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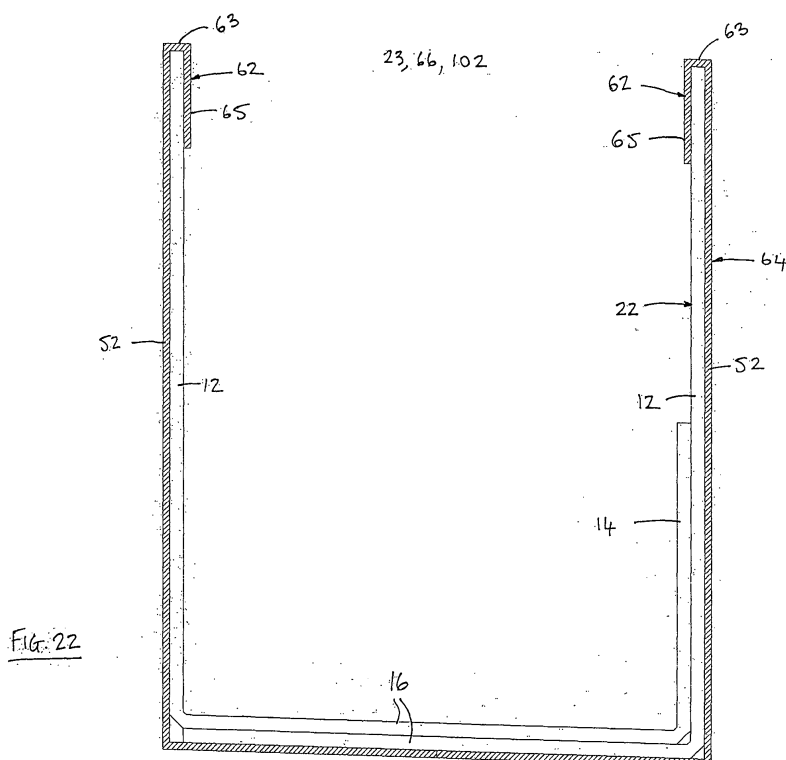
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(54) **Rigid packaging**

(57) A container comprising a self-supporting inner structure located within a self-supporting outer structure. The inner and outer structures are each formed from a substantially rigid, or semi-rigid, material, especially pa-

perboard. The inner structure is shaped and dimensioned to create a friction fit with the outer structure that retains the inner and outer structures together. The inner and outer structures together to form a respective skin of the or each wall of the container.



Description

Field of the Invention

[0001] The present invention relates to packaging. The invention relates particularly to substantially rigid containers for use in packaging.

Background to the Invention

[0002] It is well known to create substantially rigid packaging containers using cardboard lined with an external layer of paper. The cardboard lends rigidity to the packaging while the paper is amenable to printing processes. Conventionally, the cardboard is formed from a blank into a desired shape, typically a box or carton. Then a layer of paper is applied to the outer surface of the cardboard, any desired printing having been performed on the paper layer, and adhered thereto using any suitable means (usually glue).

[0003] There are a number of drawbacks with the conventional arrangement described above: adhering the paper to the cardboard is difficult and can result in overlapping of the paper, poor corner joints, and/or an uneven or rippled surface finish; the paper is readily susceptible to damage especially during transit; there is a relatively high level of material wastage during production; production speed is relatively slow; bespoke machinery is required if automation is desired; and high skill levels are required if production is to be by hand.

[0004] It would be desirable to produce packaging that mitigates the problems outlined above.

Summary of the Invention

[0005] Accordingly, a first aspect of the invention provides a container comprising a self-supporting inner wall structure located within a self-supporting outer wall structure, and means for retaining the inner and outer structures together to form a respective skin of at least one wall of said container. Preferably, the inner wall structure is shaped and dimensioned to create a friction fit that retains the inner and outer wall structures together. The friction fit may be directly or indirectly with the outer wall structure.

[0006] Typically, the inner structure has an outer surface and the outer structure has an inner surface, wherein said inner and outer surfaces are at least partially, and preferably substantially wholly, in contact with one another and wherein said inner and outer structures are fixed to, or self-retaining with, one another.

[0007] In particular, it is preferred that at least those portions of the inner and outer wall structures that serve as side wall(s) of the container are in contact with one another over substantially their entire surface area.

[0008] The structures are typically container-like, each comprising solid walls or panels which define a respective internal space.

[0009] The structures are each formed from a substantially rigid, or semi-rigid, material, especially paper based material. For example, the inner structure may be formed from cartonboard, folding boxboard, lined chipboard, unlined chipboard, kraftboard, or other suitable paperboard or cardboard material. The inner structure preferably has a thickness or caliper range of approximately 500 to 3000 micron, preferably 800 to 2000 micron. The outer structure may comprise artboard, paperboard, cartonboard, folding boxboard, lined chipboard, unlined chipboard, kraftboard, or other suitable paperboard or cardboard material. The outer structure preferably has a thickness or caliper range of approximately 150 to 1000 micron, preferably 250 to 500 micron.

[0010] In preferred embodiments, the inner structure is shaped and dimensioned to substantially fill the outer structure and, advantageously, to create a friction fit therebetween that retains the structures together.

[0011] Preferably, each of the inner and outer structures is configured to define a respective open end, the respective open ends being substantially co-located and, preferably, substantially co-planar, to define an open end of the container. The container may further include, or be cooperable with, a lid, the lid be adapted to close the open end of the container.

[0012] Preferably, one or more flaps are provided at the open end of one of said inner or outer structures, the flaps being in use folded over and onto the other of said inner and outer structures, and fixed to the other of said structures. The flaps are typically provided on the outer structure.

[0013] In preferred modes of use, the container takes the form of product packaging and may contain in use one or more products.

[0014] A second aspect of the invention provides a method of manufacturing a container, the method comprising: forming a self-supporting inner structure; forming a self-supporting outer structure; inserting the inner structure into the outer structure; and fixing the inner and outer structures together, or at least causing the structures to hold together.

Brief Description of the Drawings

[0015] Further advantageous aspects of the invention will be apparent to those ordinarily skilled in the art upon review of the following description of a specific embodiment and with reference to the accompanying drawings in which:

Figure 1 shows in plan view a first or inner layer of a container embodying the invention, the inner layer being shown in a blank or unfolded state;

Figures 2 to 8 show the inner layer of Figure 1 in respective successive states during a folding process;

Figure 9 shows the inner layer of Figure 1 in a folded state;

Figure 10 shows in plan view a second or outer layer of a container embodying the invention, the outer layer being shown in a blank or unfolded state;

Figures 11 to 16 show the outer layer of Figure 10 in respective successive states during a folding process;

Figure 17 shows the outer layer of Figure 10 in a folded state;

Figures 18 to 20 show respective states of assembly in which the inner layer is located within the outer layer;

Figure 21 shows the container (or part of a container) in a finished state; and

Figure 22 shows a cross sectional view of the container of Figure 21.

Detailed Description of the Drawings

[0016] Referring now to the drawings there is shown, generally indicated as 10, a first blank, or lamina, for use in constructing a package or container 100 (Figures 21 and 22) embodying the invention. The blank 10 is intended for use as an inner layer, or skin, of the container 100. In preferred embodiments, the container 100 is substantially rigid, or at least semi-rigid, and typically takes the form of a box, carton or other self-supporting structure.

[0017] The blank 10 is advantageously formed from material that is substantially rigid, semi-rigid or self supporting. Preferred materials for the blank 10 include cartonboard, folding boxboard, lined chipboard, unlined chipboard, kraftboard, or other suitable paperboard, or cardboard, material. The blank 10 preferably has a thickness, or caliper, range of approximately 500 to 3000 micron, more preferably approximately 800 to 2000 micron.

[0018] In Figures 1 and 2, the blank 10 is shown in an unfolded state and may be seen to comprise four side panels 12A, 12B, 12C, 12D, two inner sub-panels 14A, 14B and two end panels 16A, 16B. Adjacent panels are separated by fold lines 20 which may take any convenient form, e.g. score lines. In the illustrated embodiment, there is an overlap 18 between the sub-panel 14A and the side panel 12D. The side panels 12A, 12B are longer than the side panels 12C, 12D. Overlap 18 is approximately equal to the thickness of the blank 10 and allows panels 14A and 14B to sit inside panels 12A to 12D in the folded state. The difference in length between 12A/12B and 12C/12D is approximately equal to the thickness of the blank 10 and allows panel 16A to sit outside of panel 16B in the folded state.

[0019] As may be understood from Figures 2 to 8, the

blank 10 may be folded to form an inner wall structure 22, or inner container, which can best be seen in its folded form in Figure 9. The inner structure 22 is a self-supporting structure and may be substantially rigid or semi-rigid. It may be held in its folded state by any convenient means, e.g. by providing glue or other adhesive at appropriate locations, or it may simply be self-retaining in the folded state by means of interference amongst the folded panels. The inner structure preferably takes the form of an open mouthed container having at least one side wall and a base.

[0020] Referring now to Figures 10 to 17 in particular, there is shown, generally indicated as 50, a second blank or lamina for use in constructing the container 100. The blank 50 is intended for use as an outer layer, or skin, of the container 100.

[0021] The blank 50 is advantageously formed from material that is substantially rigid, semi-rigid or self supporting. Preferred materials for the blank 50 include artboard, paperboard, cartonboard, folding boxboard, lined chipboard, unlined chipboard, kraftboard, or other suitable paperboard or cardboard material. The blank 50 preferably has a thickness or caliper range of approximately 150 to 1000 micron, more preferably approximately 250 to 500 micron.

[0022] In Figures 10 and 11, the blank 50 is shown in an unfolded or blank state and may be seen to comprise four side panels 52A, 52B, 52C, 52D, end panels or flaps 56A, 56B, 56C, 56D, and a side flap 58. Adjacent panels are separated by fold lines 60 which may take any convenient form, e.g. score lines. The blank 50 further includes at least one, and preferably a plurality of, binding tabs, or flaps, 62A, 62B, 62C, 62D. In the illustrated embodiment, a respective binding flap 62 is provided at one end of each side panel 52. The flaps 62 are foldable with respect to their respective panel 52 by means of any suitable fold lines 60. Preferably, each flap 62 comprises a first or intermediate part 63A, 63B, 63C, 63D adjacent the respective panel 52, and an end part 65A, 65B, 65C, 65D, respective substantially parallel fold lines being provided between the panel 52 and the intermediate part 63, and between the intermediate part 63 and the end part 65. The intermediate part 63 may be tapered to reduce in width in a direction away from the panel 52. The flaps 62 could alternatively be provided on the inner structure or, alternatively still, may be omitted.

[0023] As may be understood from Figures 11 to 17, the blank 50 may be folded to form an outer wall structure, or outer container 64, which can best be seen in its folded form in Figure 17. The outer structure 64 is a self-supporting structure and may be substantially rigid or semi-rigid. It may be held in its folded state by any convenient means, e.g. by providing glue or other adhesive at appropriate locations, or it may simply be self-retaining in the folded state by interference amongst the folded panels. The outer structure preferably takes the form of an open mouthed container having at least one side wall and a base. The outer structure may optionally include

a lid portion, e.g. a flap, at its otherwise open end.

[0024] In preferred embodiments, the inner and outer structures 22, 64 are each open at one end and closed at the other end. More generally, each structure 22, 64 should be open at at least one end. In the illustrated embodiment, each structure 22, 64 is substantially rectangular in both transverse and longitudinal cross section, although in alternative embodiments, the structures may take alternative shapes, e.g. substantially circular or polygonal. Advantageously, however, the respective structures 22, 64 are substantially the same shape and, preferably still, are substantially the same size, as is described in more detail below.

