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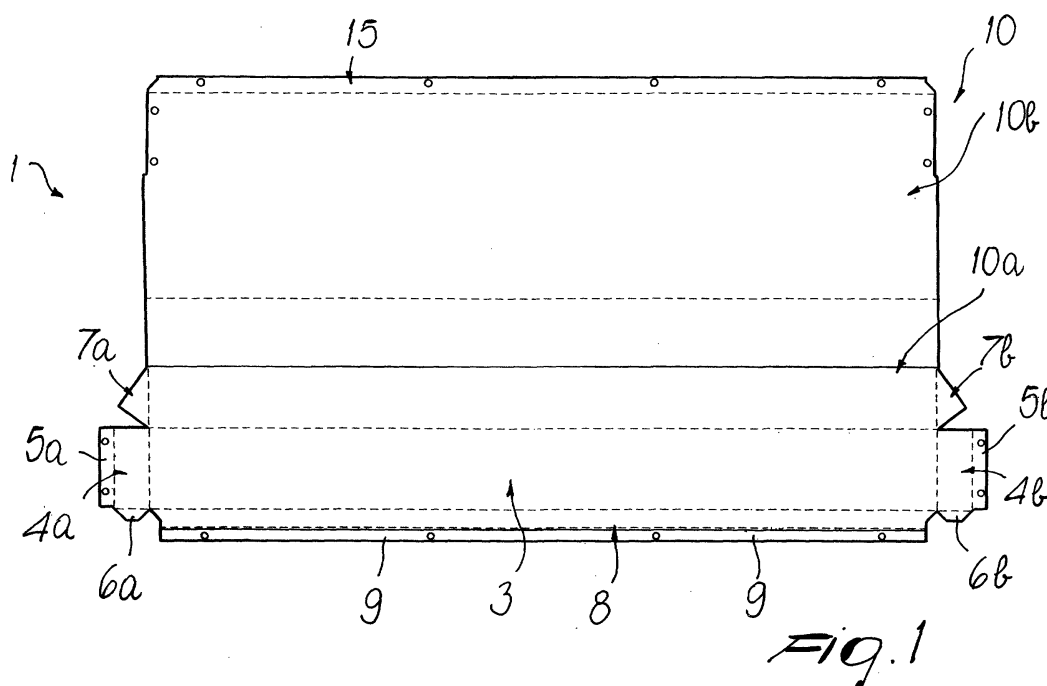
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(54) **Method for obtaining components for furniture, particularly access panels and/or leaves and/or doors, and products thus obtained**

(57) A method for obtaining components for furniture, such as access panels, leaves or doors, comprising a first step for obtaining a flat metal plate (1) that has, in plan view, a shape that is approximately cross-like or T-like, so as to form a flat body (3) provided with one or more projections (4a, 4b, 7a, 7b, 8) that protrude laterally. Then the metal plate is subjected to bending so as to obtain a pair of first (11a, 11b) and second (12a, 12b) lateral wings and a third lower wing (13) whose

edges are arranged proximate to those of the pair of first wings. A fourth wing (10) of the metal plate, which protrudes from the flat body in an opposite position with respect to the third wing, is bent so as to lie on a plane that is preferably oblique with respect to the plane of arrangement of the flat body and then bent further so as to constitute a flap that protrudes approximately in the opposite direction with respect to the third wing and constitutes user grip means.



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Description

[0001] The present invention relates to a method for obtaining components for kitchen furniture, particularly access panels and/or leaves and/or doors, suitable to allow access to a compartment or to an electrical household appliance.

[0002] These access panels, leaves and doors, generically also known as fronts, are usually suitable for temporarily closing, for example, a compartment of a refrigerator, an oven, a chest of drawers or a cabinet.

[0003] Currently, it is known in particular to use metal fronts in the field of kitchen furniture, especially in furniture for kitchens for catering and also for bar counters.

[0004] Currently commercially available known types of front essentially comprise a flat box-like body, constituted by a plurality of sheet-like elements that are mutually welded or riveted, for example hinged at the rear to an internal frame of the unit of kitchen furniture, or slidably associated with the front surface of a drawer or of a door of said unit.

[0005] At least one handle, suitable to allow the user to open the front or drawer or door, is coupled laterally or in an upper region to such flat body.

[0006] The interconnection between the flat body and the handle occurs by mechanical means of a known type, such as rivets or screws, or by gluing and/or welding.

[0007] The main drawback of these known types of front is that they are rather complicated to manufacture and therefore also quite expensive.

[0008] This is due substantially to the need to obtain individual components that have to be assembled, and this entails operations for manufacturing, assembling and fixing said components and the handle to the flat box-like body and the resulting front to the kitchen unit.

[0009] These drawbacks are particularly conspicuous when it is necessary to provide a front that has high thermal insulation characteristics, for example for use in combination with a refrigeration cell or system.

[0010] Another drawback of all known types of front is that the interstices usually formed between the handle and the flat body lead to the formation of bacterial beds caused by the stagnation of moisture or water mixed, for example, with food residues.

[0011] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited known art, by providing a method that allows to obtain a front, particularly for kitchen units, that can be manufactured simply and rapidly so as to ensure lower production costs.

[0012] Within this aim, an object of the invention is to provide a method that allows to produce a front that has optimum strength and durability characteristics, limiting the presence of interstices gaps that compromise the level of hygiene during use.

[0013] Another object is to provide a component that can be manufactured even by unspecialized personnel

and with the use of machines that are simple, cheap and easily commercially available.

[0014] Another object is to provide a method that, by reducing the manufacturing time of an individual front, allows to increase output and at the same time reduce operating costs.

[0015] Another object is to provide a component that is structurally simple and can be associated easily and rapidly with the frame, drawer or internal door.

[0016] This aim and these and other objects that will become better apparent hereinafter are achieved by a method for obtaining components for furniture, such as access panels and/or leaves and/or doors, characterized in that it comprises, even in a different order, the following steps:

- obtaining a flat metal plate that has, in plan view, a shape that is approximately cross-like or T-like and forms a flat body provided with one or more projections that protrude laterally;
- an optional first bending of said metal plate so as to obtain a pair of first lateral wings that are approximately L-shaped;
- a second bending of said pair of first lateral wings;
- a third bending of said metal plate so as to obtain a pair of second lateral wings;
- an optional fourth bending so as to constitute a third lower wing, whose edges are arranged proximate to the edges of said pair of first wings;
- a fifth bending, along a plane that is preferably oblique with respect to the plane of arrangement of said flat body, so as to constitute a fourth wing that protrudes from the flat body in the opposite position with respect to the third wing;
- a sixth bending of the free end of the fourth wing, so as to constitute a fin that protrudes approximately in the same direction as the third wing;
- a further seventh bending of the fourth wing, so as to obtain a flap that is constituted by a double layer of the metal plate and protrudes approximately in the opposite direction with respect to the third wing;
- an optional mutual fixing of the adjacent and/or superimposed edges of said wings by way of mechanical means of a known type.

