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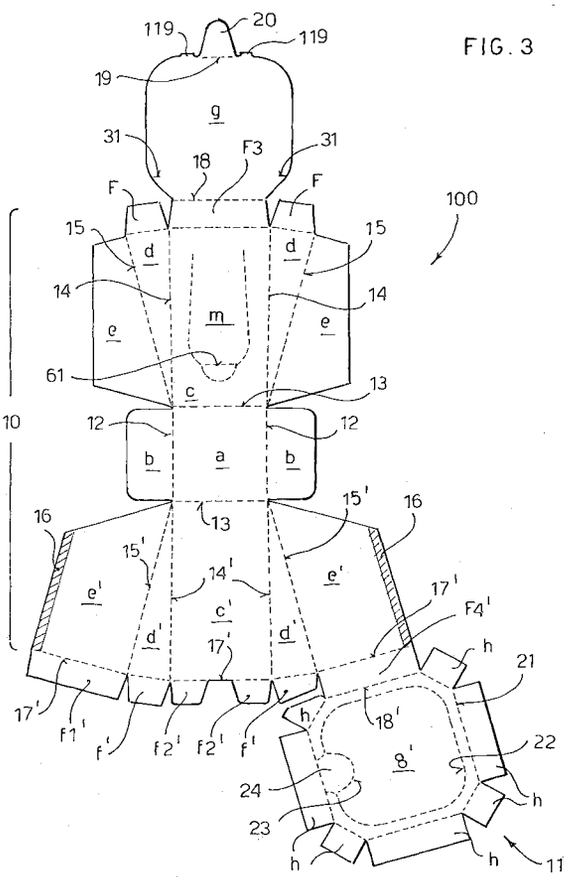
(54) Cardboard container obtained from a single blank

(57) A cardboard container particularly for solid, granular, powder or even fluids products is described, having a substantially box-shaped body open at the top and an upper closing wall (8) which disposes inside the body of the container at a certain distance from the upper edge (3) thereof and a pre-cut line (22-23), designed to facilitate the detachment of a disk (8') to form an opening for access to the container is provided; the body and the upper closing wall and possibly a movable flap, which acts as a lid once the disk has been removed, are formed from a single blank (100).

FIG. 3



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Description

[0001] The present invention refers to a cardboard container for solid, granular or eventually fluid products, in particular cream or paste products and the like, and to a relative production method.

[0002] Although reference will be made in the description that follows mainly to a cardboard container, it is to be understood that the material used to form the container can be a multi-layer material, including a layer of cardboard, able to give a certain stiffness to the container, and any other layers of sheet material.

[0003] Containers of the type to which the invention refers are normally common cardboard boxes, obtained by successive folding and gluing of a flat blank, so as to obtain a substantially parallelepiped shape of the desired size.

[0004] Obviously, besides the classic parallelepiped shape, other shapes have been suggested according to the particular use for which the container is intended.

[0005] Cardboard containers of the box type have various drawbacks, which range from the fact that the container does not have a perfect seal to the fact that it cannot be re-closed or that the re-closure of the container is not practical in the event of partial use of the product, to the fact that a loss of or a decrease in stiffness of the container occurs if opening thereof involves essentially the entire upper face.

[0006] Also, such box-shaped cardboard containers do not lend themselves to contain viscous, pasty or fluid products.

[0007] European patent application No. 03011600.8 of 22.05.03, not yet published, in the name of the same applicant, describes a container whose body and whose upper closing wall are obtained from two separate blanks. The present invention is intended to improve and to simplify the structure of the container described in said European patent application.

[0008] In particular, an object of the invention is to provide a cardboard container that is perfectly sealed before use and which can be opened easily to form a large opening for removing the product, which involves essentially the entire upper face of the container.

[0009] Another object of the invention is to provide a container which maintains a good stiffness even after opening.

[0010] Yet another object of the invention is to provide a container which, in a suitable composition of various components, can be produced in a completely hermetic form, so as to be suitable for containing products in a pasty, viscous or fluid state.

[0011] Another, but not last, object of the invention is to provide such a container that is simple and economical to produce.

[0012] The container according to the invention has the characteristics of appended independent claim 1.

[0013] Advantageous embodiments of the invention are apparent from the dependent claims.

[0014] Essentially, the container according to the invention is obtained from a single blank. In particular, the blank of the body of the container has bend and crease lines, which make the container assume a slightly truncated conical shape, once it is raised, said shape starting from a rectangular base and ending in an octagonal open top wall, widened with respect to the base.

[0015] The body of the open container thus produced has, at its upper edge, a series of tongues or flaps which, after the container has been filled with the product, are folded inward to embrace corresponding flaps of the part of the blank forming the upper closing wall of the container.

[0016] A pre-cut line is provided in said upper closing wall, to facilitate opening of the container.

[0017] The part of the blank forming the container advantageously has at one of its edges an octagonal extension, designed to form a re-closing lid for the container.

[0018] The container thus formed, in one embodiment thereof, can be made hermetic, to contain products in a pasty or viscous state, such as yoghurt or the like, and also fluid products.

[0019] For this purpose, on the part of the blank designed to form the container body, on the face designed to form the inner surface of the container, there is applied a sheet of plastic material such that, after folding of the blank to form the body of the container, it covers the whole inner surface thereof making it hermetic.

[0020] Likewise, the part of the blank forming the upper closing wall of the container has on the inside a thin sheet of aluminium which ensures the upper seal of the closed container and allows easy tearing thereof.

[0021] Further characteristics of the invention will be made clearer by the detailed description that follows, referring to purely exemplifying and therefore non-limiting embodiments thereof, illustrated in the appended drawings, in which:

- Figure 1 is an axonometric view of a container according to the invention, with the re-closing lid lowered;
- Figure 2 is an axonometric view of the container of Figure 1 with the re-closing lid raised and the disk removed from the upper wall;
- Figure 3 is a plan view of a blank from which the container of Figures 1 and 2 is obtained;
- Figure 4 is an axonometric view of the container, in the upright position, obtained by folding and gluing of the blank of Figure 3, before filling it with the product;
- Figure 5 is a sectional view taken along the section plane V-V of Figure 1, showing the snap re-closure of the lid;
- Figure 6 is a plan view of the blank of Figure 3, for the formation of a hermetic container;
- Figure 7 is a plan view of a membrane which can be applied to the top closing part of the blank of Fig-

ure 6, for formation of a hermetic container; and

- Figure 8 is a cross sectional view taken along the section plane VIII-VIII of Figure 7.

[0022] With reference to these figures, and for now in particular to Figures 1 and 2, the cardboard container according to the invention has been indicated as a whole with the reference numeral 1.

[0023] In a first embodiment, which will now be described, the container 1 is destined particularly to contain solid, granular or even powder products. Sweets, chocolates, animal foods, detergents and the like are cited purely by way of example as products for which the container is intended.