[0025] The structures 22, 64 are shaped and dimensioned so that the inner structure fits within the outer structure 64. This is advantageously achieved by inserting the inner structure 22, in its assembled or folded state, into the outer structure 64, in its assembled or folded state, via the open end 66 of the outer structure 64. When so fitted, the open end 23 of the inner structure 22 is substantially co-located with, and preferably substantially co-planar with, the open end 66 of the outer structure 64. In preferred embodiments, the structures 22, 64 are shaped and dimensioned so that the inner structure 22 substantially fills the outer structure 64. Advantageously, the arrangement is such that the outer surfaces of at least the side panels 12, but typically also the end, of the inner structure 22 are in contact with the inner surfaces of the corresponding side panels 52 and closed end of the outer structure 64. Preferably, there is a self-retaining friction fit between the inner and outer structures 22, 64. Alternatively, or in addition, glue or other adhesive means may be provided between the inner and outer structures 22, 64 to hold them together. In preferred embodiments, the outer surfaces of the side panels 12 are in contact with the inner surfaces of the side panels 52 over substantially their entire surface area, the respective abutting panels 12, 52 more preferably being of substantially the same size (surface area).

[0026] Figures 18 to 22 show the inner and outer structures 22, 64 fitted together to form the container 100. The binding flaps 62, which are provided adjacent the open end 66 of the outer structure 64, are foldable inwardly of the container 100 such that the respective intermediate parts 63 cover the edge of a respective side panel 12 of the inner structure 22 and the end parts 65 extend along the inner surface of a respective side panel 12, as illustrated in Figures 18 to 21. The end parts 65 of the flaps 62 may be fixed to the inner surfaces of the side panels 12 by any suitable fixing or bonding means, typically glue or other adhesive or bonding agent.

[0027] The length of the intermediate parts 63 of the flaps 62 is preferably substantially equal to (although typically marginally greater than) the thickness of the inner structure 22 to allow the flaps 62 to be folded in the manner described above. The tapering of the intermediate parts 63 facilitates the folding of the flaps 62 without mutual interference.

[0028] In alternative embodiments (not illustrated), one or more panels, layers of material or other items may be provided between the inner and outer structures in order to obtain the desired fit, e.g. a self-retaining fit, between the structures. These intermediate structures may for example take the form of a sleeve or a container-like structure formed from any suitable material, e.g. paper-board. The intermediate structures may be fixed to either or both of the inner and outer structures, or may be self-retaining by means of a friction fit. For example, the, or each, intermediate structure may take the form of a self-supporting container-like or sleeve like structure substantially the same as or similar to the inner structure 22.

[0029] In preferred embodiments, the resulting container 100 is a substantially rigid structure with a high quality and durable feel and finish. The external surface of the outer structure 64 is printed and/or formed with other desired finishes or features, e.g. window-patching, and problems normally associated with paper linings, e.g. tearing, rippling and poor fit, are mitigated if not eliminated. The container 100 is amenable to automated production and lends itself to relatively high production speeds, requiring less manual skill. Material wastage is lower than for conventional products and a relatively high level of control is possible throughout the manufacturing process.

[0030] The container 100 may be provided with a lid (not shown) to close its open end 102. The lid may, for example, be of the press-fit type (and may for example be formed from plastics or metal) adapted to fit into or onto the open end 102 and to be self-retaining therein or thereon. Alternatively, the lid may take the form of a structure formed in substantially the same manner as the container 100, and which may itself be described as a container or semi-container. In this case, at least part of the lid structure is adapted to fit into or over the open end 102 of the container 100. For example, the lid structure may take the form of an open ended container at least part which is shaped and dimensioned to fit into the container 100 and creating a self-retaining friction fit with the internal walls of the container. The inner structure 22 may be configured to provide a ledge 25 against which the leading edge of the lid structure may abut when fitted.

[0031] The inner and outer blanks 12, 50 may take the form of blanks of material in which the respective panels are co-formed with one another and defined by the provision of fold lines in the form of, for example, score lines, creases or perforations. Alternatively, at least some of the panels may be formed separately of one another and joined together in any suitable manner.

[0032] The blank 50 is amenable to conventional printing and/or forming processes and typically is subjected to one or more printing and/or other forming processes, prior to folding so that, for example, its external surface carries desired graphics, information and/or other features. The blank 10 may also be amenable to conventional printing and/or forming processes and its internal surface may be printed or lined if desired.

[0033] Either or both layers 10, 50 may be subjected to other processing, e.g. lining or lamination.

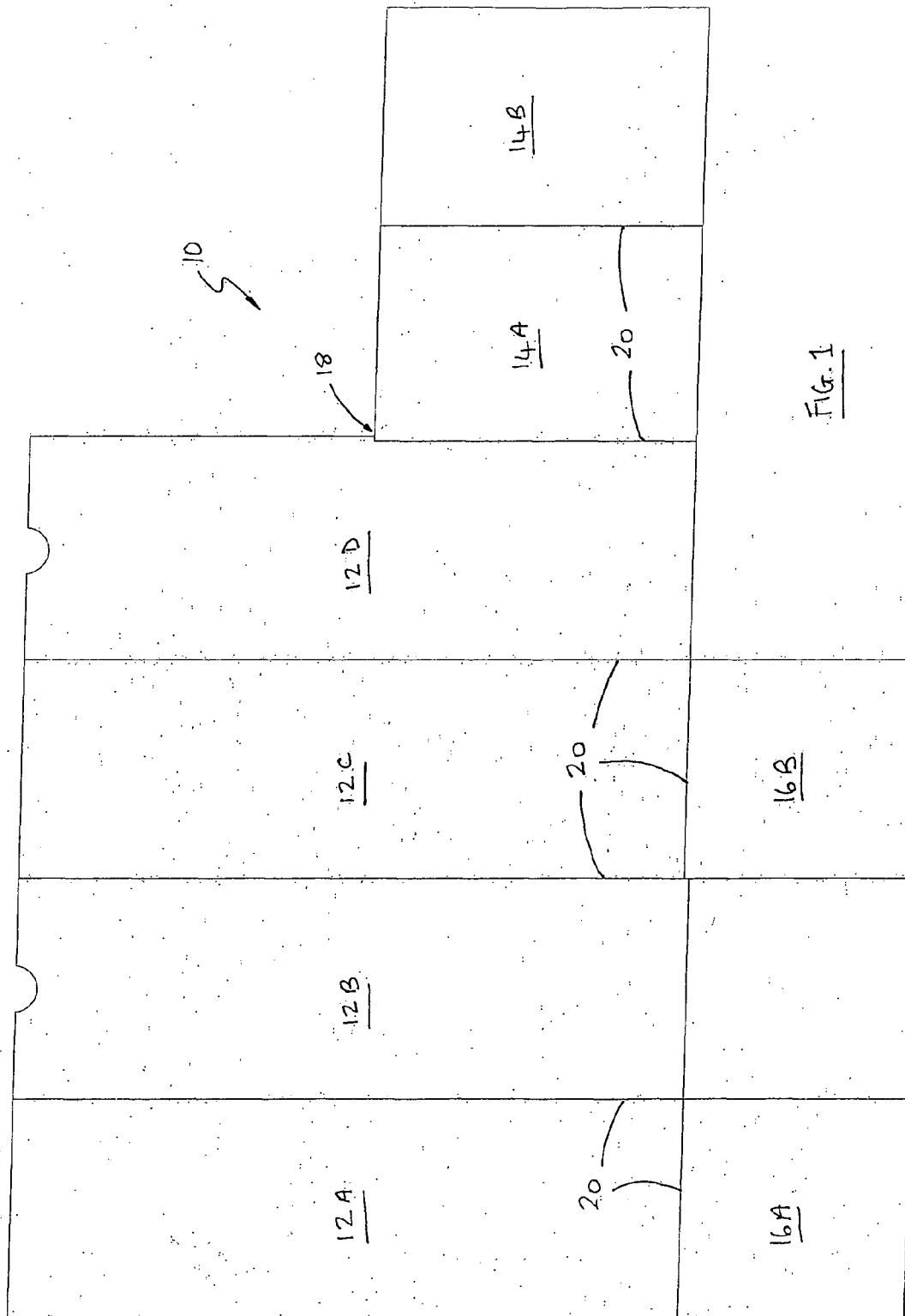
[0034] In preferred embodiments, a friction fit is created between the inner structure 22 and outer structure 64. This may be achieved by the relative shape and dimensions of the structures 64 (e.g. the inner structure substantially filling the outer structure to the extent that a friction fit is created), or by other means, e.g. the provision of one or more additional layers or members between the structures 22, 64. In some embodiments, the flaps 62 may be omitted, in which case the structures 22, 64 may be fixed together by means of a friction fit and/or adhesive or other fixing means. To help hold the structures together, an annular cap or rim structure (not shown) may be provided which fits over the edges of the structures 22, 64 at the open end 102 of the container 100. The cap may be held in place by any suitable means (e.g. friction fit, adhesive etc.) and may be formed from any suitable material, e.g. a paper based material, or plastics or metal.

[0035] It will be understood that the specific shapes and configurations of the inner and outer layers and of the container 100 shown in the drawings are provided by way of example only and are not limiting to the scope of the invention. More generally, the invention is not limited to the embodiment described herein which may be modified or varied without departing from the scope of the invention.

Claims

1. A container comprising a self-supporting inner wall structure located within a self-supporting outer wall structure, and means for retaining the inner and outer wall structures together to form a respective skin of at least one wall of said container.
2. A container as claimed in claim 1, wherein the inner wall structure has an outer surface and the outer wall structure has an inner surface, said inner and outer surfaces being at least partially in contact with one another, and wherein said inner and outer wall structures are fixed to, or self-retaining with, one another.
3. A container as claimed in any preceding claim, wherein the inner wall structure is shaped and dimensioned to create a friction fit that retains the inner and outer wall structures together.
4. A container as claimed in any preceding claim, wherein the inner and outer wall structures are substantially the same shape and size.
5. A container as claimed in any preceding claim, wherein the inner and outer wall structures each comprise a sleeve-like body, preferably closed at one end.

6. A container as claimed in any preceding claim, wherein the inner and outer wall structures are each formed from a substantially rigid, or semi-rigid, material, especially a paper based material.
7. A container as claimed in claim 6, wherein the inner wall structure is formed from paperboard or cardboard having a thickness of approximately 500 to 3000 micron, preferably 800 to 2000 micron.
8. A container as claimed in claim 6 or 7, wherein the outer wall structure is formed from paperboard or cardboard having a thickness of approximately 150 to 1000 micron, preferably 250 to 500 micron.
9. A container as claimed in any preceding claim, wherein each of the inner and outer wall structures is configured to define a respective open end, one or more flaps being provided at the open end of one of said inner or outer structures, the flaps being in use folded over and onto the other of said inner and outer structures, and fixed to the other of said structures.
10. A method of manufacturing a container, the method comprising: forming a self-supporting inner wall structure; forming a self-supporting outer wall structure; inserting the inner wall structure into the outer wall structure; and causing the structures to be retained together to form a respective skin of the or each wall of said container.