[0017] The method described above is suitable to obtain a component for pieces of furniture, particularly an access panel or a leaf or a drawer, that is characterized in that said component is formed as a single part that has a box-like shape and from the top of which user grip means, such as a flap acting as a handle, protrude at at least one perimetric edge.

[0018] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a plan view of a first metal plate before the bending steps for obtaining a first front; Figures 2 and 3 are two rear perspective views of the first front respectively during production and after the last bending operation; Figures 4 to 6 are respectively a rear view, a bottom view and a side view of the first front; Figure 7 is a plan view of a second metal plate before the bending steps, suitable to obtain a second front; Figures 8 and 9 are two rear perspective views of the second front respectively during production and after the last bending operation; Figures 10 to 12 are respectively a rear view, a bottom view and a side view of the second front.

[0019] A method for obtaining components for pieces of furniture, such as for example an access panel, a leaf or a door, hereinafter generally referenced as fronts, usable in particular for closing compartments temporarily, is described with reference to Figures 1 to 6.

[0020] In particular, in Figure 1 the reference numeral 1 designates a metal plate that is advantageously flat and is shaped so as to constitute a blank for obtaining a front, designated by the reference numeral 2, preferably for kitchen units.

[0021] The flat metal plate 1 is provided so that its plan shape is advantageously approximately cross-like or T-like, and forms a flat body, designated by the reference numeral 3, that has one or more laterally protruding projections.

[0022] In the embodiment illustrated here merely by way of example, the metal plate 1 has two first projections 4a and 4b that protrude laterally from the flat body 3, in a mirror-symmetrical position with respect to the longitudinal central axis of the metal plate 1.

[0023] The first projections 4a and 4b are approximately rectangular and have first free ends 5a and 5b that protrude laterally and second free ends 6a and 6b that protrude downward.

[0024] Two second lateral projections, designated by the reference numerals 7a and 7b, also protrude from the metal plate 1 above the two first projections 4a and 4b and are also arranged mirror-symmetrically with respect to the longitudinal central axis of the metal plate 1.

[0025] The second projections 7a and 7b are approximately triangular, with a free vertex that is orientated outward.

[0026] A third projection, designated by the reference numeral 8, protrudes downward from the flat body 3, is advantageously trapezoidal and has a third free end 9 that is preferably rectangular.

[0027] In the opposite position with respect to the third projection 8, a fourth projection 10 protrudes from the flat body 3 along its entire width and has an extension that is usually greater than the extension of the flat body 3.

[0028] The method for obtaining the front 2 provides

for performing a first bending of the first free ends 5a and 5b of the two first projections 4a and 4b so as to obtain two first lateral wings, designated by the reference numerals 11a and 11b, which are approximately L-shaped.

[0029] At the same time, the two second lower free ends 6a and 6b are subjected to bending along an axis that is perpendicular to the longitudinal central axis, so that said second free ends are arranged adjacent and at right angles to the first free ends 5a and 5b.

[0030] It is then possible to perform a second bending of the lateral edges of the metal plate 1, so as to bend both the two first projections 4a and 4b and the two second projections 7a and 7b at a same angle of for example approximately 90°.

[0031] The two second projections 7a and 7b thus constitute two second lateral wings, designated by the reference numerals 12a and 12b, which protrude above the first lateral wings 11a and 11b.

[0032] A subsequent step provides for a fourth bending of the metal plate 1, which is performed at the third lower projection 8 and at the third free end 9 thereof, so as to obtain a third lower wing 13 that protrudes approximately at right angles to the flat body 3.

[0033] The lateral edges 14a and 14b of the third wing 13 are thus arranged approximately at the lower edges of the two first wings 11a and 11b.

[0034] As an alternative to the bending sequence described above, it is possible to first bend the third projection 8 and simultaneously the two second ends 6a and 6b, and then perform the two lateral bending operations that are suitable to obtain the two first wings 11a and 11b and second wings 12a and 12b.

[0035] This last procedure is in fact usually simpler and faster to perform.

[0036] Another step of the method described here provides for the bending of the fourth projection 10 along a plane that is advantageously oblique to the plane of arrangement of the flat body 3, followed by a further bending of said fourth projection in an opposite direction, so as to divide the fourth projection 10 into a first oblique portion 10a and a second portion 10b that is approximately co-planar to the plane of arrangement of the first free ends 5a and 5b of the two first wings 11a and 11b, as shown in Figure 2.

[0037] Figure 2 also shows that a fourth free end, designated by the reference numeral 15, of the fourth projection 10 is subjected to bending at an angle of approximately 90°, so as to protrude approximately in the same direction as the third wing 13.

[0038] Then a further bending of the second portion 10b of the fourth projection 10 is performed so as to obtain a flap, designated by the reference numeral 16 in the figures, that is advantageously arc-shaped and protrudes approximately in the opposite direction with respect to the third wing 13.

[0039] The arc-like flap 16 is constituted by a double layer of metal plate, since it is formed by means of a

double bending of the second portion 10b.

[0040] Such bending is furthermore suitable to form a back wall 17 for the front 2; the back wall 17 is constituted by the part of the second portion 10b that is adjacent to the fourth free end 15, which as a consequence of said last bending is arranged at right angles to the flat body 3.

[0041] In particular, the fourth free end 15 of the fourth projection 10 and the third wing 13 of the third projection 8 mutually overlap, so that they can be mutually associated by mechanical means of a known type, such as for example rivets 18.

[0042] In this manner one obtains a component for pieces of furniture 1, such as a front that can be used for example as an access panel or leaf or drawer, which is formed monolithically by simple operations for bending a metal plate.

[0043] The front 1 therefore has a box-like configuration, from the top of which user grip means, such as a handle constituted by the arc-like flap 16, protrude at the front.

[0044] It has thus been found that the invention has achieved the intended aim and objects, a method having been devised that allows to provide a front, particularly usable for kitchen units, that can be produced rapidly and very cheaply, considerably reducing production and management costs.

[0045] This method can be performed even by unspecialized personnel and by using machines that are simple and easily commercially available, such as plate bending machines and riveting machines.

[0046] With the method of the invention it is possible to obtain fronts that have a chosen shape and preset dimensions: such fronts can be closed or open at the rear, so as to be able to perform, for example, the insertion or foaming of insulating material.

[0047] The resulting fronts have high characteristics of strength and durability over time: moreover, since they have no interstices, they allow to maintain an optimum level of hygiene during use.

[0048] The method is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0049] Thus, for example, it is possible to provide a method that is suitable to obtain a front 102 that can be used to close temporarily refrigeration cells or compartments and therefore has high thermal insulation characteristics.

[0050] In particular, in Figure 7 the reference numeral 101 designates a metal plate that is advantageously flat and is provided so that it has, in plan view, an advantageously cross-like or T-like shape, so as to form a flat and rectangular body, designated by the reference numeral 103, that has one or more laterally protruding projections.

[0051] In the embodiment shown in Figures 7 to 12, the metal plate 101 has two first projections 104a and 104b that protrude laterally from the flat body 103, in a

position that is mirror-symmetrical with respect to the longitudinal central axis of the metal plate 101.