[0024] As can be seen in Figures 1 and 2, the container 1 has a rectangular or square base 2 and an octagonal upper edge 3, widened with respect to the base, so as to determine a certain conicity of the container.

[0025] In particular, the octagonal upper edge 3 of the container has four larger-sized sides 4, opposed two by two and corresponding to the four side walls 5 of the container, separated by the same number of smaller-sized sides 6, disposed at the four corners of the container and obtained by means of respective triangular blunting 7 of said corners, which start from zero at the base 2 of the container and reach their greatest width at the top thereof.

[0026] As can be seen better in Figure 2, the container 1 has a top closing wall 8 and a re-closing lid 9, elements which will be better described later.

[0027] With reference now to Figures 3 to 5, the elements composing the container 1 according to the invention, and the manner in which it is produced are described.

[0028] The container 1 is obtained essentially from a single blank 100, shown in a plan view in Figure 3. The blank 100 comprises:

- a central portion 10 designed to form the body of the container, shown in the upright position in Figure 4,
- a first octagonal end portion 11 designed to form the top closing wall 8 of the container, shown in Figure 4 in the open position for filling of the container, and
- a second octagonal end portion g designed to form the re-closing lid 9, also shown in the open position in Figure 4.

[0029] In said figures, the dashed lines indicate crease and bend lines, along which the various parts of the blank are folded to obtain the container, as will now be better described.

[0030] The blank 100 of Figure 3 comprises a central rectangular part a destined to form the base 2 of the container 1.

[0031] Corresponding tongues b, which are folded inward by about 90° during formation of the container are attached, by respective bend lines 12, to the two smaller sides of the rectangle a.

[0032] Attached by respective bend lines (13, 13') to the other two sides of the rectangle a are trapezoidal portions (c, c'), having their larger bases at said lines (13, 13'), destined to form the rear wall and the front wall of the container 1, respectively, as shown in Figures 1 and 2.

[0033] In Figure 3 the difference in length between the larger base and the lesser base of the trapeziums (c, c') is imperceptible, so they are comparable to rectangles.

[0034] Joined to the sides of the trapezoidal portions (c, c'), by means of crease lines (14, 14'), there are respective pairs of triangular portions (d, d'), with their vertices disposed at the vertices of the central rectangle a, said triangular portions (d, d') being able to form said blunted corners 7 of the container 1.

[0035] Joined to the triangular portions (d, d'), again along crease lines (15, 15'), there are further substantially rectangular trapezium shaped portions (e, e'), with the acute angles of the trapeziums facing toward the central rectangular portion a.

[0036] The trapezoidal portions or wings e are narrower than the corresponding wings e' and are destined to be disposed on the inside thereof, to form together the two side walls, right and left, of the container 1. On the outer edge of the wings e' there are provided respective strips of glue 16, to block the superimposed wings (e, e') firmly, possibly also by heat-sealing.

[0037] Trapezoidal flaps (f, f') protrude from the upper and lower edges of the triangular portions d and d', respectively. A trapezoidal flap f1' protrudes from the lower edge of one of the trapezoidal portions e', whilst a connecting flap f4' protrudes from the other portion e'. A trapezoidal connecting flap f3 protrudes from the upper edge (lesser base) of the trapezoidal portion c, whereas two trapezoidal flaps f2', spaced apart, protrude from the lower edge of the trapezoidal portion c'.

[0038] The connecting flap f4' is destined to be folded toward the inside of the container along the bend line 17' to lower the top closing wall 8 inside the body of the container. On the other hand the end flaps f, f', f1' and f2' and the connecting flap f3 are destined to be folded to the inside of the container along the respective bend lines (17, 17') to block the top closing wall 8 of the container, as will be better explained later.

[0039] Furthermore, the first octagonal portion 11 of the blank destined to form the top closing wall 8 of the container is connected by means of a bend line 18 to the connecting flap f4' of the trapezoidal portion e'. On the other hand, the second octagonal portion g of the blank, destined to form the re-closing lid 9 of the container and provided with a pull tab 20 that can oscillate around a bend line 19, is connected by means of a bend line 18 to the connecting flap f3 of the trapezoidal portion c.

[0040] The potion 11 of the blank is octagonal in shape in a plan view, as described above, and has seven rectangular flaps h, connected by means of respec-

tive bend lines 21 to seven sides of the octagon. The eighth side of the octagon is formed by the bend line 18' which connects the portion 11 of the blank to the connecting flap f4' which is of the same size as the larger flaps h. The smaller flap h which coincides with the flap f' is partially cut. The flap f' coinciding with the flap h is also cut.

[0041] Said flaps h are destined to be folded at about 90° and to be disposed beneath the flaps (f, f3, f', f1', f2') of the part 10 of the blank for closing of the container, as will be better described later.

[0042] As can be seen in Figure 3, the portion 11 of the blank has a pre-cut line 22, which extends substantially parallel to the octagonal perimeter thereof, following a rounded path and ending at the front with a crescent 23, so that on pressing on the portion 24 in front of the crescent 23, an opening is formed through which the central part or disk 8' of the top wall 8 of the container can be gripped, to remove it along the pre-cut line 22 and to cause the opening of the container.

[0043] Formation of the container 1 starting from the blank 100 of Figure 3 will now be described.

[0044] Starting from the blank 100 and keeping the base a fixed, the two side tongues b are raised, disposing them on the inside, and then the trapezoidal portions (c, c') are raised together with the other portions (d, e) and (d', e') connected thereto. The latter are then rotated around the respective crease and bend lines (14, 15, 14', 15'), so that the wings e' partially overlap the corresponding wings e, forming the raised container, open at the top, shown in Figure 4. The strips of glue or of heat-sealed adhesive 16 applied to the wings e' ensure fixing on the wings e beneath and thus the maintenance of the shape of the body of the container as shown in Figure 4.

[0045] During formation of the container, the eight creases (14, 15, 14', 15'), diverging from the bottom upwards, give rise to the conicity of the container and give its top the aforementioned octagonal shape.

[0046] The body of the container can easily be raised mechanically, by means of an internal mandrel which keeps fixed the base a, on which mechanical hinged systems raise the various portions of the part 10 of the blank to form the body of the container.

[0047] The open container shown in Figure 4 is filled with product before closure, which takes place as follows.

[0048] The peripheral flaps h of the portion 11 of the blank are folded upwards by about 90°, to take on a tray configuration 25. It is clear that this operation, for the sake of simplicity, can be performed before the body of the container is formed.

[0049] The tray-shaped part 25 of the blank is folded along the bend lines (17', 18) so as to be inserted in the open container of Figure 4 through the open top part thereof and is disposed so that the upper edge 26 of the folded flaps h is disposed level with the bend lines (17, 17') of the corresponding flaps f, f' , f1', f2' and f3 of the open container of Figure 4.

