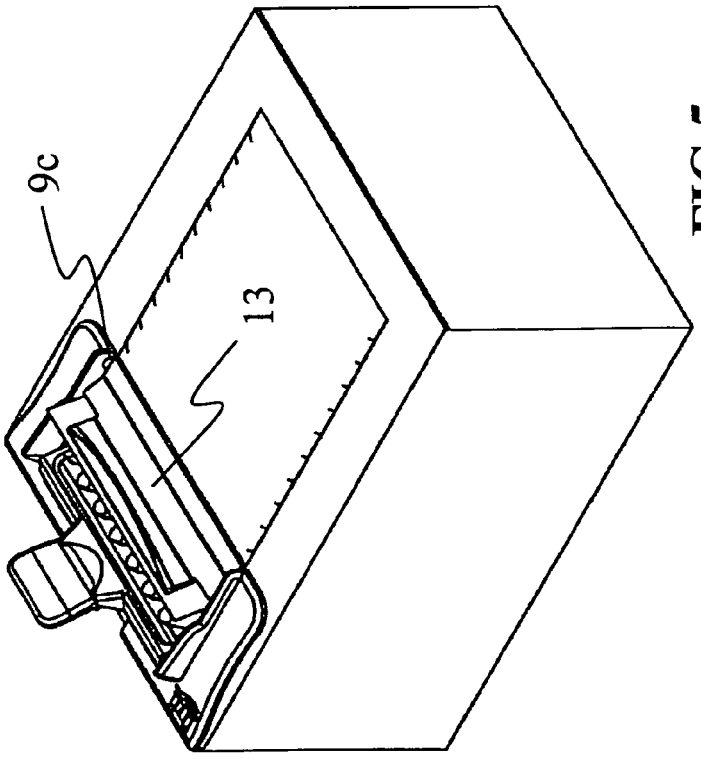

FIG 5e

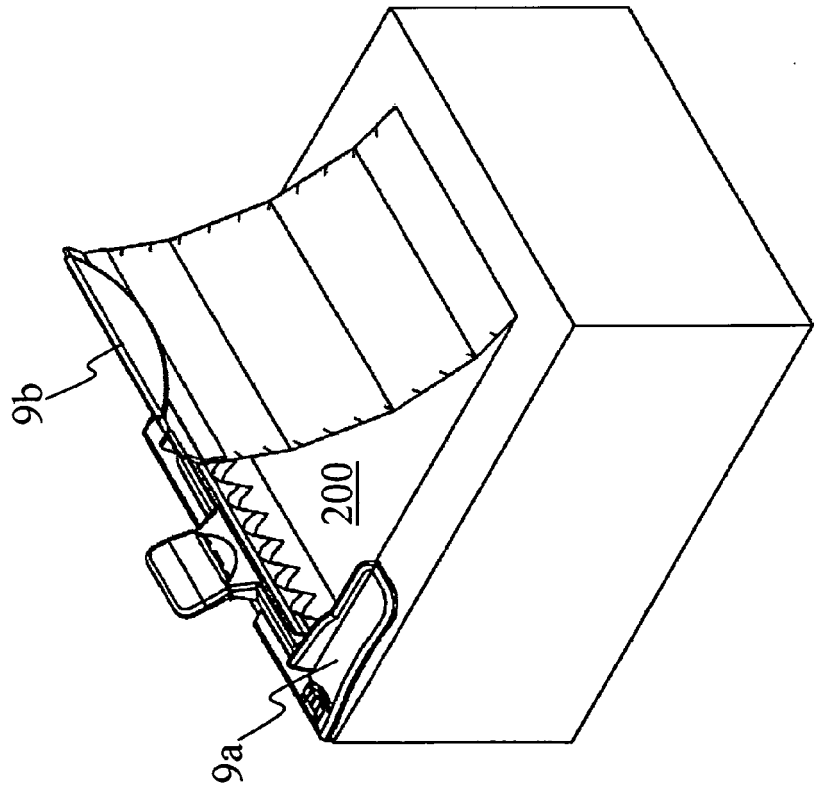

FIG 5g

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EUROPEAN SEARCH REPORT

Application Number
EP 12 00 4447

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 November 2012	Segerer, Heiko

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X : particularly relevant if taken alone
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L : document cited for other reasons

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