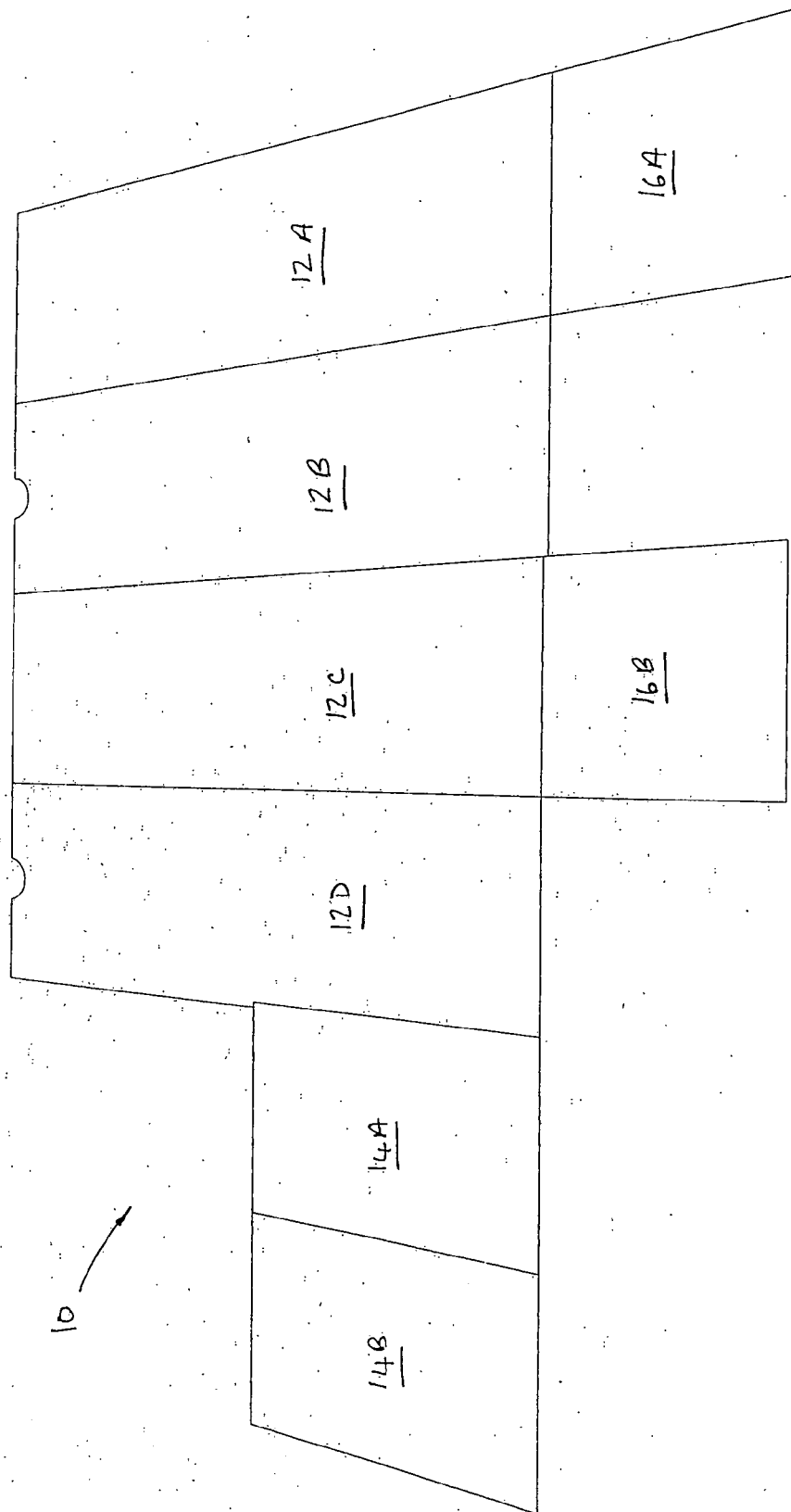


FIG. 2

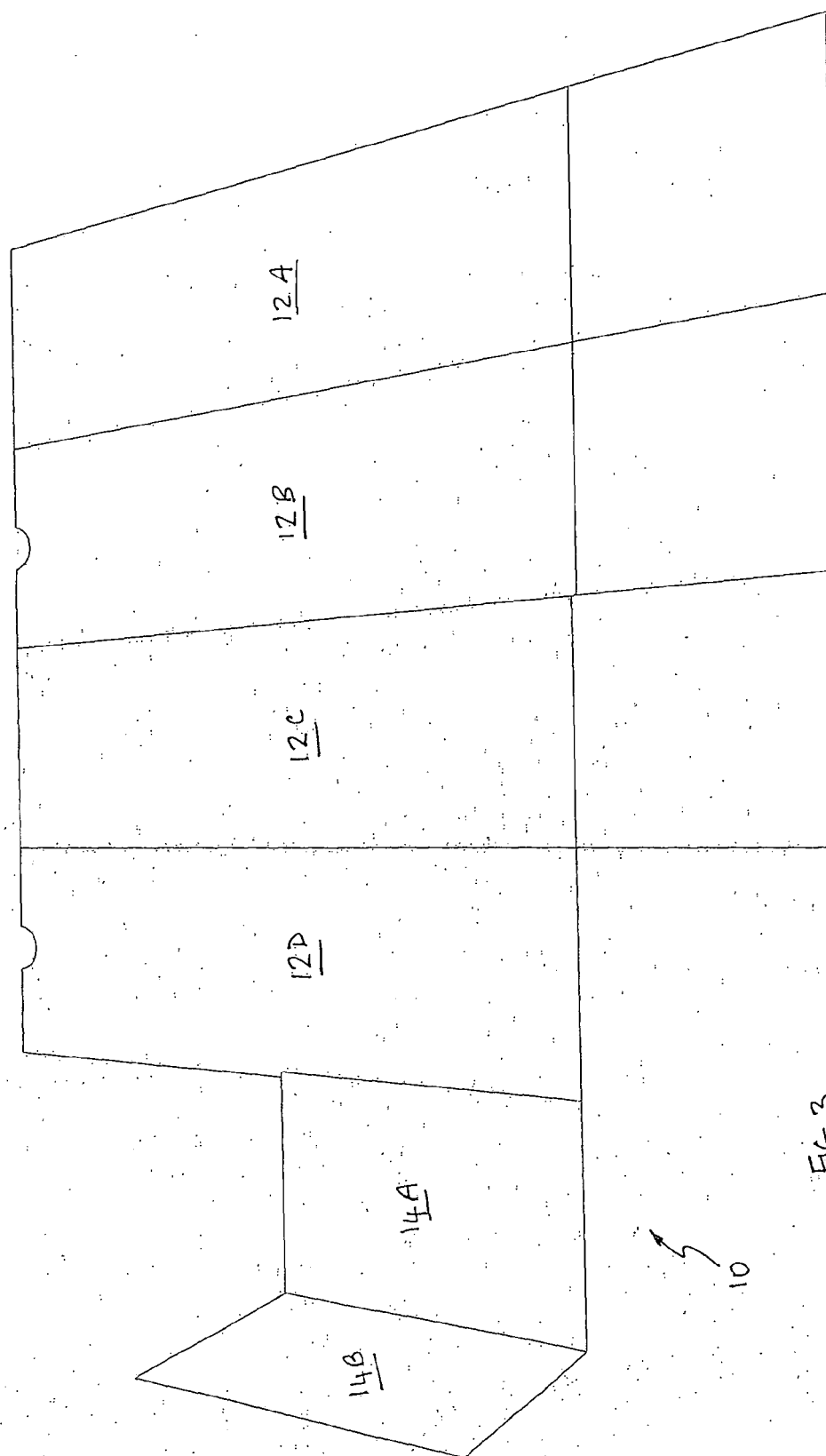
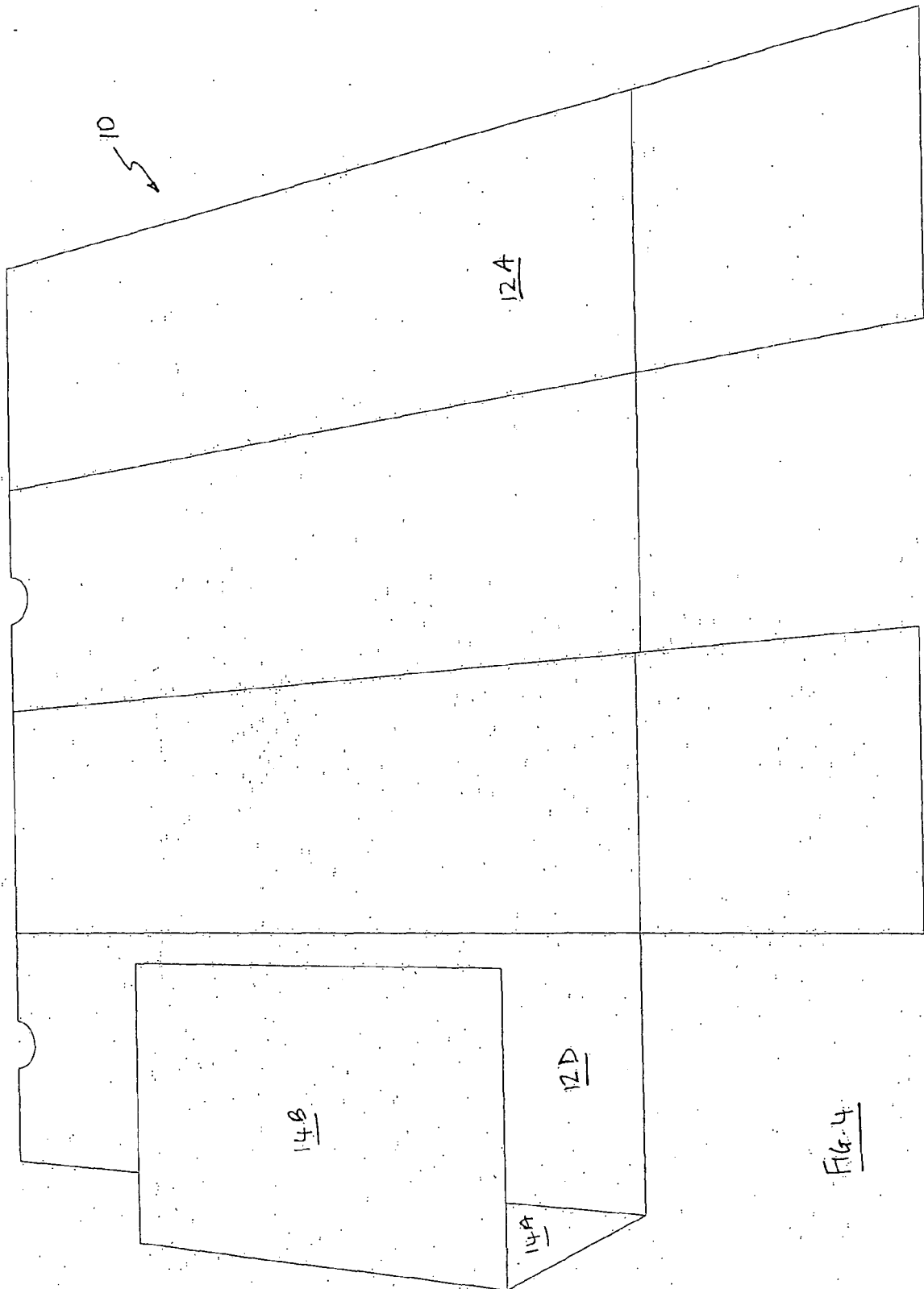
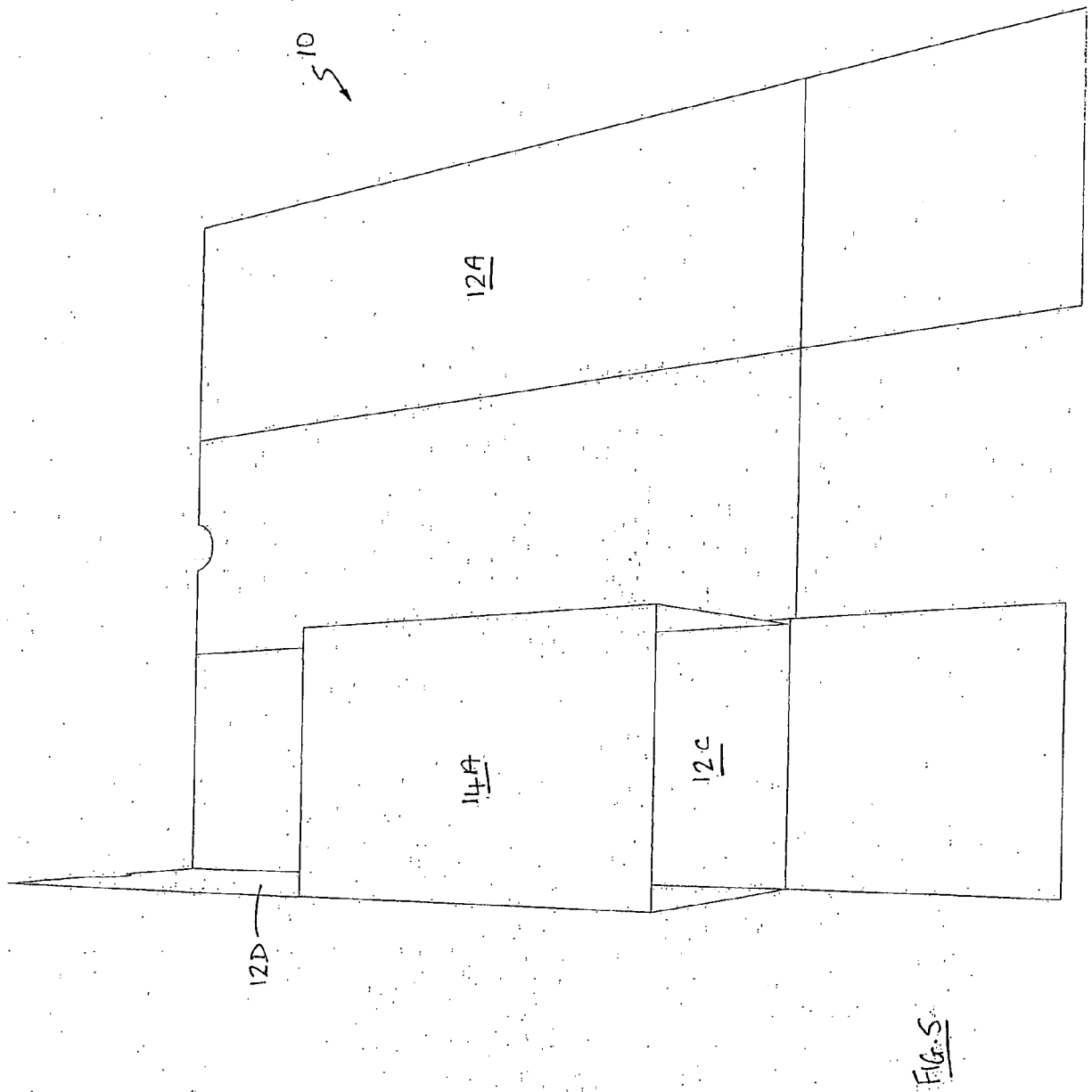