[0050] In this manner, by folding the flaps f, f' f1', f2' and f3 inward onto the corresponding flaps h, after application of a layer of glue, upper sealing of the container is achieved, as shown in Figure 2. Obviously a layer of glue can be provided on the connecting flap f4' to fix it to the wings e and e'.

[0051] Lastly, the lid 9 is lowered onto the top-closing wall 8, as shown in Figure 1.

[0052] It should be noted that in this lowered position, as shown in the sectional view of Figure 5, the lid 9 is positioned beneath said pairs of front overlapping flaps (f, f2'), which prevent the lid from lifting spontaneously. In practice, when the lid is lowered, it snaps shut and is held in the closed position by said superimposed flaps (f, f2'). In addition, in the front side of the lid 9, opposite the hinging side f3, two teeth 119 are provided, spaced apart on one side and on the other with respect to the pull-tab 20. Said teeth 119 snap engage beneath the folded flaps f2' when the lid 9 is closed. For this purpose the flaps f2' are slightly shorter than the other flaps.

[0053] Raising of the lid 9 is facilitated by the pull tab 20 which is housed in the empty space determined by said pair of flaps f2' and which protrudes slightly beyond the top profile of the container 1.

[0054] The first opening of the container is facilitated by said pre-cut line 22 formed on the upper closing wall 8.

[0055] In fact, by exerting a pressure downwards with a finger on the semi-spherical part 24 in front of the crescent-shaped join 23 of the cut 22, an opening is formed through with it is possible to grip the disk 8' and to remove it easily by simply pulling upwards, causing detachment along the cut line 22.

[0056] It should be noted that the cut line (22-23) can take a path different to that shown by way of example in the appended drawings. In theory it could extend exactly along the inner perimeter of the container.

[0057] In practice, however, it is preferred that the disk 8' leaves, when removed, a rim 30 suitably joined in the corners, which allows the upper mouth of the container to be stiffened.

[0058] The function of this rim 30 is also to act as a stop for the re-closing lid 9, which comes to rest thereon after the disk 8' has been removed.

[0059] As shown diagrammatically in Figures 1, 2 and 5, two small cuts 31, formed on the inclined sides of the octagonal lid 9 joined to the bend line 18 allow the lid 9 to be blocked in the open position, as shown in Figure 2, by hooking to the top edge of the container.

[0060] Re-closure of the lid 9 takes place by lowering thereof, as previously described.

[0061] In figure 6 the same blank 100 of Figure 3 is illustrated according to a hermetic embodiment of the container, according to the invention.

[0062] According to said embodiment, a lining film 40 of single- or multi-layer plastic material, preferably heat sealed on both faces, is applied to the blank part 10.

[0063] The film 40 is substantially rectangular in

shape, possibly rounded at the two ends, of such a size that its length reaches to the bend lines (17, 17') of the flaps (f, f3, f', f1', f2', f4)' whilst its width is such as to allow said film, in the established conicity of the container, to be overlapped to form the tight seal by means of heat sealing.

[0064] As shown diagrammatically in Figure 6, the film 40 is constrained to the blank 10 by means of a continuous or dotted track of gluing or heat sealing 41, which extends along a rectangle parallel to the perimeter of the base a, and by means of two strips of gluing or heat sealing (42, 42') disposed in the vicinity of the top of said trapezoidal portions (c, c').

[0065] Obviously the arrangement of the above mentioned areas of gluing or heat sealing (41, 42, 42') is purely exemplary.

[0066] A typical structure of the lining film can be PE/PET/PE, in which the PET film acts as heat resistant material, giving a certain stiffness, whilst the two PE films form the part that can be heat sealed on both faces. The PET film can be metallized to give greater impermeability.

[0067] The body of the container is formed as described in the previous embodiment, obtaining a container open at the top with an inner lining 40, which can be filled with the product and closed with a lid g, which must also have impermeable characteristics, and a the same time must allow an easy opening along the above mentioned cut line 22.

[0068] For this purpose, as shown diagrammatically in Figure 6, a thin aluminium film 50 (8 - 10 micron), which covers the entire peripheral profile of the octagonal portion 11, including the empty spaces between the successive flaps h, has been joined by means of adhesive and/or heat sealing to the octagonal portion 11 of the blank.

[0069] In this manner, when the flaps h are folded to be inserted beneath the corresponding flaps (f, f3, f' , f1', f2') of the container, a shaped surface without breaks in continuity is formed.

[0070] Fixing of the closing wall 8 to the body of the container takes place as in the preceding embodiment, by sealing the flaps f, f3, f' , f1' and f2', heat sealable on the inside to the underlying flaps h and, in this case, also by sealing the aluminium layer 50 to the underlying lining film 40 so as to form a single hermetically sealed whole. The lining film 40 in turn is sealed to the inside part of the container with the dual function of further stiffening of the mouth of the container.

[0071] To open the container it is sufficient, as in the previous case, to exert a simple pressure on the semi spherical portion 24 to cause yielding and breaking of the carton along the cut line 22, and thus allow the removal of the disk 8'. In this phase, the thin layer of aluminium 50 faithfully follows the break along the cut line 22.

[0072] However, when this heat-sealing operation is performed, the aluminium sheet 50 dilates through the effect of heat, so that creases are formed which compromise sealability in said areas. These creases also form channels which allow air to enter, in the long run causing oxidation and gradual detachment of the aluminium sheet 50 from the polyethylene layer deposited on the cardboard through heat-sealing of the aluminium sheet 50.

[0073] To eliminate these phenomena in the octagonal portion 11 of the blank a barrier structure other than the simple aluminium sheet 50 has been designed. As shown in Figures 7 and 8, said structure consists in a membrane 70 comprising a very thin aluminium film 71 (thickness 7-9 microns) which is coupled to a layer of a very thin paper 72 (grammage 20 - 30 gr/m^2).

[0074] The paper 72 is of the pelure type and has considerable heat stability, whilst the aluminium film 71 is held by said paper, eliminating the aforementioned creases.

[0075] The aluminium film 71, so thin, can be varnished on one side (the outward facing one) to prevent oxidation. The paper 72, on the other hand, being of low grammage, can easily tear under pressure. In the membrane 70, the aluminium film 71 is necessary because it is one of the best barrier materials.

[0076] To fix the membrane 70, a layer of polyethylene is applied to the portion 11 of the blank, then the aluminium film 71 or the sheet of paper 72 is heat sealed to the layer of polyethylene, so that one of the two remains on the outside. This solution, furthermore, is possible in that the two materials, that is the aluminium 71 and the paper 72, are varnished with respective layers 73, 74, so that they can come into direct contact inside the container with the product contained therein, as in the case of food products.