[0052] The first projections 104a and 104b are approximately rectangular and are provided laterally with first free ends 105a and 105b and, in a lower region, with second free ends 106a and 106b that are polygonal.

[0053] Two second lateral projections, designated by the reference numerals 107a and 107b, also protrude from the metal plate 101 above the two first projections 104a and 104b, are also arranged mirror-symmetrically with respect to the longitudinal central axis of the metal plate 101, and are approximately trapezoidal.

[0054] An advantageously trapezoidal third projection, designated by the reference numeral 108, protrudes downward from the flat body 103 and has a third free end 109 that is preferably rectangular.

[0055] A fourth projection 110 protrudes from the flat body 103 along its entire width opposite the third projection 108 and has an extension that is usually greater than the extension of the flat body 103.

[0056] The method for obtaining the front 102 provides for a double bending of the third free end 109 of the third lower projection 108 along an axis that is perpendicular to the longitudinal central axis of the metal plate 101.

[0057] The third projection 108 can then be subjected to bending along an axis that is parallel to the preceding one and in the same direction, so as to obtain a third wing 113 that is approximately C-shaped and protrudes below the flat body 103.

[0058] The bending of the second lower free ends 106a and 106b of the two first projections 104a and 104b can be performed advantageously simultaneously with the bending of the third projection 108 and therefore along the same axis as said third projection.

[0059] The method further provides for a double bending of the first free ends 105a and 105b of the two first projections 104a and 104b and for the similar bending of the free end of the second projections 107a and 107b.

[0060] Then the two first projections 104a and 104b and the second projections 107a and 107b are bent along an axis that is advantageously parallel to the longitudinal central axis, so that the second free ends 106a and 106b, bended earlier, overlap the lateral edges 114a and 114b of the third wing 113, so that they can be optionally mutually associated.

[0061] Another step of the method described here provides for the bending of the fourth projection 110 along a plane that is advantageously oblique with respect to the plane of arrangement of the flat body 103, followed by a further bending, in the same direction, of the fourth free end, designated by the reference numeral 115, of the fourth projection 110, so that the fourth free end 115 protrudes approximately in the same direction as the third wing 113.

[0062] Then the fourth projection 110 is bent again so

as to obtain a flap, designated by the reference numeral 116 in the figures, that is advantageously arc-like and protrudes approximately in the opposite direction with respect to the third wing 113.

[0063] The arc-like flap 116 is constituted by a double layer of metal plate, since it is provided by a double bending of the fourth projection 110.

[0064] A component for furniture, such as a front 101, is thus obtained that can be used for example as an access panel for a refrigerator drawer or compartment, since plastic material having good thermal insulation characteristics, such as for example expanded polyurethane, is injected into the cavity designated by the reference numeral 120 in Figure 9 during mounting onto the frame or inner door.

[0065] Therefore, a front that is formed monolithically by means of simple operations for bending a metal plate is obtained also with the method described above.

[0066] The materials used, as well as the dimensions that constitute the individual components of the invention, may of course be more pertinent according to specific requirements.

[0067] The various means for performing certain different functions need not certainly coexist only in the described embodiment but may also be present per se in many embodiments, including ones that are not illustrated or described.

[0068] The disclosures in Italian Patent Application No. TV2002A000012 from which this application claims priority are incorporated herein by reference.

[0069] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A method for obtaining components for furniture, such as access panels and/or leaves and/or doors, **characterized in that** it comprises, even in a different order, the following steps:
 - obtaining a flat metal plate that has, in plan view, a shape that is approximately cross-like or T-like and forms a flat body provided with one or more projections that protrude laterally;
 - an optional first bending of said metal plate so as to obtain a pair of first lateral wings that are approximately L-shaped;
 - a second bending of said pair of first lateral wings;
 - a third bending of said metal plate so as to obtain a pair of second lateral wings;
 - an optional fourth bending so as to constitute a

third lower wing, whose edges are arranged proximate to the edges of said pair of first wings;

- a fifth bending, along a plane that is preferably oblique with respect to the plane of arrangement of said flat body, so as to constitute a fourth wing that protrudes from said flat body in the opposite position with respect to said third wing;
- a sixth bending of the free end of said fourth wing, so as to constitute a fin that protrudes approximately in the same direction as said third wing;
- a further seventh bending of said fourth wing, so as to obtain a flap that is constituted by a double layer of said metal plate and protrudes approximately in the opposite direction with respect to said third wing;
- an optional mutual fixing of the adjacent and/or superimposed edges of said wings by way of mechanical means of a known type.

2. The method according to claim 1, **characterized in that** said metal plate is provided so that it has two first projections that protrude laterally from said flat body in a mirror-symmetrical position with respect to the longitudinal central axis of said metal plate.
3. The method according to claim 1, **characterized in that** said metal plate is provided so as to have two second lateral projections that are arranged mirror-symmetrically with respect to the longitudinal central axis of said metal plate.
4. The method according to claims 1, 2 and 3, **characterized in that** said two second projections protrude from said metal plate above said two first projections.
5. The method according to one or more of the preceding claims, **characterized in that** said first projections are approximately rectangular, first free ends protruding laterally from said projections and being rectangular or trapezoidal.
6. The method according to one or more of the preceding claims, **characterized in that** said first projections are rectangular, second trapezoidal free ends protruding downward from said projections.
7. The method according to one or more of the preceding claims, **characterized in that** said second projections are trapezoidal or triangular, with a free vertex that is directed outward.
8. The method according to claim 1, **characterized in that** a third projection protrudes downward from said flat body, is rectangular or trapezoidal, and has

a third free end that is rectangular.

9. The method according to claim 1, **characterized in that** a fourth rectangular projection protrudes upward from said flat body along its entire width. 5
10. The method according to claims 1 and 9, **characterized in that** said metal plate is provided so that the length of said fourth projection is usually proximate to, or greater than, the length of said flat body. 10
11. The method according to claim 1, **characterized in that** said first bending is performed along two axes that are approximately parallel to the longitudinal central axis of said metal plate and pass along said two first projections. 15
12. The method according to claim 1, **characterized in that** said first bending arranges said two first ends approximately at right angles to said two first projections, so as to constitute said two first lateral wings. 20
13. The method according to claim 1, **characterized in that** said second bending is performed advantageously along two axes that are parallel to the longitudinal central axis of said metal plate, so as to arrange said first free ends of said first projections on the same plane of arrangement, which is approximately parallel to the plane of arrangement of said flat body. 25 30
14. The method according to claim 1, **characterized in that** said second and third bending operations are performed simultaneously and along the same pair of axes. 35
15. The method according to claim 1, **characterized in that** said fourth bending of said metal plate is performed, along an axis that is perpendicular to the longitudinal central axis of said metal plate, at said third lower projection, so as to obtain said third wing. 40
16. The method according to claims 1 and 15, **characterized in that** said fourth bending affects also said third free end of said third projection, so that said third projection is approximately L-shaped. 45
17. The method according to claims 1, 6 and 15, **characterized in that** said fourth bending affects said two second free ends of said two first projections, so as to provide an approximately L-shaped configuration of said first projections. 50
18. The method according to one or more of the preceding claims, **characterized in that** said fifth bending is performed at said fourth projection, so as to constitute said fourth wing, which is provided 55

with a first oblique portion and with a second portion that lies on a plane that is parallel to said flat body.