Fig. 3





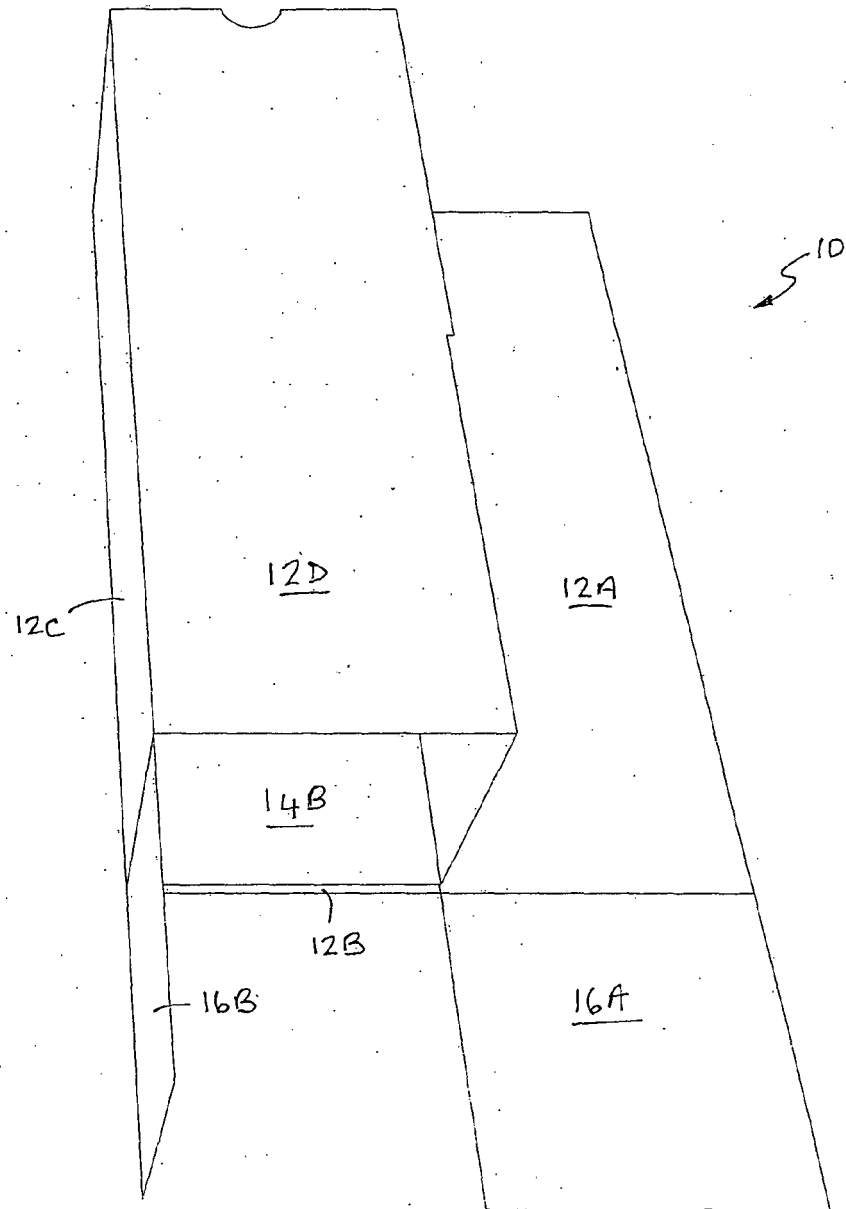
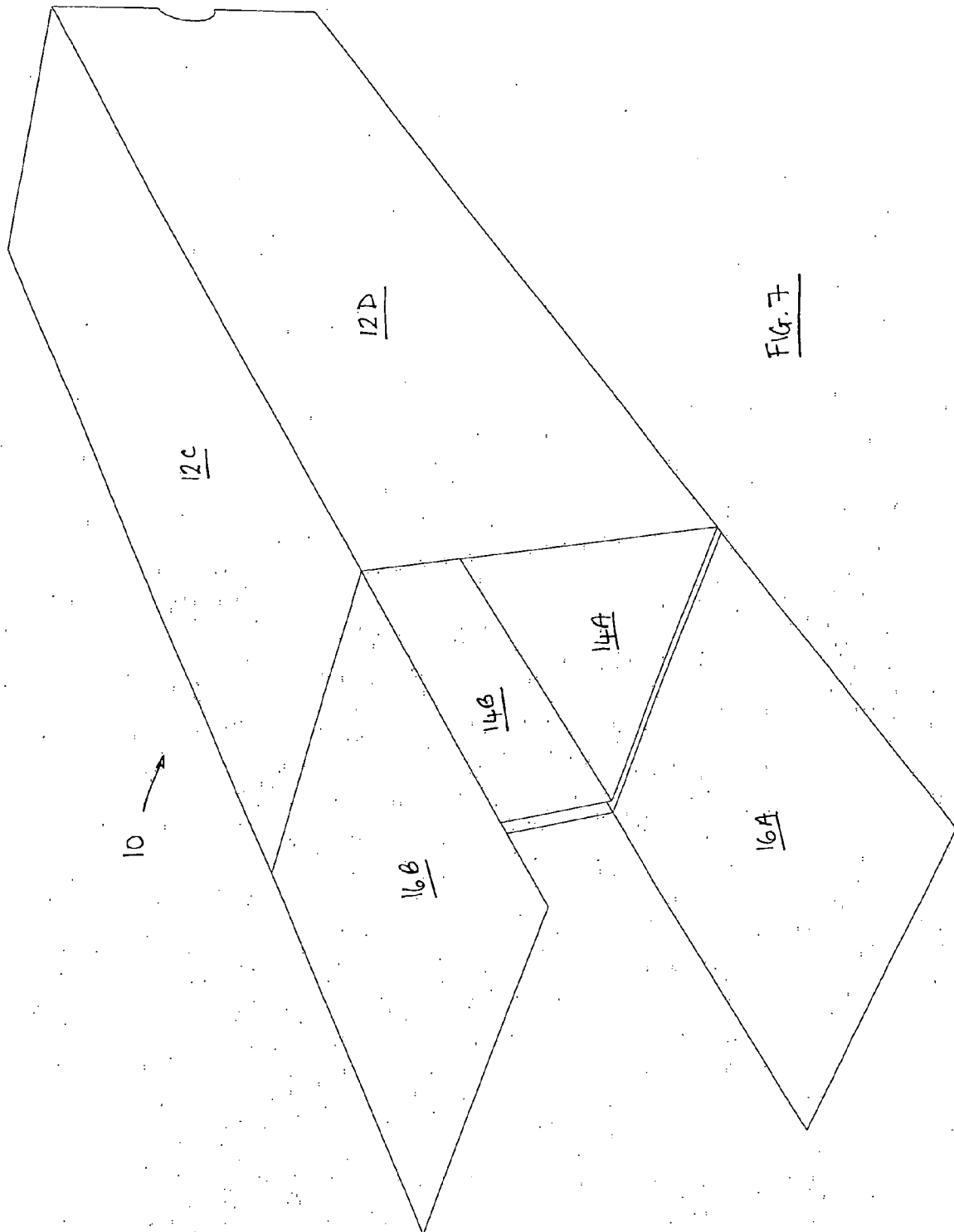