[0077] It is clear that the membrane 70 can be applied with the thin paper sheet 72 in contact with the portion 11 of the blank so that the aluminium layer 71 remains on the outside.

[0078] In this case also, when the top wall 8 of the container is to be opened, the disk 8' is lowered by applying a pressure to the round part 24 and by breaking the cut lines 22 and 23. As a result the membrane 70, being thin, tears along the cut lines 22 and 23.

[0079] It can thus be seen that the blank 100 of Figure 6 makes it possible to produce a perfectly hermetic container, simple and inexpensive to make, unlike the solutions existing on the market, which are very sophisticated, wherein the structure of the material is a single whole of multi-layer components such as to make the cardboard impermeable.

[0080] The hermetic container according to the invention also lends itself to an easy recycling, in that the lining film 40 of plastic material may be detached from the cardboard blank 10, allowing a separate waste collection. In order to facilitate this operation, a U-shaped precut 60 which defines an openable window m is made in one of the trapezoidal walls c. A crosswise bend line 61 which passes through the bottom part of the window m

is provided. In this case the user, after having used the content of the container, lowers the window m toward the inside causing the detachment of the cardboard from the lining film 40.

[0081] From the aforegoing description the advantages of the cardboard container according to the invention are evident, although not limited to the particular embodiments described above and illustrated in the appended drawings, but numerous modifications of detail can be reached by a person skilled in the art, without thereby departing from the scope of the invention as defined by the appended claims.

Claims

1. A cardboard container particularly for solid, granular or powder products, having a substantially box-shaped body open at the top and an upper closing wall (8) disposed on the inside of the container body at a certain distance from the upper edge (3) thereof, and being provided with a pre-cut line (22, 23) able to facilitate the detachment of a disk (8') to cause an opening for the access to the container, **characterized in that** said body and said upper closing wall are formed from a single blank (100).

2. A container according to claim 1, further comprising a re-closing lid (9), hingedly openable, **characterized in that** said lid (9) is formed from said single blank (100) comprising said body and said top closing wall.

3. A container according to claim 1 or 2, **characterized in that** said blank (100) for the production of the container comprises:

   - a central rectangle (a) designed to form a base (2) of the container,
   - two opposite tongues (b) foldable to the inside around respective bend lines (12) coinciding with two opposite sides of the rectangle (a),
   - two trapezoidal portions (c, c') foldable around the other two sides (13, 13') of the central rectangle (a) to form the rear and the front walls, respectively, of the container (1),
   - two pairs of triangular portions (d, d; d', d') respectively adjacent said portions (c, c') and joined thereto by means of respective crease lines (14, 14'), said triangular portions (d, d') having their vertices coinciding with the corresponding vertices of said central rectangle (a) and being able to form blunted corners (7) of the container (1),
   - two pairs of substantially rectangular trapezium-shaped portions (e, e, e', e'), respectively adjacent said triangular portions (d, d, d', d'), and joined thereto by means of crease lines (15, 15'), the portions (e', e') being wider than the portions (e, e) and being provided on the respective outer edges with a strip of glue or of a heat-sealable adhesive (16, 16') for fixing to the corresponding portions (e, e) to form, by overlapping of said portions (e, e'), the right and left side walls of the container and the closure thereof,
   - a plurality of flaps (f, f3, f', f1', f2', f4'), possibly heat sealable on the inside, protruding respectively from said portions (c, d) and from said portions (c', d', e'),
   - an octagonal portion (11) connected, by means of a bend line (18') to one (f4') of said flaps (f, f3, f', f1', f2', f4') to form said closing wall (8), and
   - a possible second octagonal portion (g) connected, by means of a bend line (18), to one (f3) of said flaps (f, f3, f', f1', f2', f4') to form a possible re-closing lid (9).

4. A container according to claim 3, **characterized in that** said octagonal portion (11) forming the closing wall (8) is connected to the flap (f4') protruding from one of said rectangular trapezium-shaped parts (e') forming the side walls and **in that** said second octagonal portion (g) forming the re-closing lid (9) is connected to the flap (f3) protruding from a rectangular portion (c) forming the rear wall of the container.

5. A container according to any one of the preceding claims, **characterized in that** the top closing wall (8) has a plurality of peripheral flaps (h) folded upwards at about 90° so as to be disposed against the corresponding inside walls of the body of the container, which has at its upper edge (3) corresponding counterflaps (f, f3, f, f1', f2') which, folded inward, overlap said flaps (h) of the closing wall, blocking it in position by means of glue or adhesive.

6. A container according to any one of the preceding claims, **characterized in that** said container (1) is raised from a rectangular base (2), with a certain conicity widening towards the top, where it has an octagonal upper edge (3) with four larger sized sides (4), coinciding with the four substantially vertical peripheral walls (5) of the container and four smaller sized sides (6), coinciding with blunted corners (7) of the container.

7. A container according to any one of the preceding claims, **characterized in that** said pre-cut line (22, 23) is shaped so as to leave a rim (30) on said upper closing wall (8) after removal of said disk (8'), said rim extending at least partially along the perimeter of the container (1) to stiffen the mouth of the container.

8. A container according to claim 2 and to one or more of the subsequent claims, **characterized in that** said re-closing lid (9) is hingedly openable around one (f3) of said folded flaps (f, f3, f', f1', f2', f4') of the upper edge (3) of the container and is disposed, in the closed position, on said upper closing wall (8) or on said peripheral edge (30), once said disk (8') has been removed, for re-closing the container.

9. A container according to claim 8, **characterized in that** the re-closure of said lid (9) takes place by a snap action, the front edge of the lid having a pair of teeth (119) which are disposed, with slight forcing, beneath at least one flap (f2') of said upper edge (3) of the container which is shorter than the other flaps.

10. A container according to claim 8 o 9, **characterized in that** said re-closing lid (9) has a pull tab (20) which is disposed, in the closed position, in the empty space between two of said flaps (f2').

11. A container according to any one of claims 8 to 10, **characterized in that** said lid (9) has, on two of its inclined sides adjacent to that of hinging, two cuts (31) designed to hook to the upper edge (3) of the container, so that the lid is kept blocked in the open position.

12. A container according to any one of the preceding claims, of the hermetic type, particularly suitable for containing fluid, pasty or cream products and the like, **characterized in that** inside the container body there is disposed a film (40) fixed by points or by lines to said blank (100) and being of such a size as to reach to said upper edge (3) of the container, disposing itself beneath said folded flaps (f, f3, f', f1', f2', f4'), and to cover the whole inner peripheral surface of the container, a thin membrane (70) comprising a thin sheet of aluminium (71) coupled to a sheet of low-grammage paper (72), both possibly protected with layers of varnish (73, 74) being applied to the inside of said upper closing wall (9), such that following the fixing of said upper closing wall (8) to the body of the container, by means of folding of said flaps (h) and of heat sealing or gluing along the upper peripheral edge of the container, a single hermetically sealed whole is formed.