19. The method according to claim 1, **characterized in that** said sixth bending of the end of said fourth projection is performed along an arc of approximately 90°. 5
20. The method according to claim 1, **characterized in that** said seventh bending, performed at said second portion of said fourth projection, is suitable to provide an arc-like shape on said flap. 10
21. The method according to one or more of the preceding claims, **characterized in that** said seventh bending is suitable to provide a back wall for said furniture component, said back wall being constituted by the part of said second portion of said fourth projection that lies between said flap and said fin or fourth free end. 15
22. The method according to claims 1 and 21, **characterized in that** said fourth free end is arranged, following said seventh bending, approximately at right angles to said flat body, adjacent to or superimposed on said third free end of said third projection. 20
23. The method according to claims 1 and 22, **characterized in that** said third and fourth free ends mutually overlap, so as to allow interconnection by said known mechanical means, such as rivets. 25
24. A furniture component, particularly an access panel or a leaf or a drawer, **characterized in that** said component is formed as a single part that has a box-like configuration, user grip means protruding at at least one perimetric edge. 30
25. The furniture component according to claim 24, **characterized in that** said user grip means are constituted by a double layer of metal plate. 35
26. The furniture component according to one or more of claims 24-25, **characterized in that** it has at least two lateral wings that constitute the lateral surfaces of said component and are obtained monolithically with the front surface and/or with the rear surface of said component. 40
27. The furniture component according to one or more of claims 24-26, **characterized in that** it has at least one lower wing that constitutes the lower surface of said component and is obtained monolithically with the front surface and/or with the rear surface of said component. 45
28. The furniture component according to one or more of claims 24-27, **characterized in that** it has a first 50

lower wing and a second lower wing, which are mutually associated by way of mechanical means of a known type and are obtained respectively monolithically with the front surface and with the rear surface of said component.

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29. The furniture component according to one or more of claims 24-28, **characterized in that** said grip means, constituted by said flap or handle, are obtained monolithically with said front and rear surfaces of said component.

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30. The furniture component according to one or more of claims 24-29, **characterized in that** said lateral and/or lower wings have free ends that protrude approximately at right angles and allow to stiffen the structure and/or provide a mutual connection.

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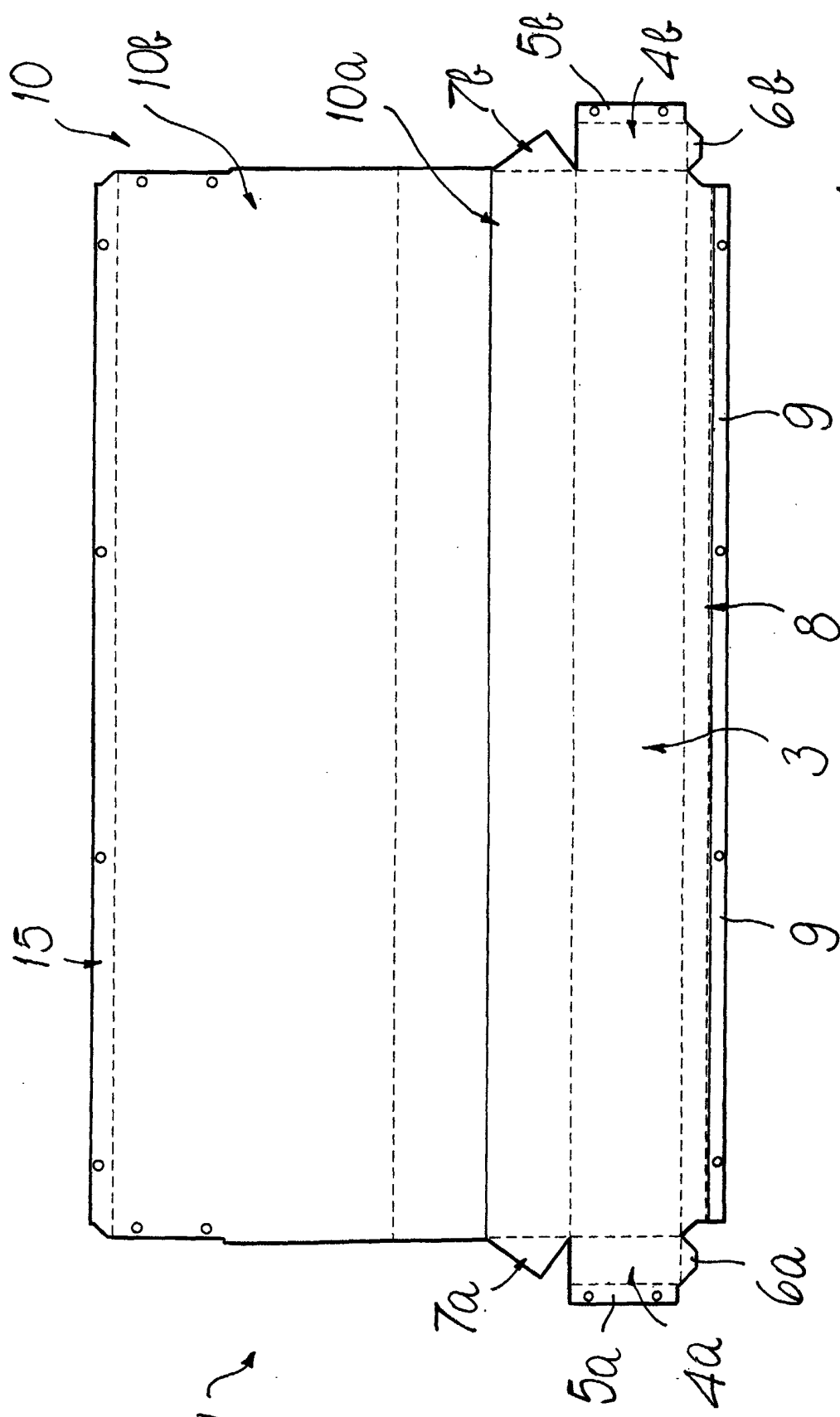
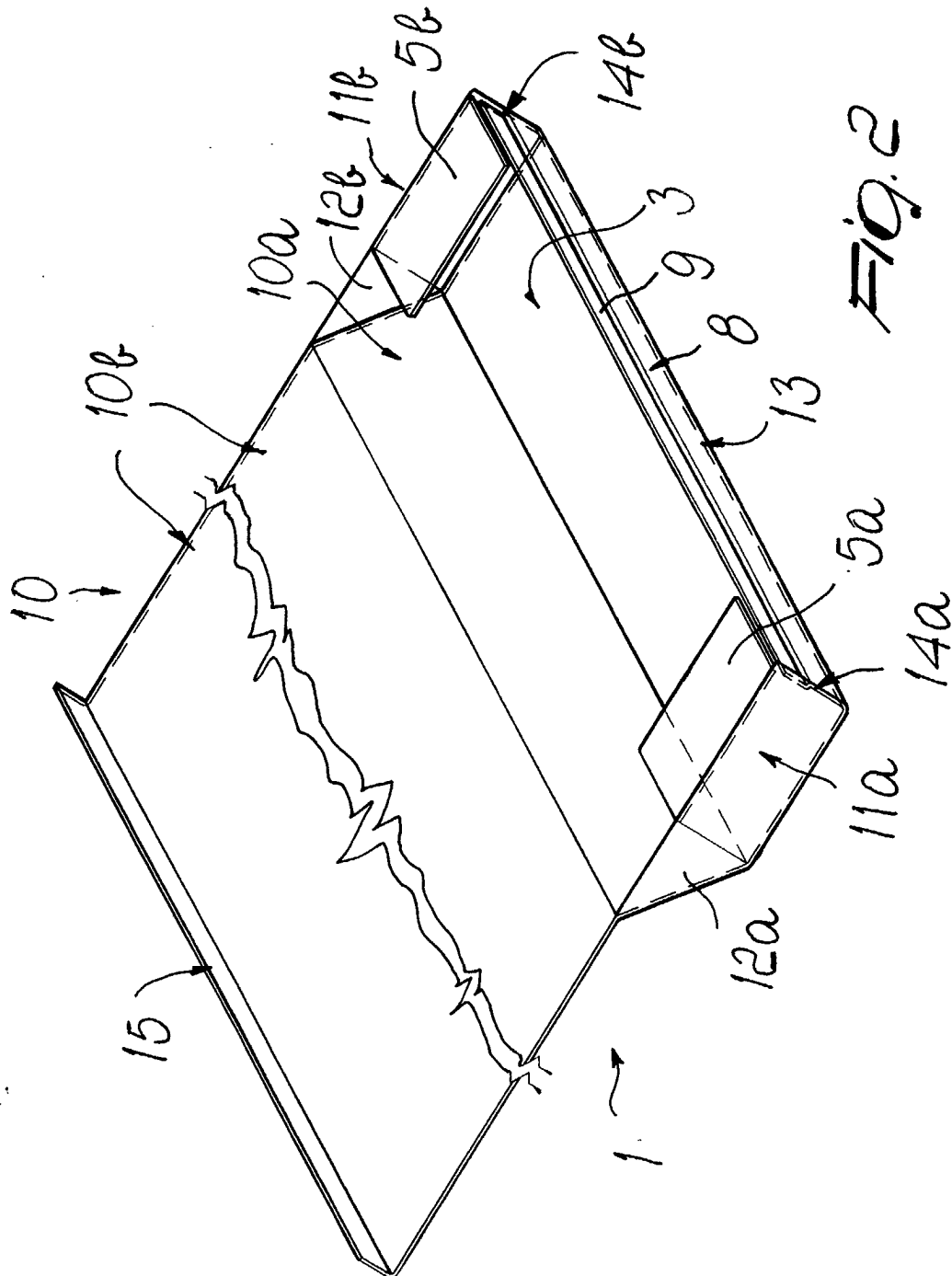