FIG. 6



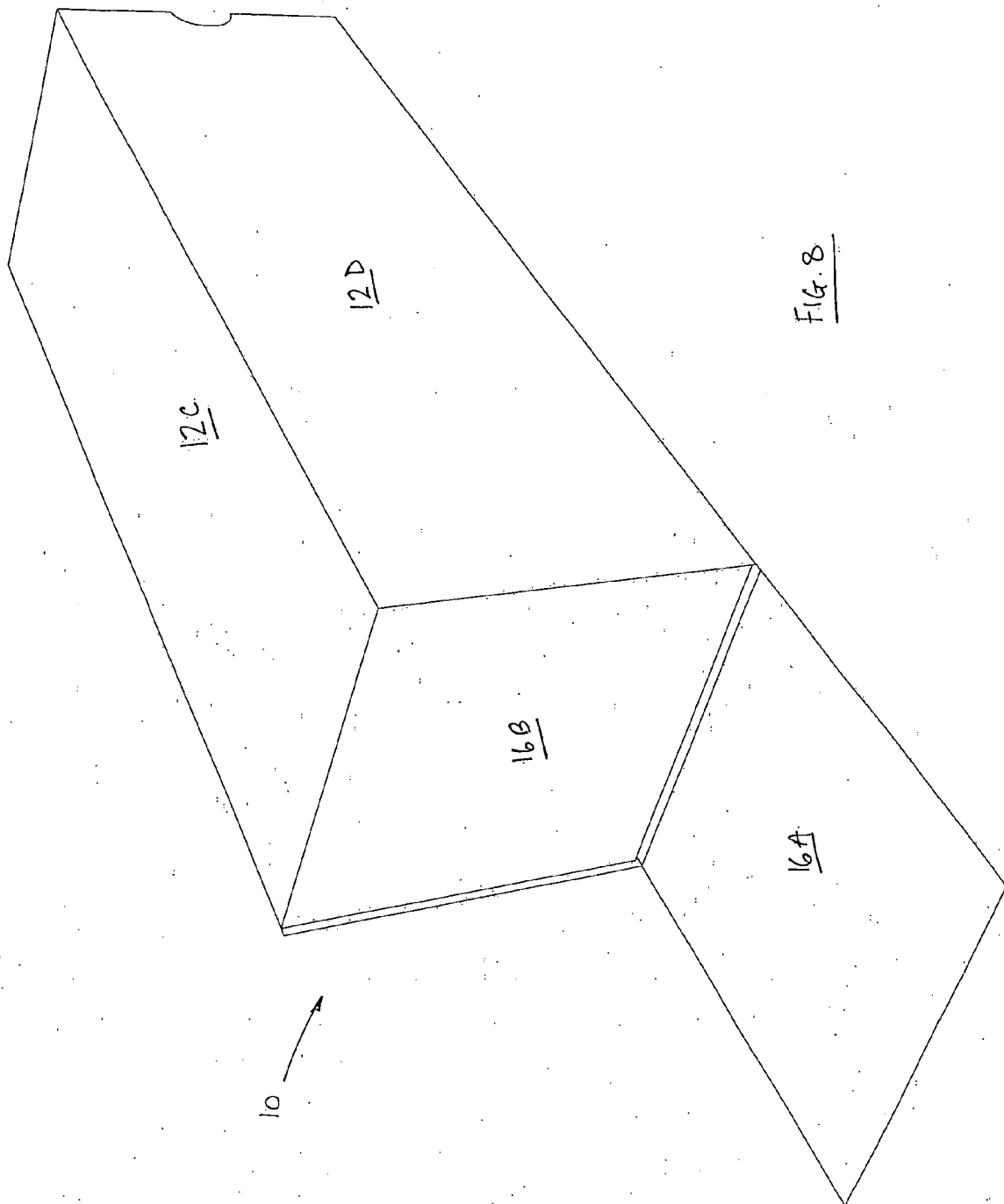


Fig. 8

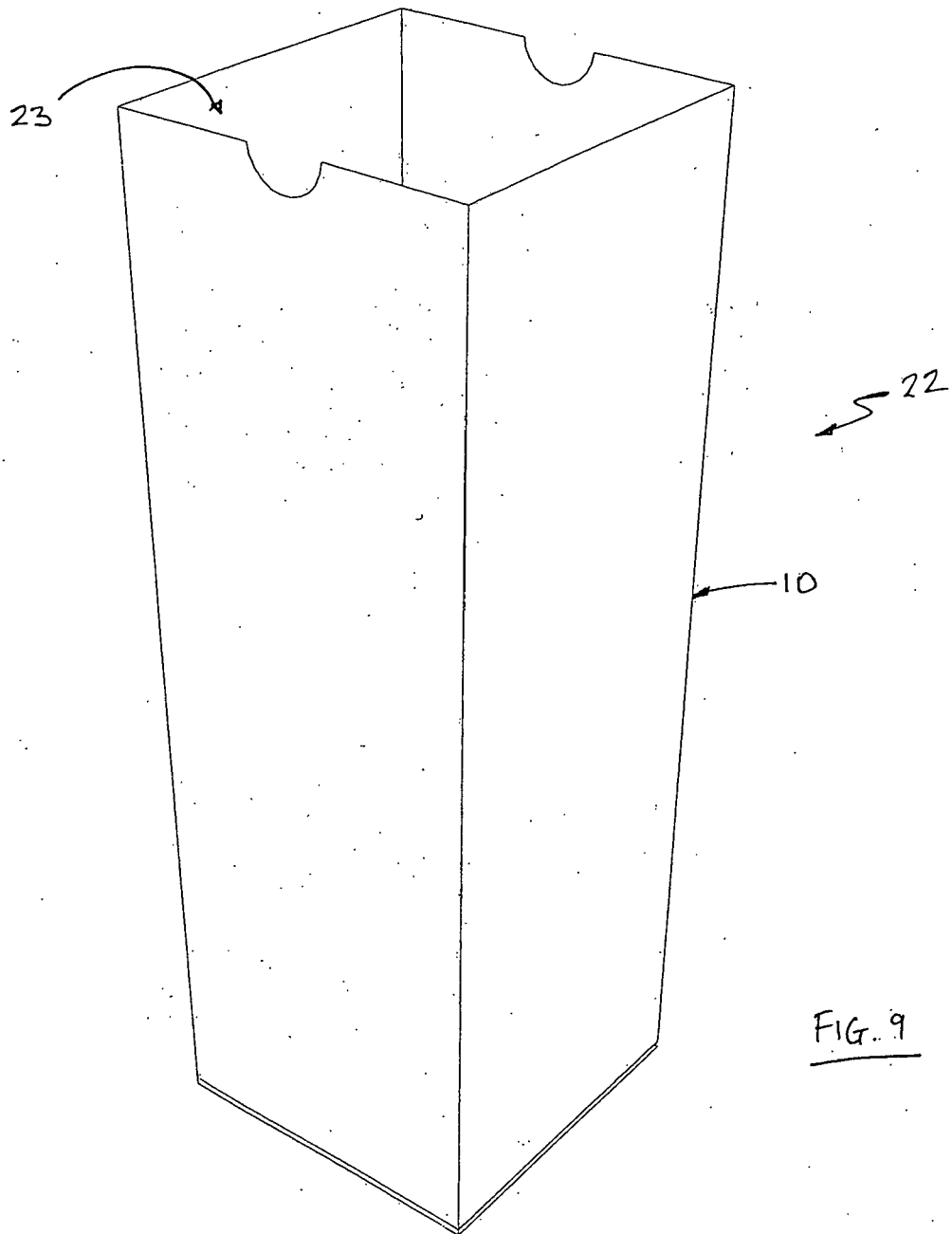


FIG. 9