13. A single blank (100) for the production of a container for solid, granular or powder products according to any one of claims 1 to 11, comprising

- a central rectangle (a) designed to form a base (2) of the container,
- two opposite flaps (b) foldable to the inside around respective bend lines (12) coinciding with two opposite sides of the rectangle (a),
- two trapezoidal portions (c, c') foldable around the other two sides (13, 13') of the central rectangle (a), to form the rear and the front walls, respectively, of the container (1),
- two pairs of triangular portions (d, d, d', d') respectively adjacent said portions (c, c') and joined thereto by means of respective crease lines (14, 14'), said triangular portions (d, d') having vertices coinciding with the corresponding vertices of said central rectangle (a) and being able to form blunted corners (7) of the container (1),
- two pairs of substantially rectangular trapezium-shaped portions (e, e, e', e'), respectively adjacent said triangular portions (d, d, d', d'), and joined thereto by means of respective crease lines (15, 15'), the portions (e', e') being wider than the portions (e, e) and being provided on the respective outer edges with a strip of glue or of heat-sealable adhesive (16, 16') for fixing to the corresponding portions (e, e) to determine, by overlapping of said portions (e, e'), the right and left side walls of the body of the container and the closure thereof,
- a plurality of flaps (f, f3, f, f1', f2', f4'), possibly heat-sealable on the inside, protruding from said portions (c, d) and from said portions (c', d', e'), respectively,
- an octagonal portion (11), connected by means of a bend line (18') to one (f4') of said flaps (f, f3, f', f1', f2', f4') to determine said closing wall (8), and
- a possible second octagonal portion (g) connected, by means of a bend line (18) to one (f3) of said flaps (f, f3, f', f1', f2', f4') to form a possible re-closing lid (9).

14. A blank according to claim 13, **characterized in that** said octagonal portion (11) reproduces the shape of the upper edge (3) of the container and is connected, by means of one (f4') of said flaps, to one (e') of said rectangular trapezium-shaped parts, a respective flap (h) foldable around a respective bend line protruding from the other sides of said octagonal portion e (11), a pre-cut line (22-23) designed to facilitate the removal of a central disk (8') being provided on the inside of said octagonal shape.

15. A blank according to claim 13 or 14 for the production of a hermetic container particularly suitable for containing products in a fluid state, **characterized in that** it further comprises a lining film (40) of plastic material, fixed by points or by lines to the blank (100) and being of such a size as to reach flush with the folding bases (17, 17') of said flaps (f, f3, f', f1', f2', f4') respectively, and to involve the entire inner peripheral surface of the container.

16. A blank according to claim 15, **characterized in that** said lining film (40) can be heat sealed on both sides and is fixed to the blank (100) along a continuous or dotted rectangular track (41) which involves said base (a) and two strips (42, 42') disposed in proximity to the free ends of said trapezoidal portions (c, c'), respectively.

17. A blank according to claim 15 or 16, **characterized in that** it further comprises a membrane (70) consisting of a thin aluminium foil (71) coupled to a thin sheet of low-grammage paper (72), both possibly protected with layers of paint (73, 74), wherein the aluminium (71) or the paper (72) is closely applied to the inside surface of said octagonal portion (11) by means of glue or of thermal adhesives, so that during removal of said disk (8') the membrane (70) yields exactly along said pre-cut lines (22 -23).

18. A blank according to any one of claims 15 to 17, **characterized in that** in one (c) of said trapezoidal parts (c, c') forming the front and the rear walls of the container a pre-cut line (60), substantially U-shaped so as to define a window (m) which is lowered to allow the detachment from the cardboard of said lining film of aluminium (40) for separate waste collection, is formed.

19. A production method for a cardboard container, particularly for solid, granular or powder products, obtained starting from a single blank (100) according to claim 13, said method comprising the following steps:

- inward folding of said tongues (b) around said respective bend lines (12),
- upward folding of said trapezoidal portions (c, c') around said respective bend lines (13, 13'),
- inward rotation of said portions (d, e, d', e'), respectively around the crease lines (14, 15, 14', 15'),
- partial overlapping of said portions (e', e') on said portions (e, e) and fixing by means of said strips (16) of glue or of heat-sealing adhesive, so as to obtain a container body that is open at the top,
- filling the body of the open container with the relative product,
- upward folding at about 90° of said flaps (h) of said octagonal portion (11) having pre-cut lines (22 - 23),
- lowering of the octagonal portion (11) with the flaps (h) facing upwards into the body of the open container, disposing it at such a level that the upper edge thereof coincides with the bend lines (17, 17') of the flaps (f, f) of the blank (100),
- inward folding of said flaps (f, f) and gluing thereof to the corresponding flaps (h) of the octagonal portion (11),
- possible lowering of said lid (9) onto said top closing wall (8).

20. A method according to claim 19, for production of a hermetic container particularly suitable to contain fluid products according to claim 11, **characterized in that** a film (40) of plastic, on both sides heat-sealable material is applied of said blank (100) before folding it, and **in that** a thin membrane (70), consisting of a thin aluminium film coupled with a thin sheet of low-grammage paper, is closely applied to said octagonal portion (11), on the inner surface, by means of glue or of heat sealing.