Fig. 1



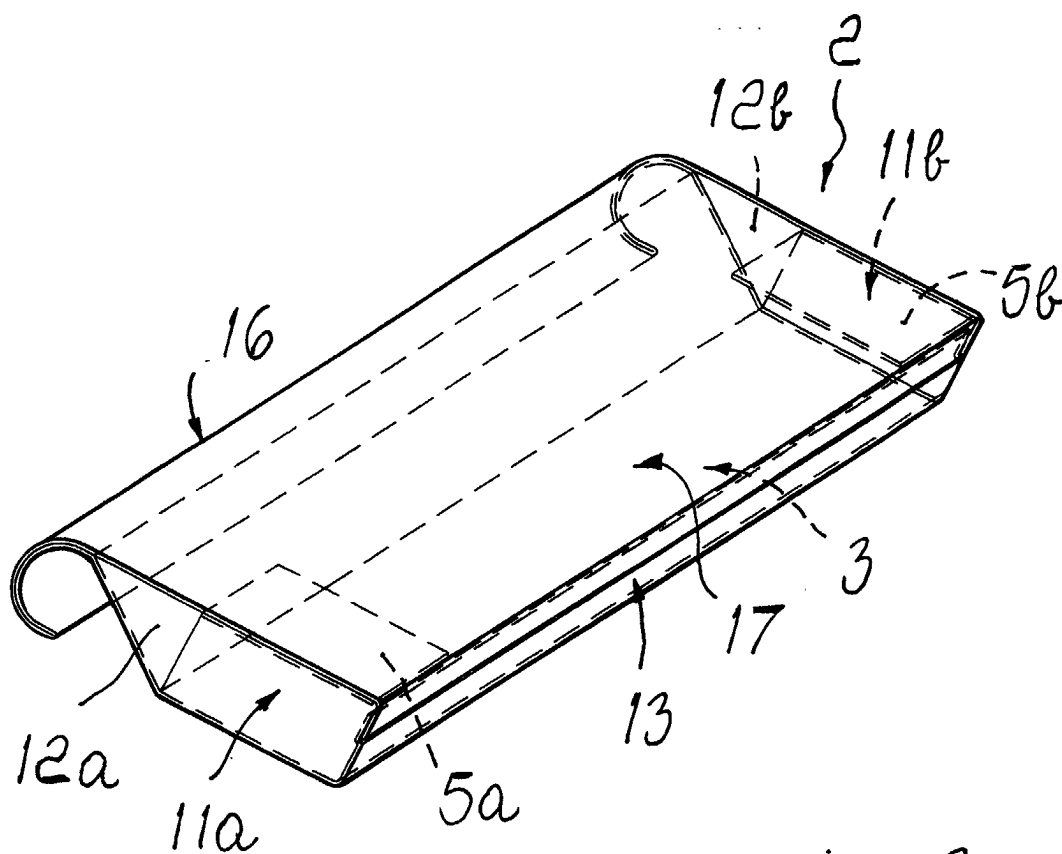


FIG. 3

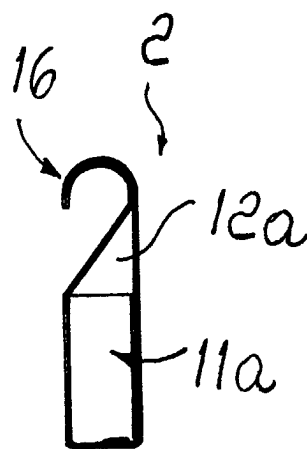


FIG. 6