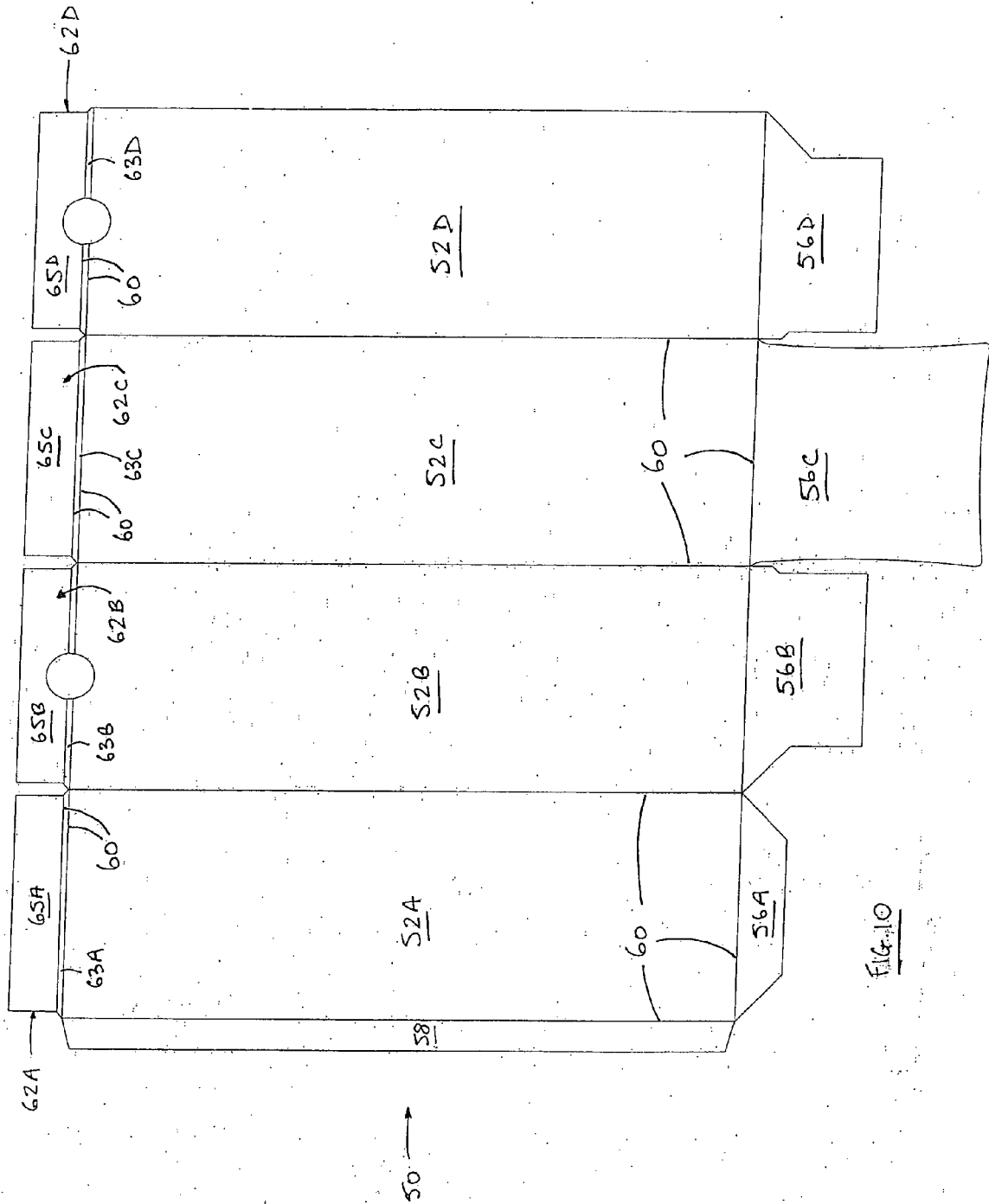


FIG. 10

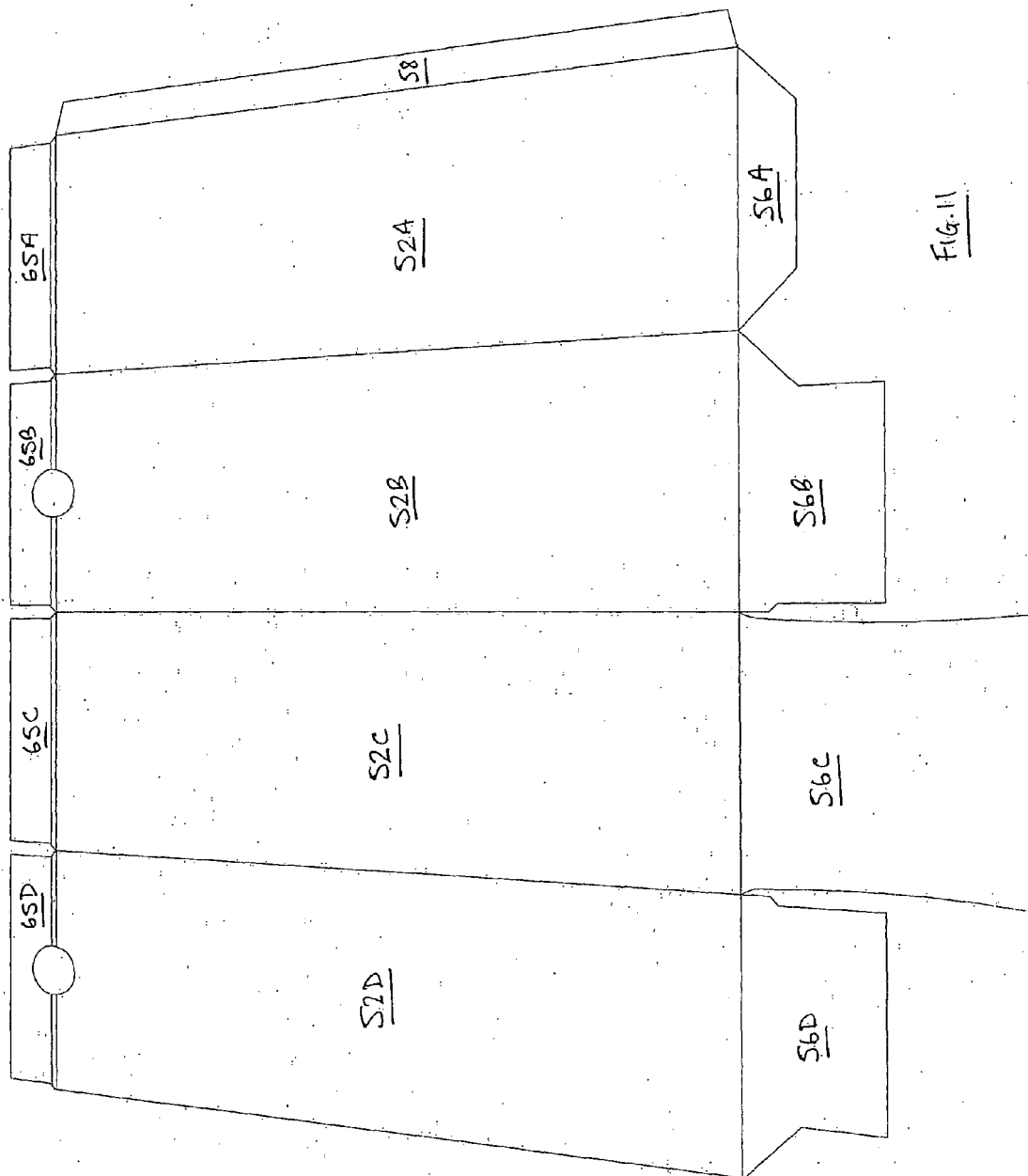
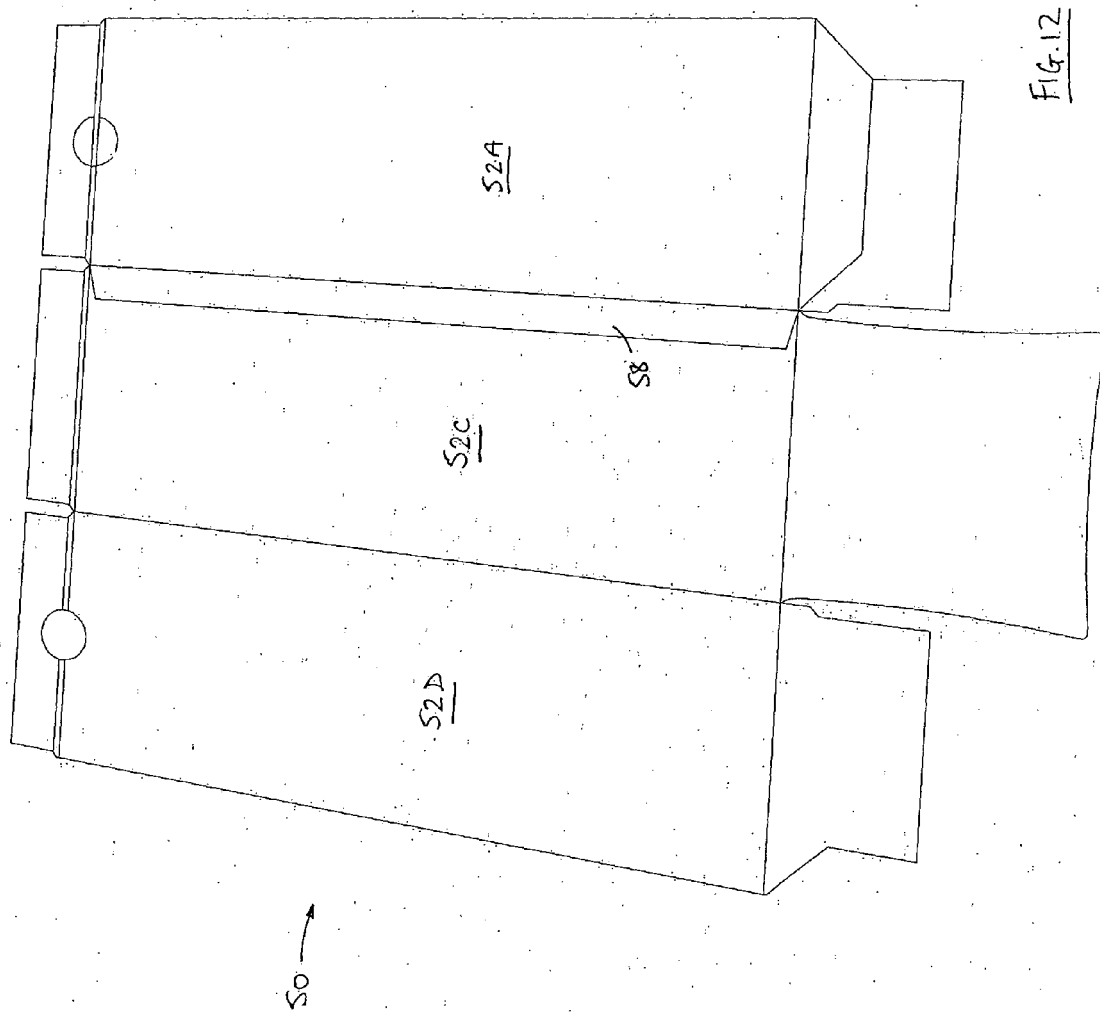