FIG. 1

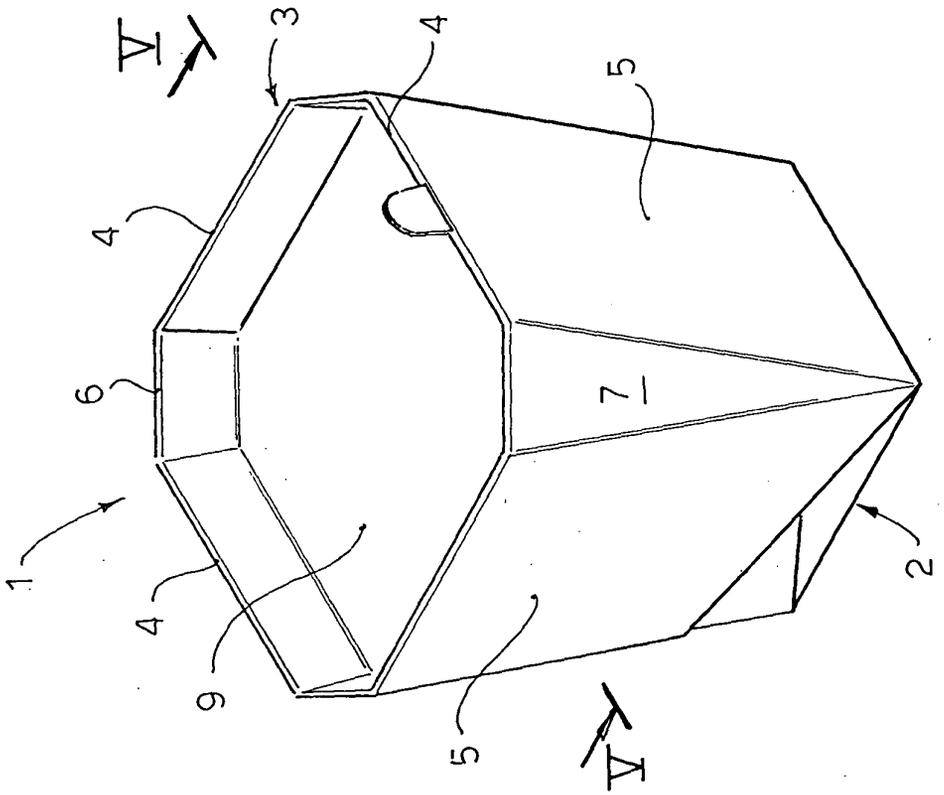


FIG. 2

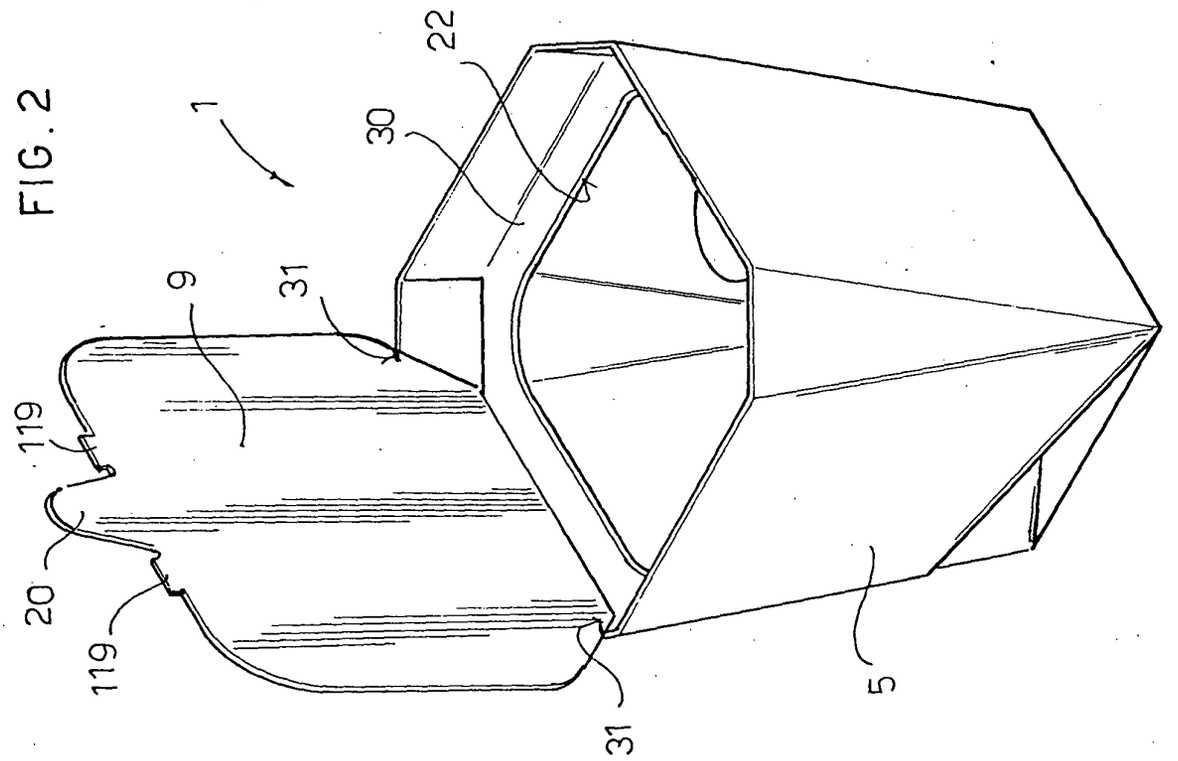
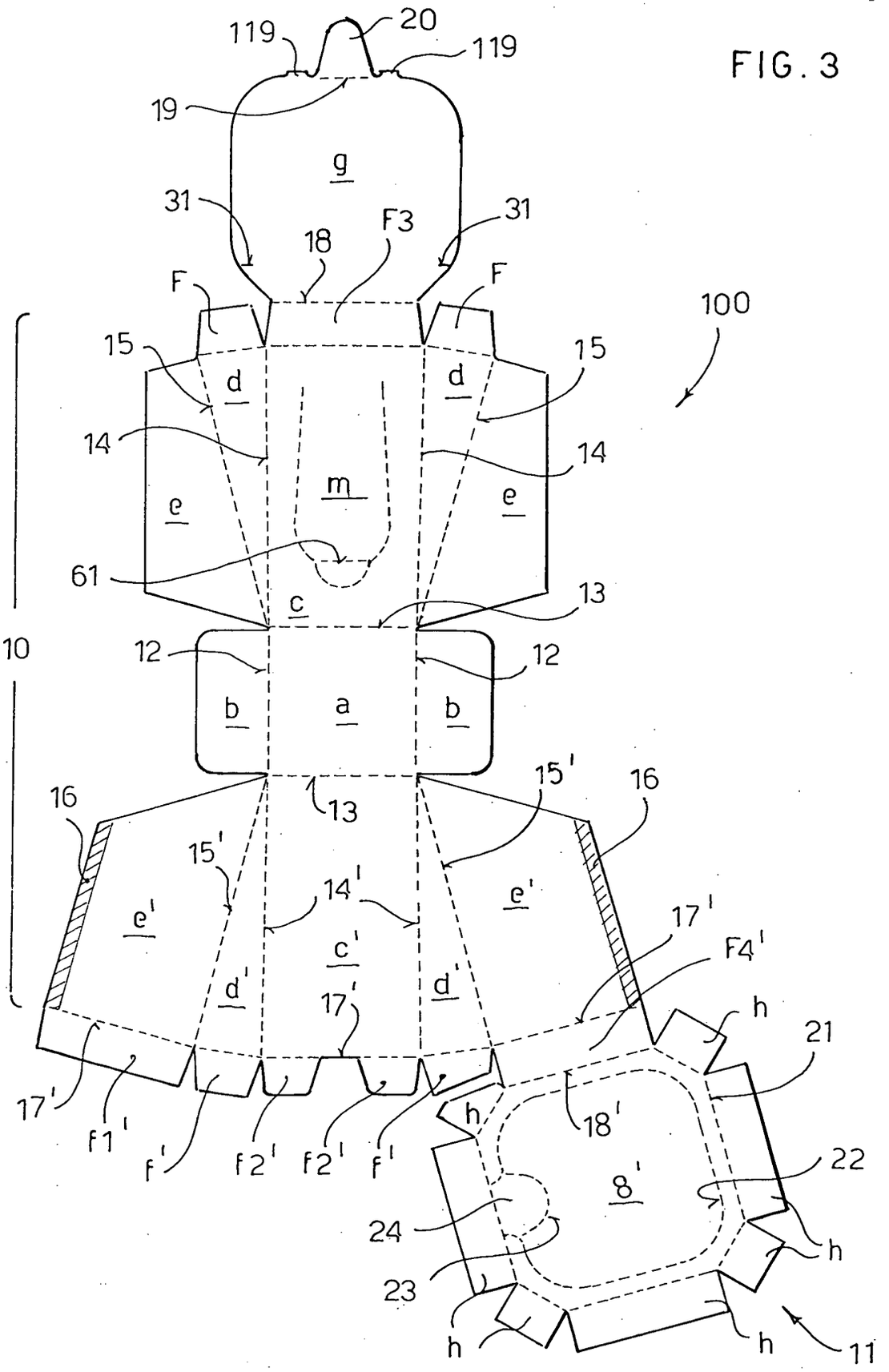