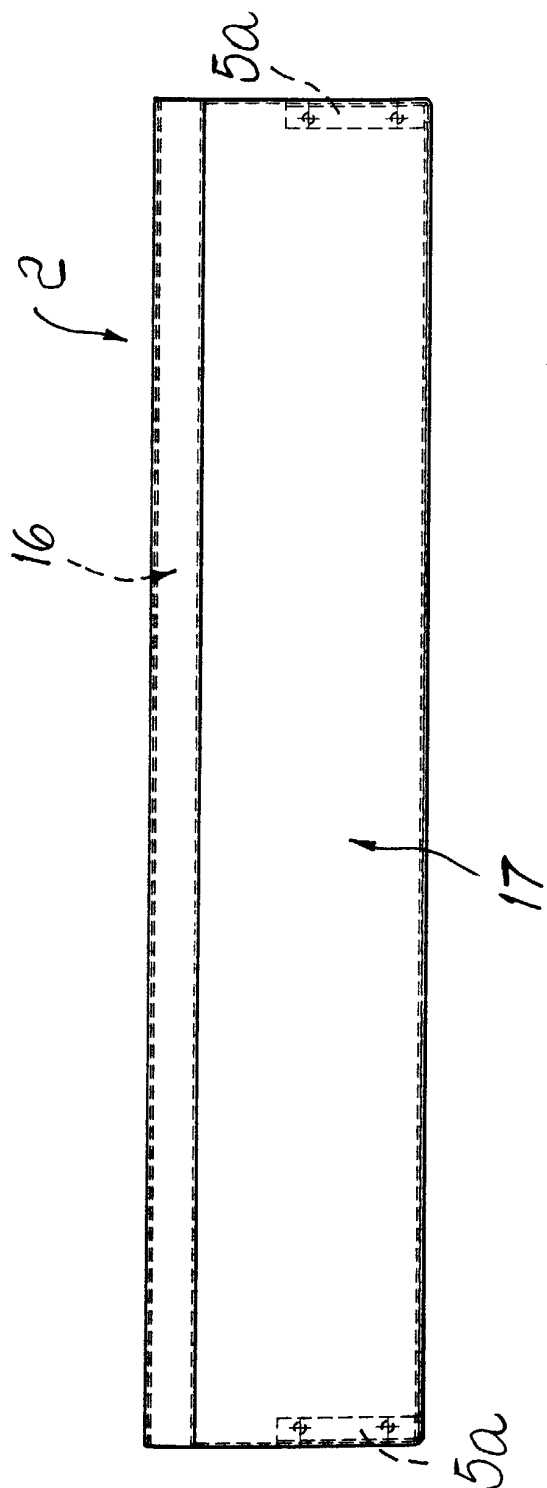


Fig. 4

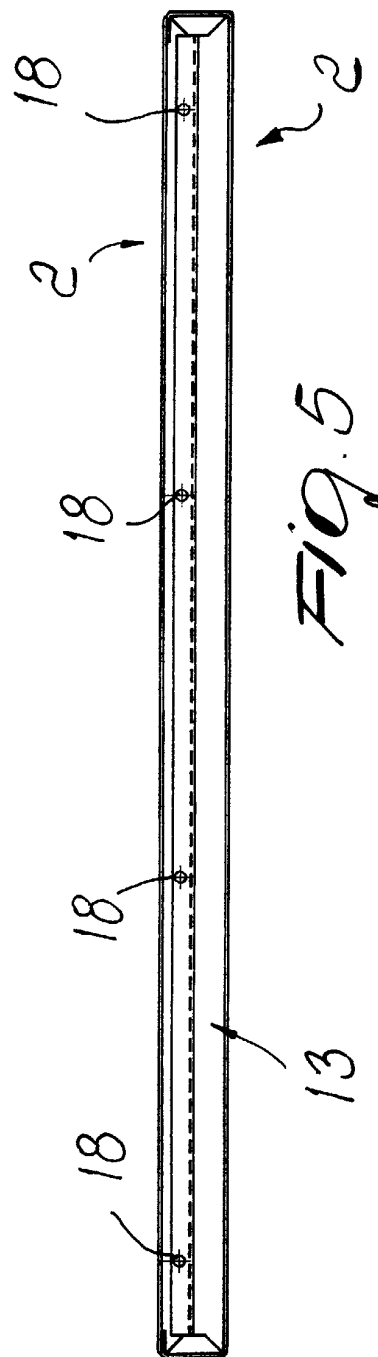