Fig. 11

50 →



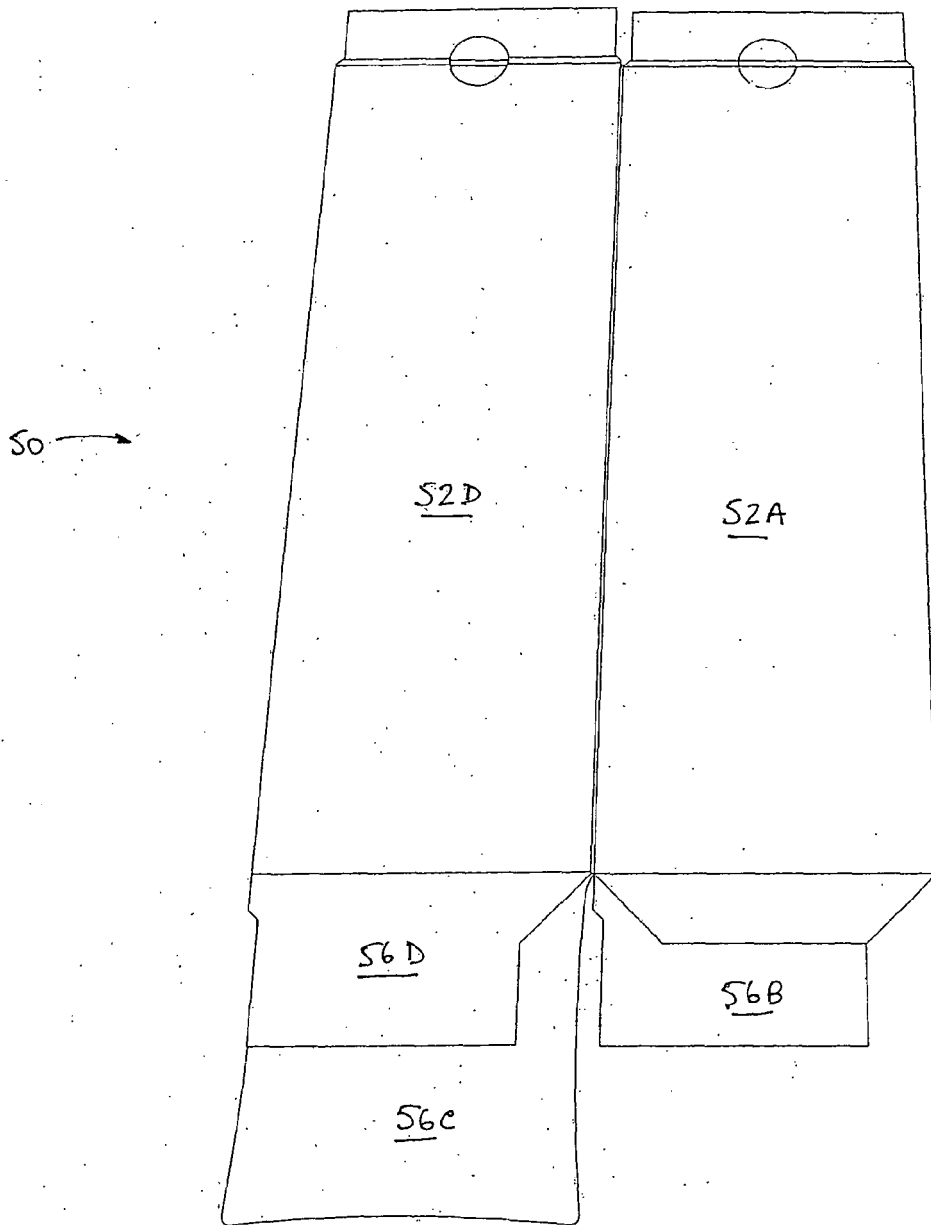


FIG. 13

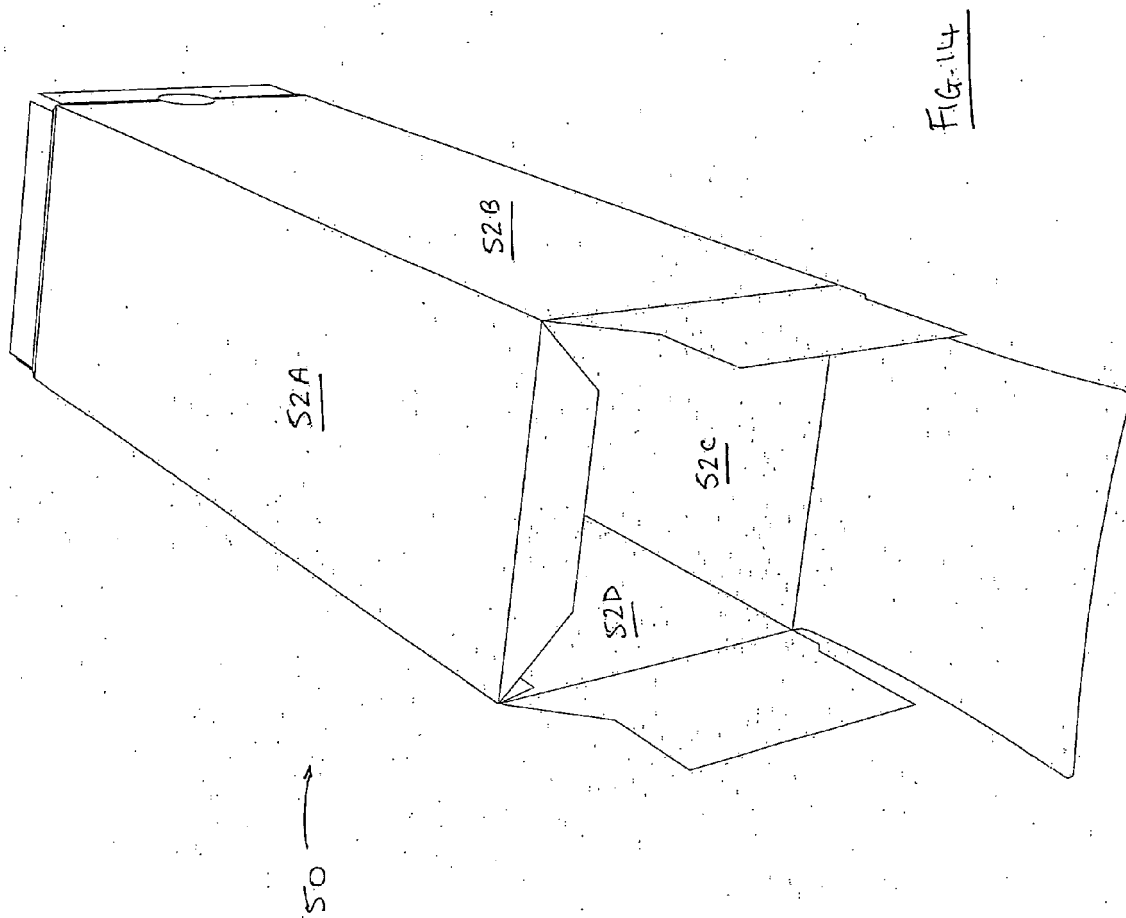
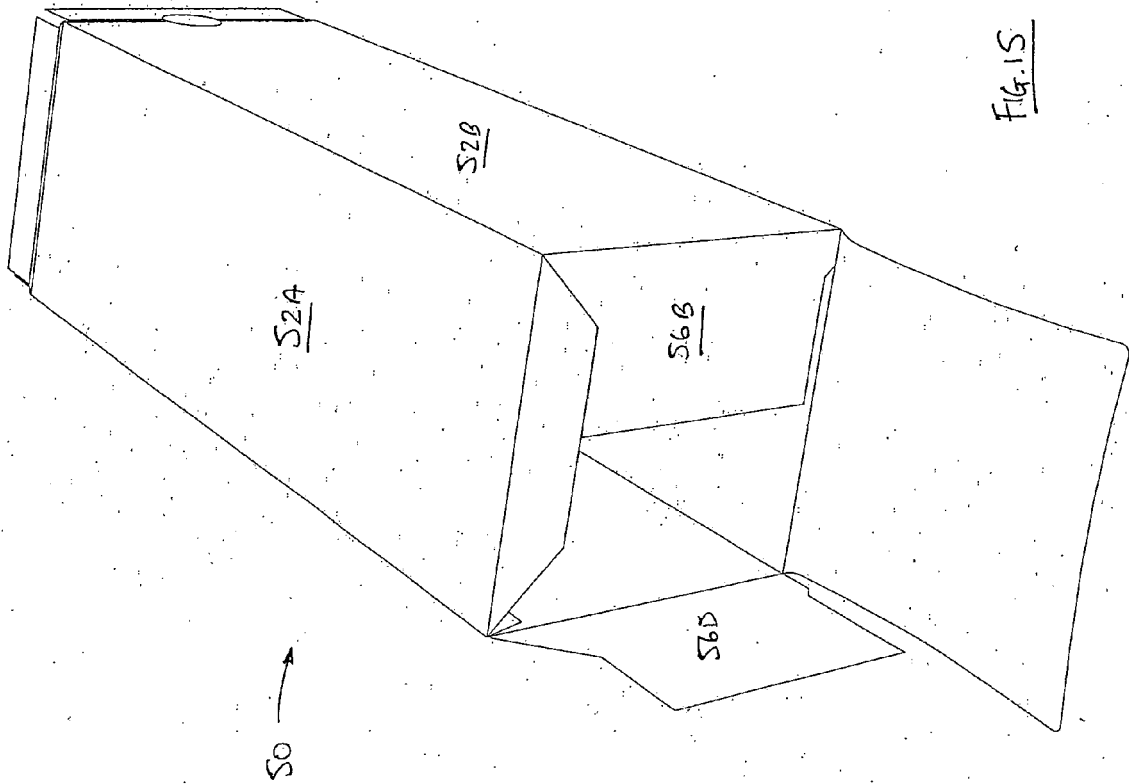
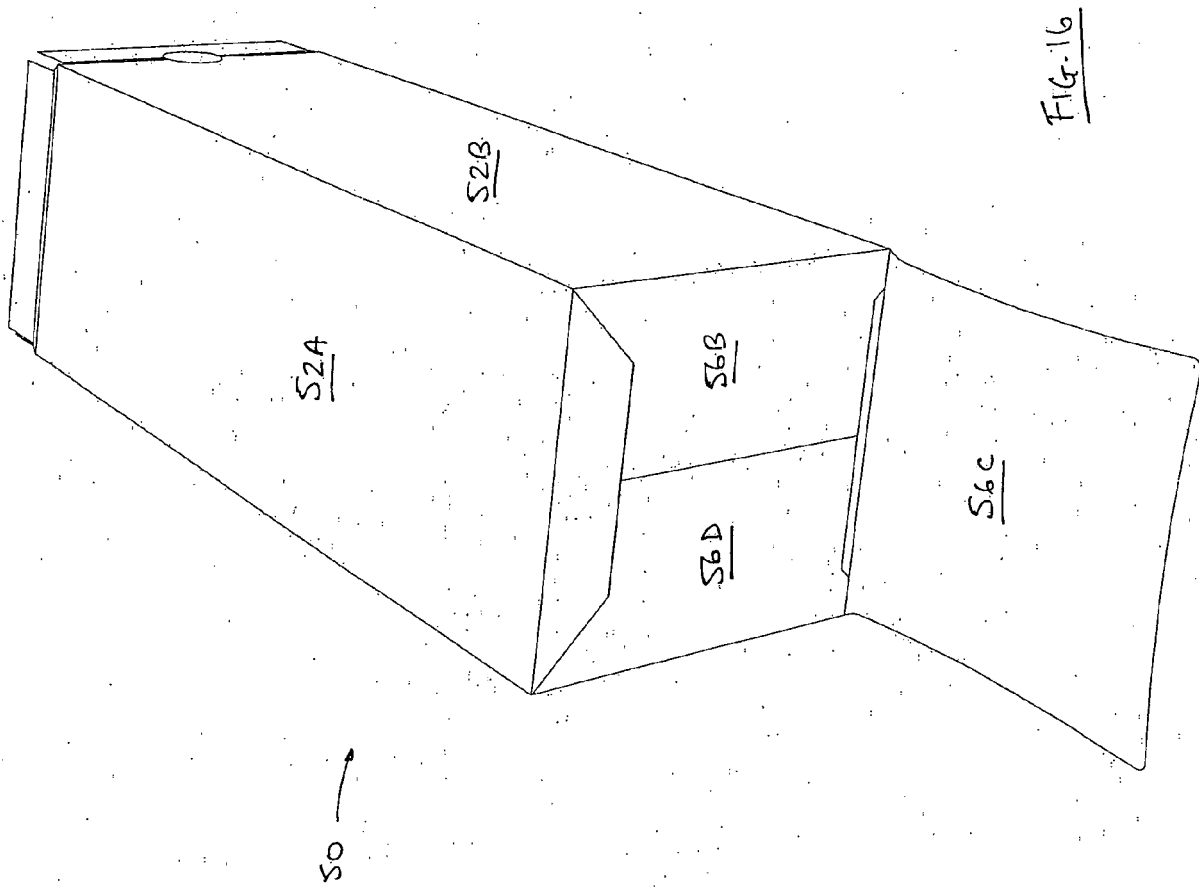