FIG. 3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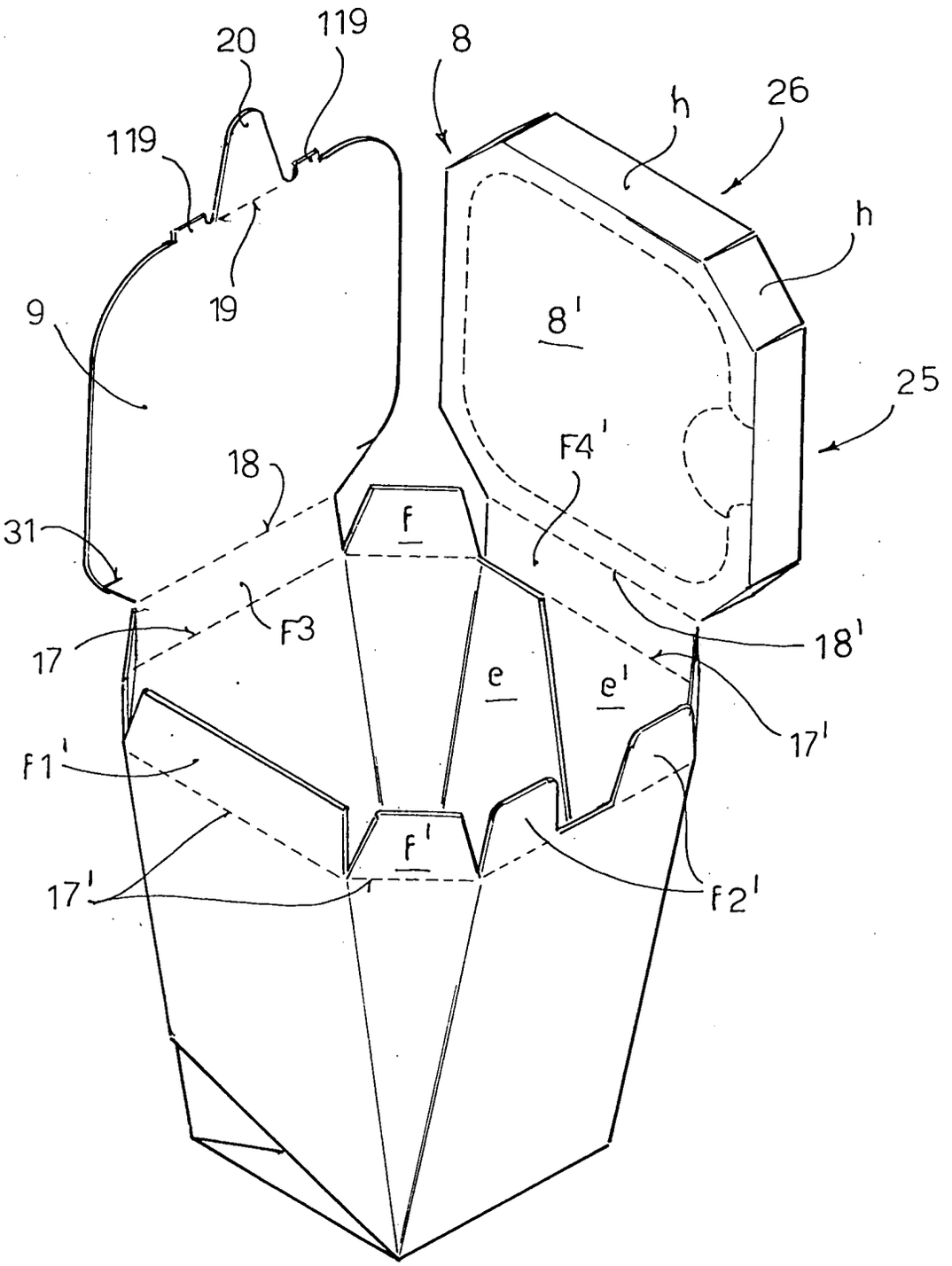