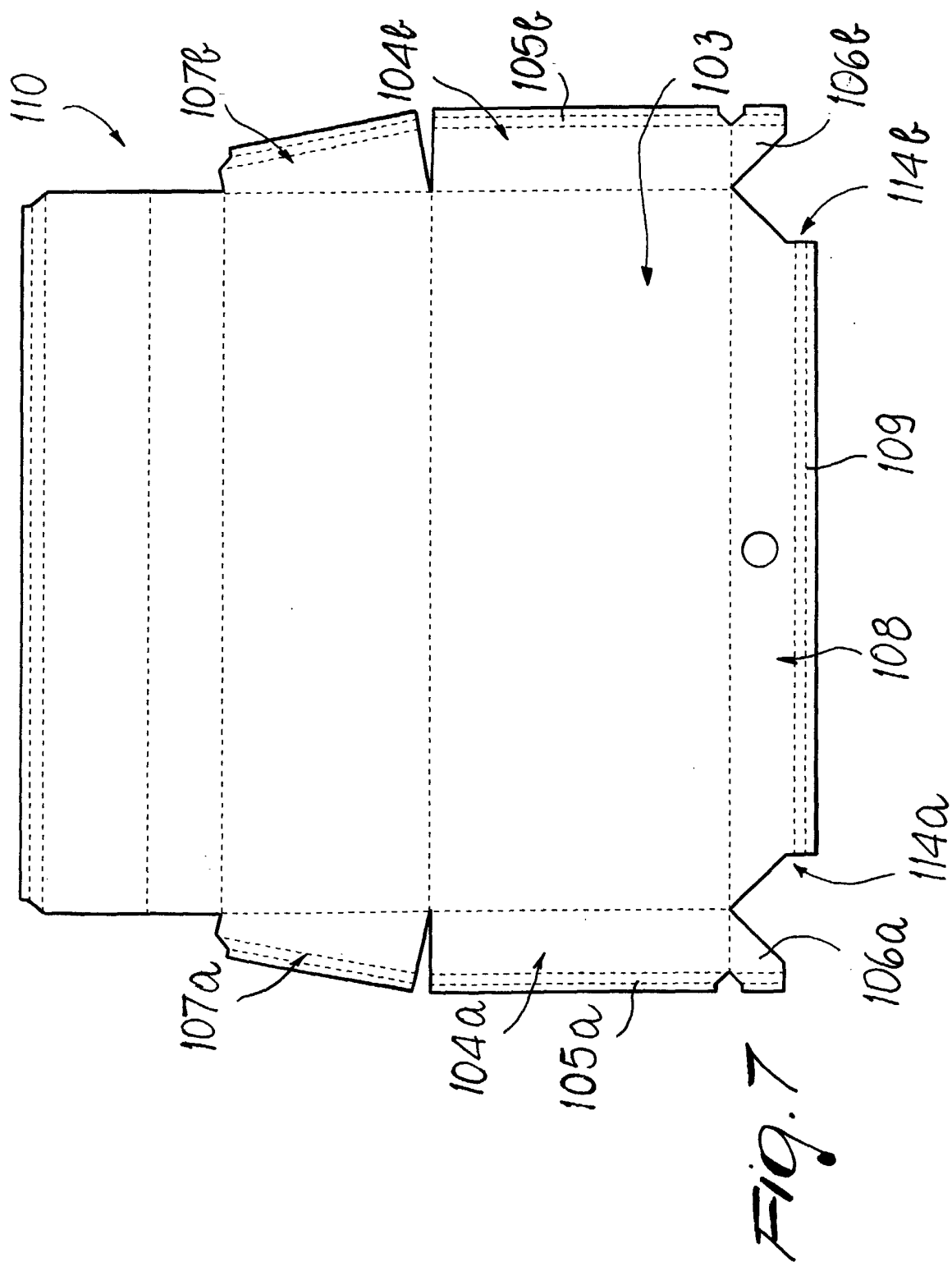
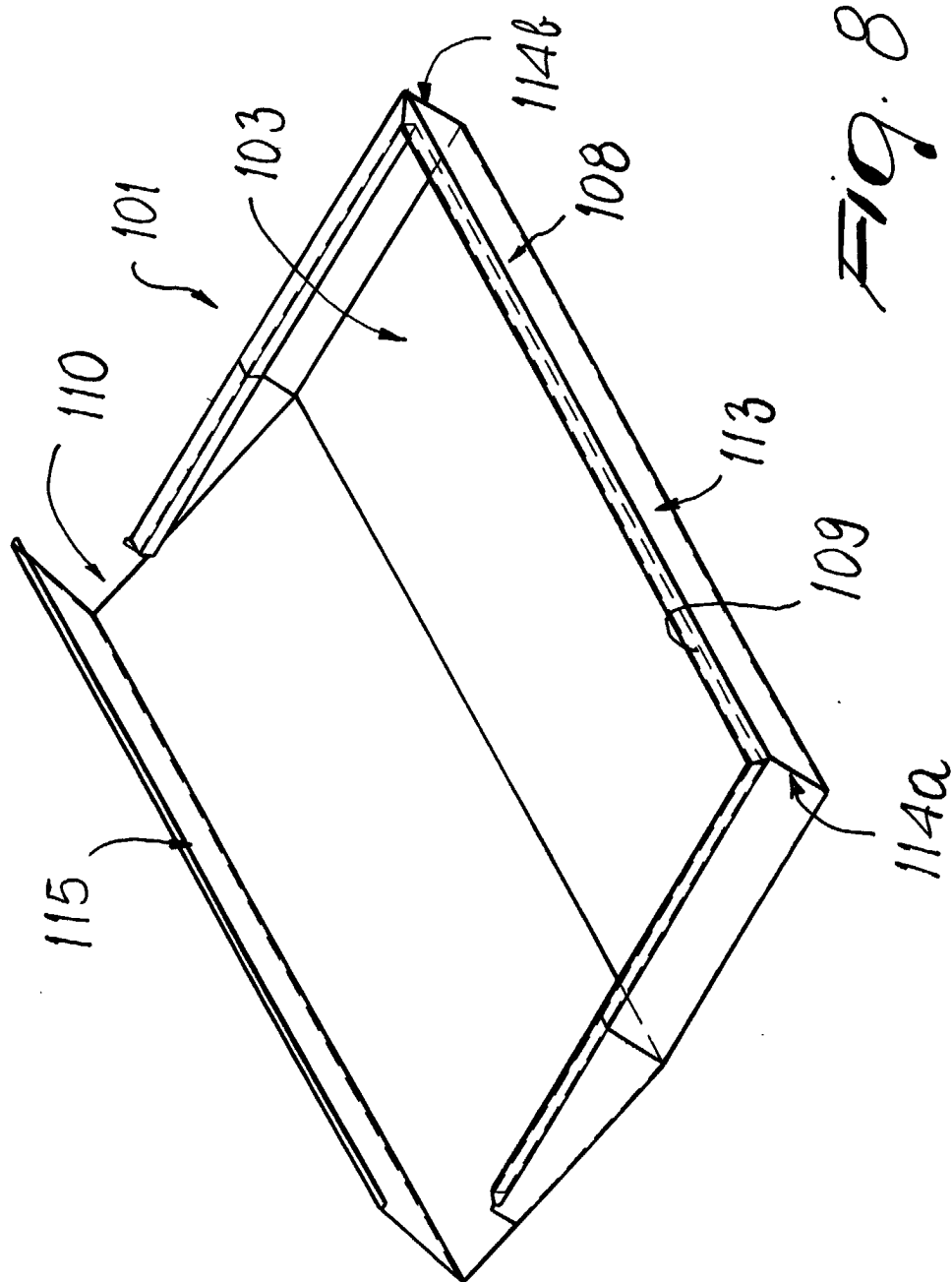
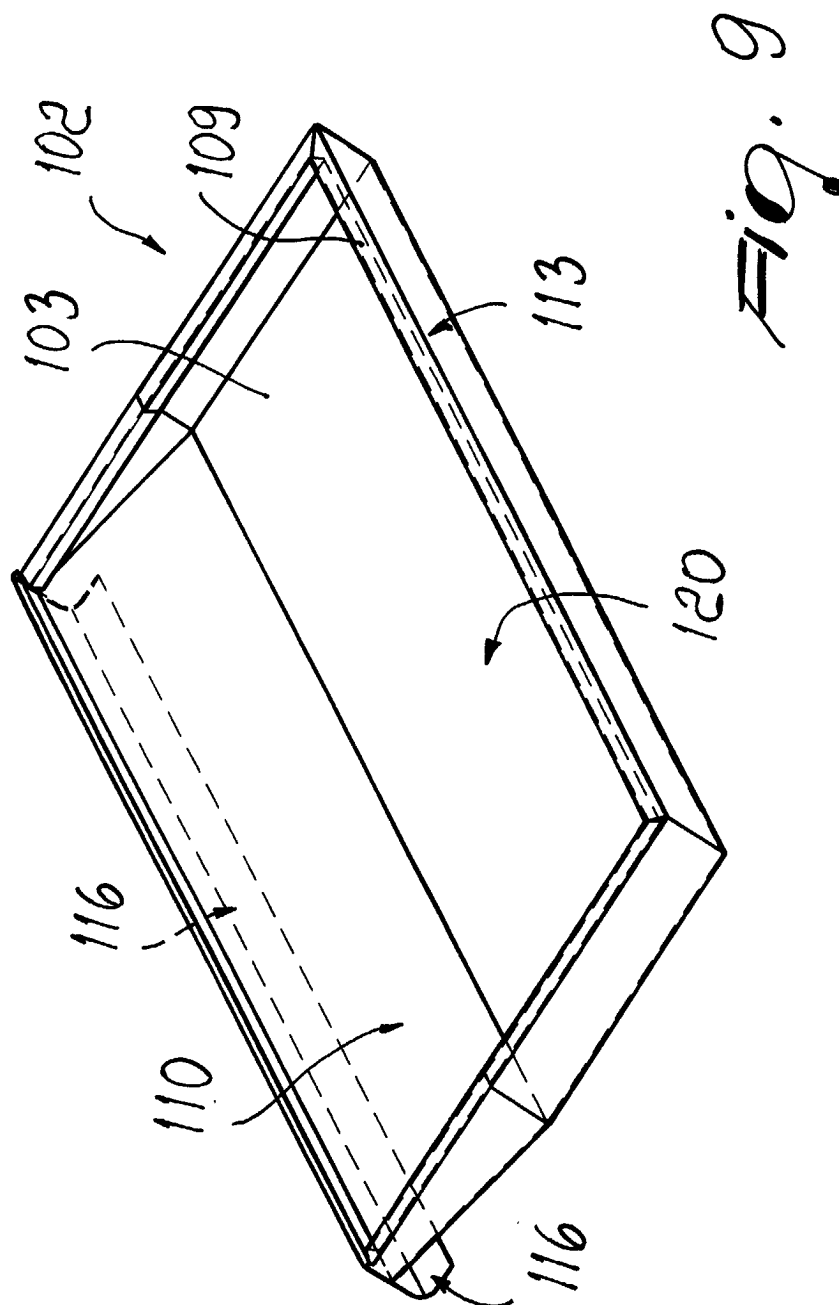


Fig. 5







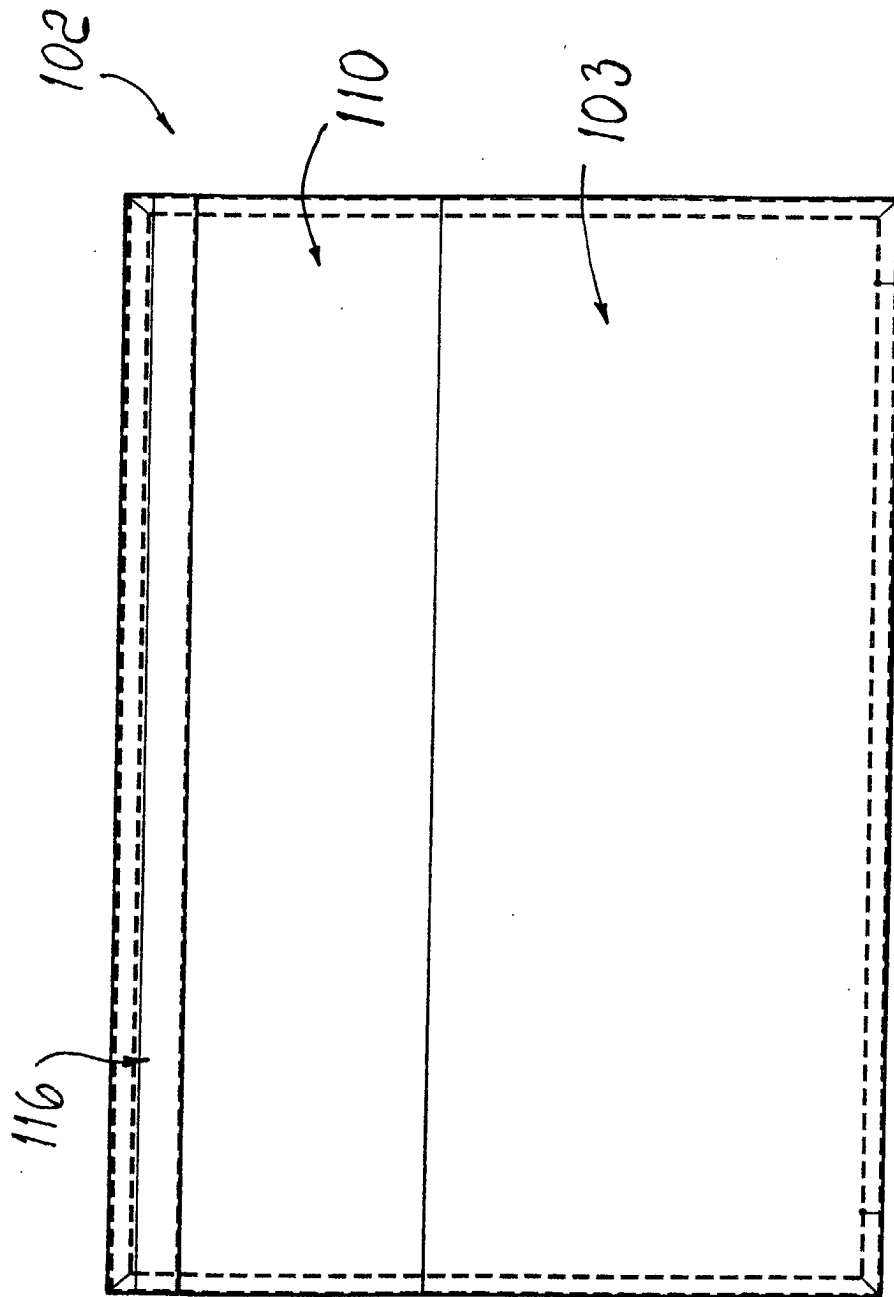


Fig. 10

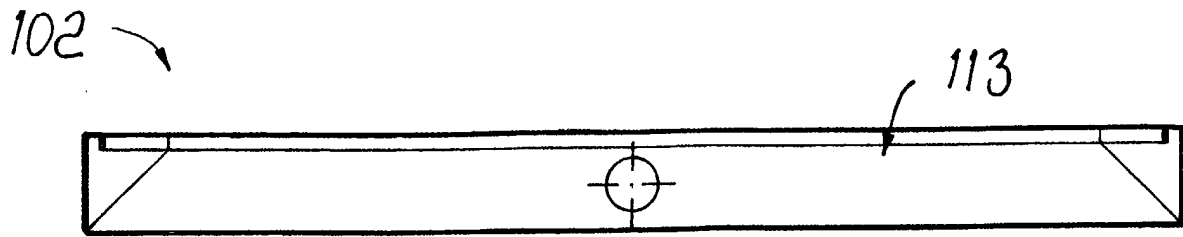


Fig. 11

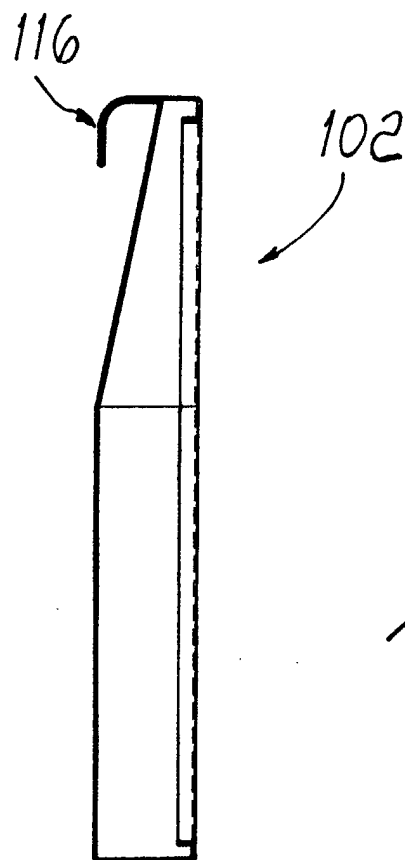


Fig. 12