FIG 4

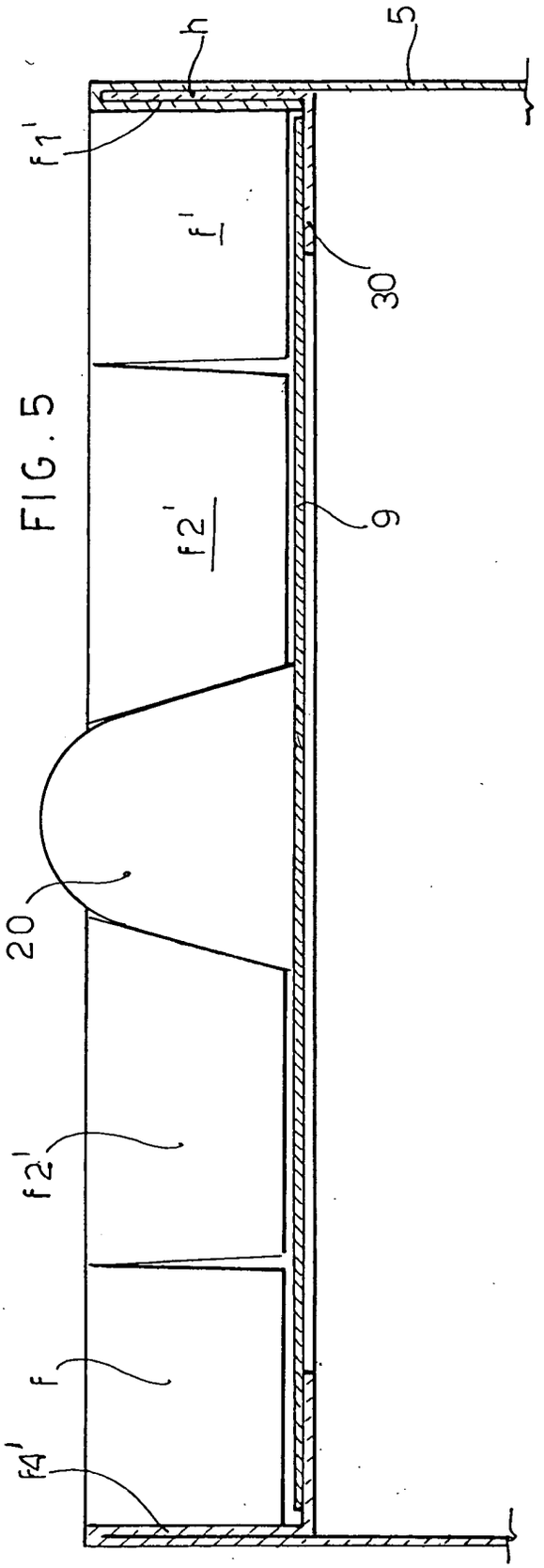

FIG. 5

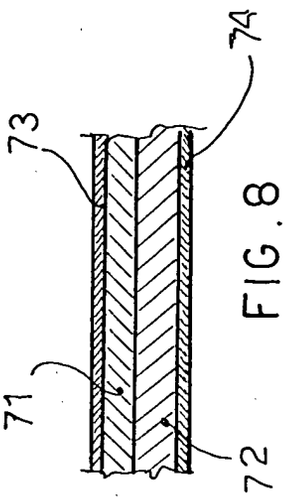

FIG. 8

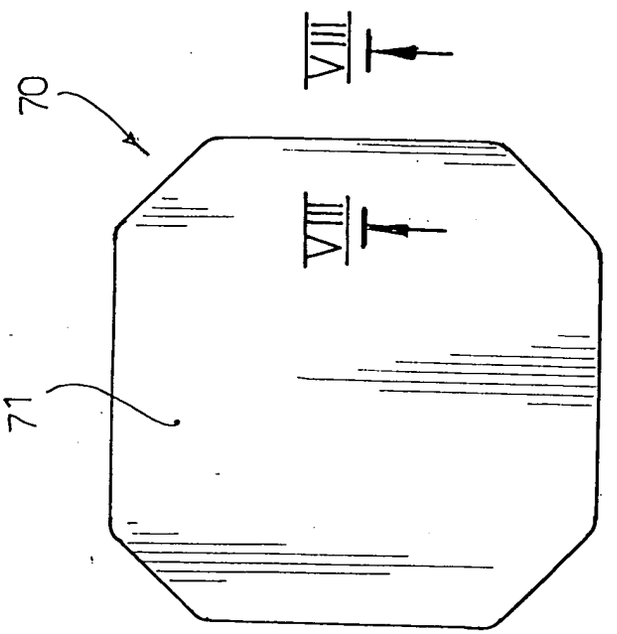

FIG. 7

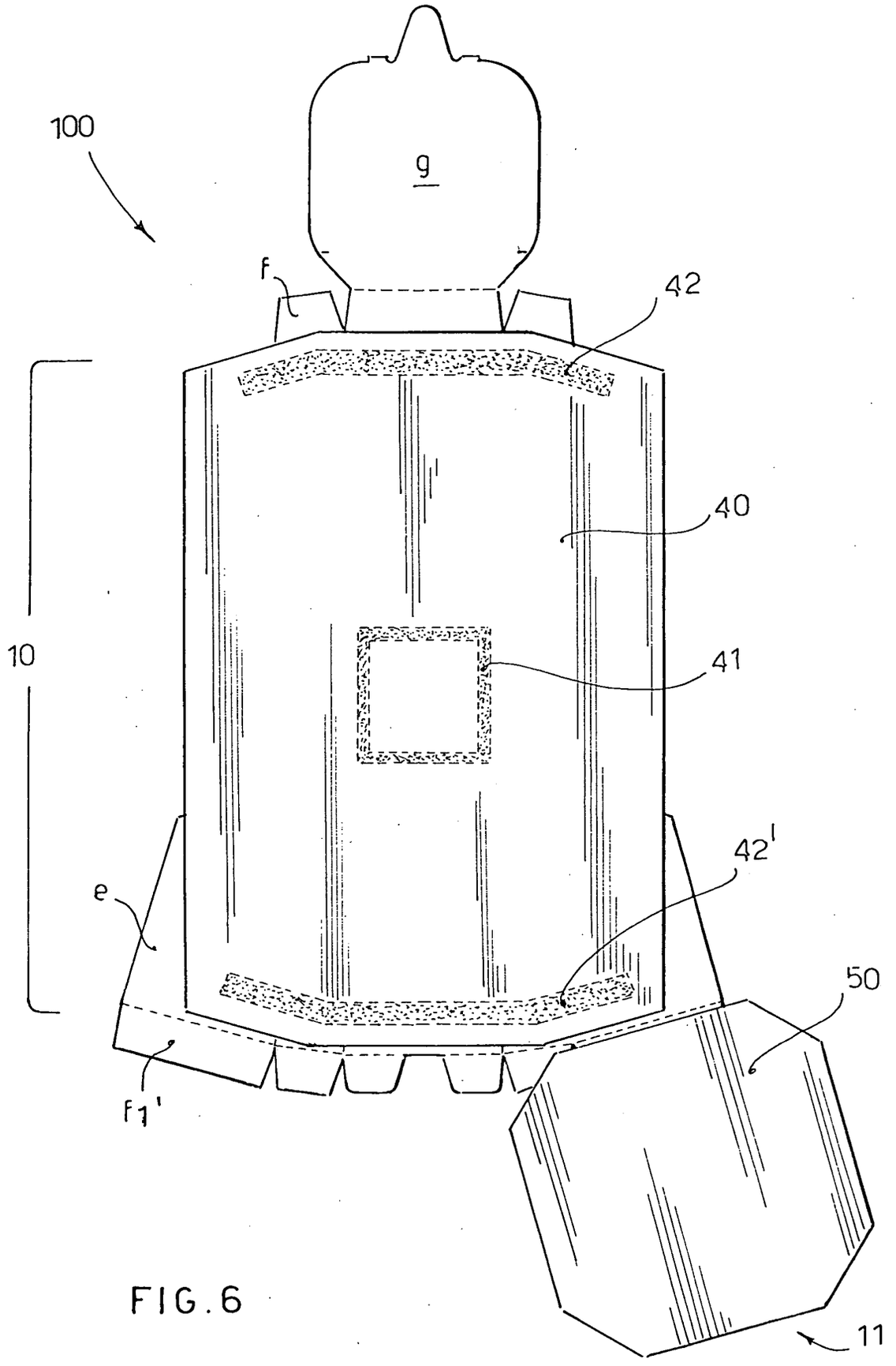

FIG.6