Fig. 14





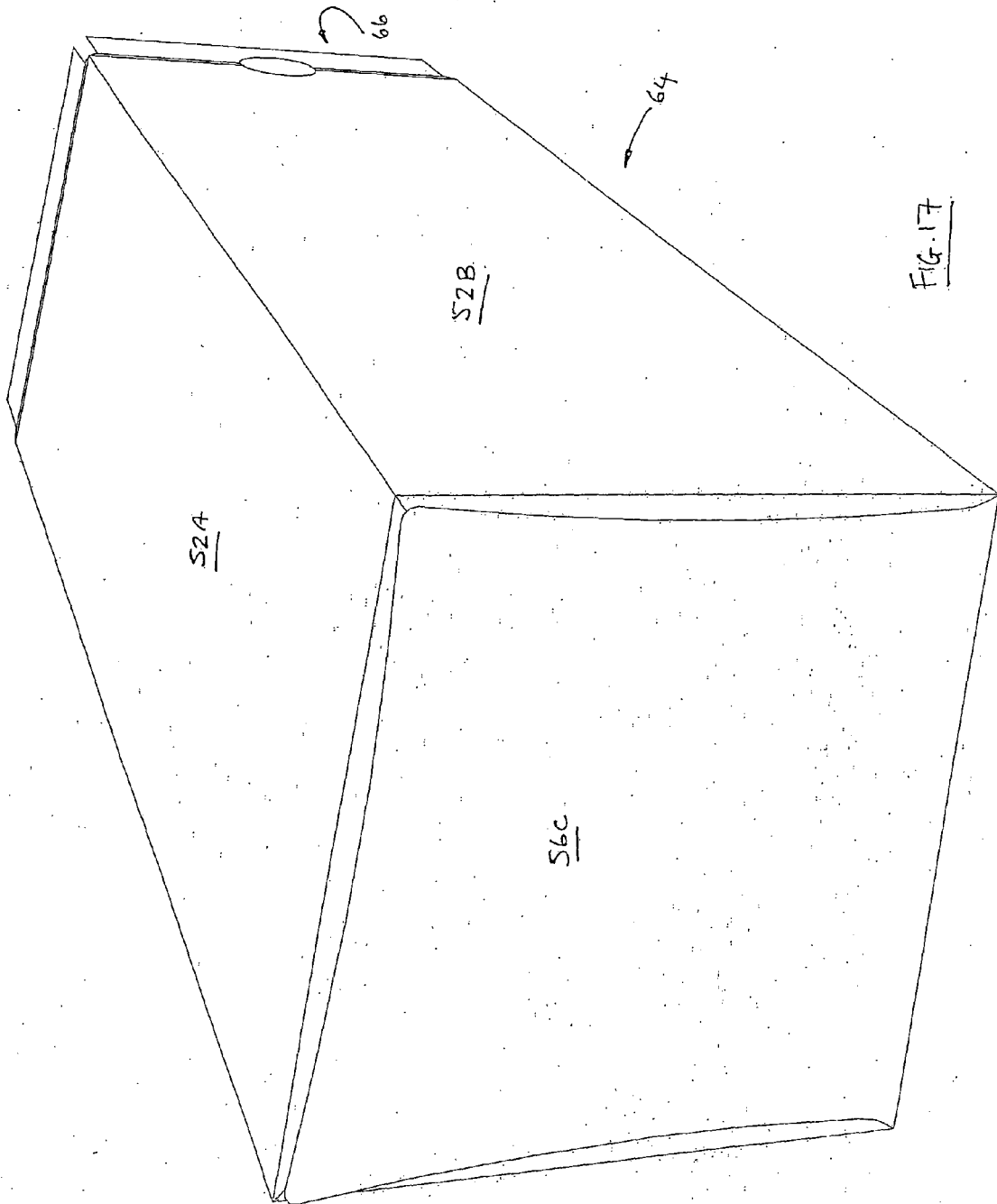
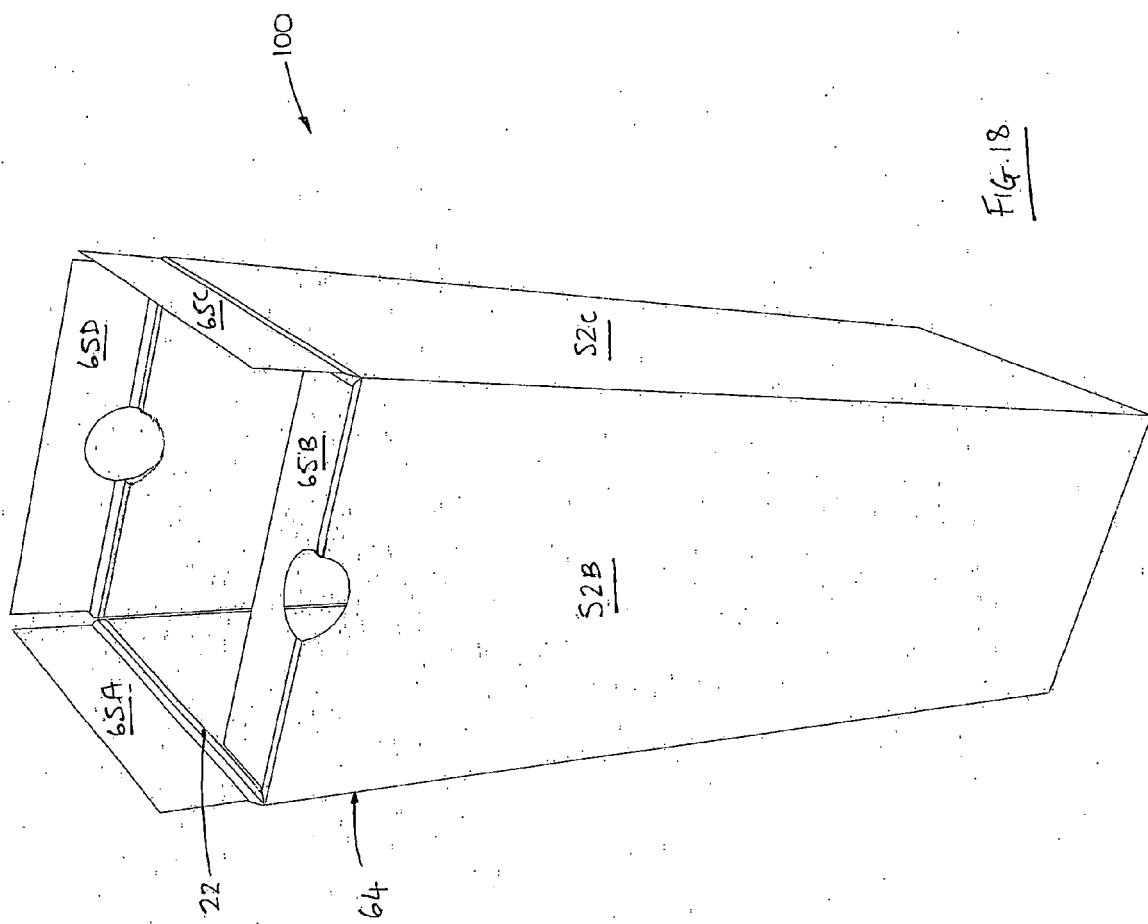
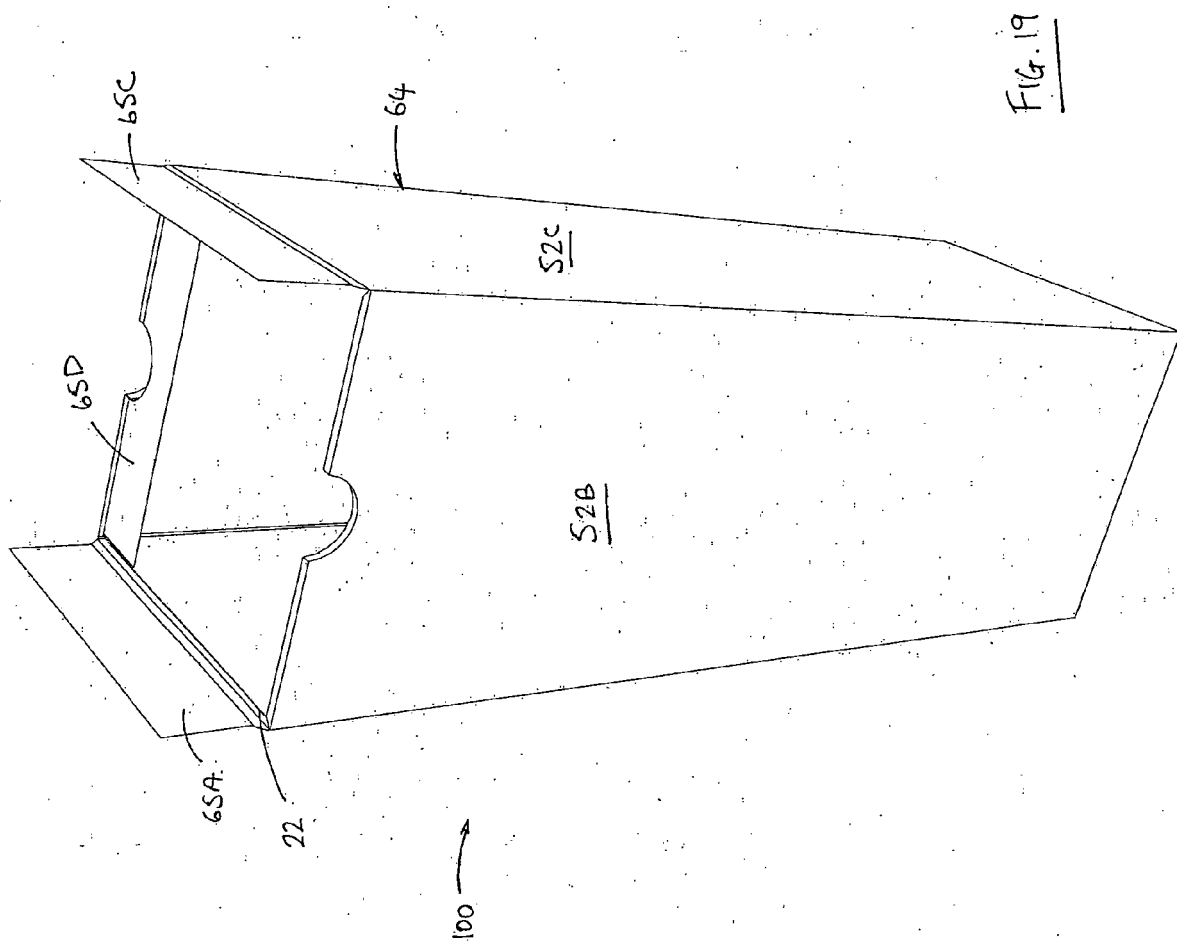
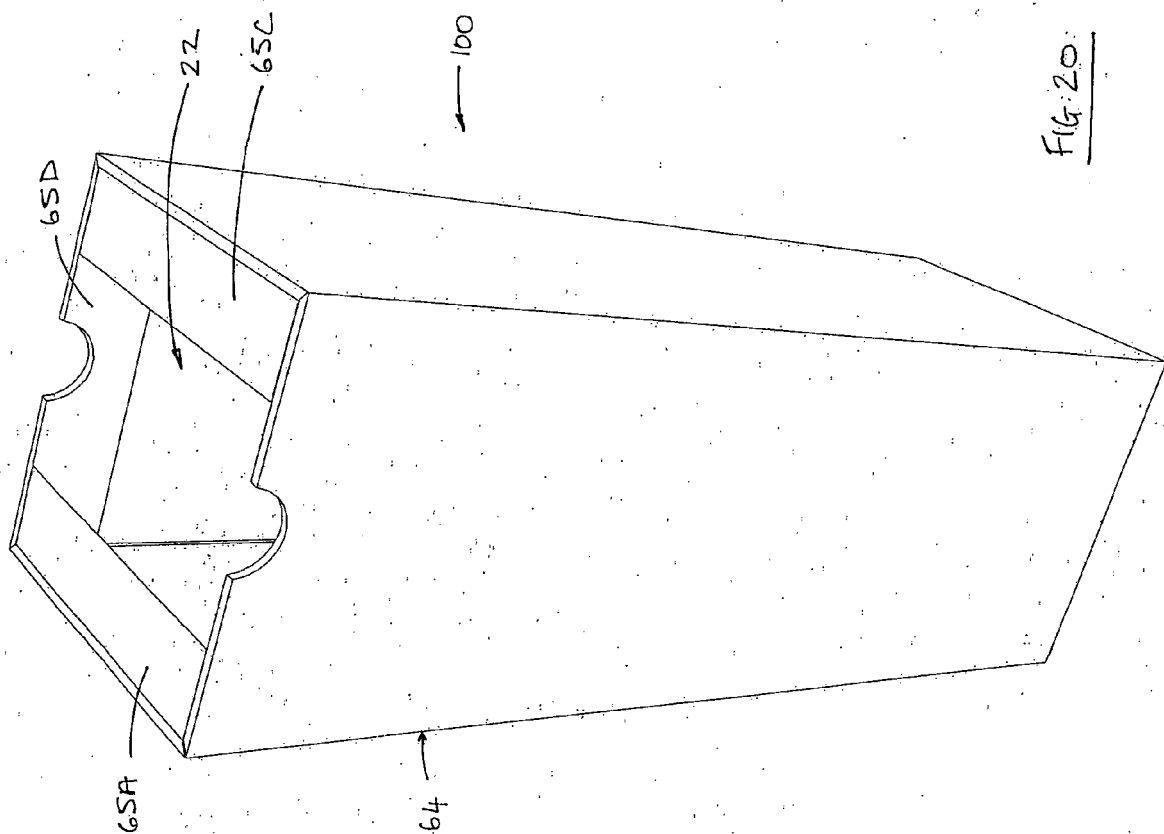
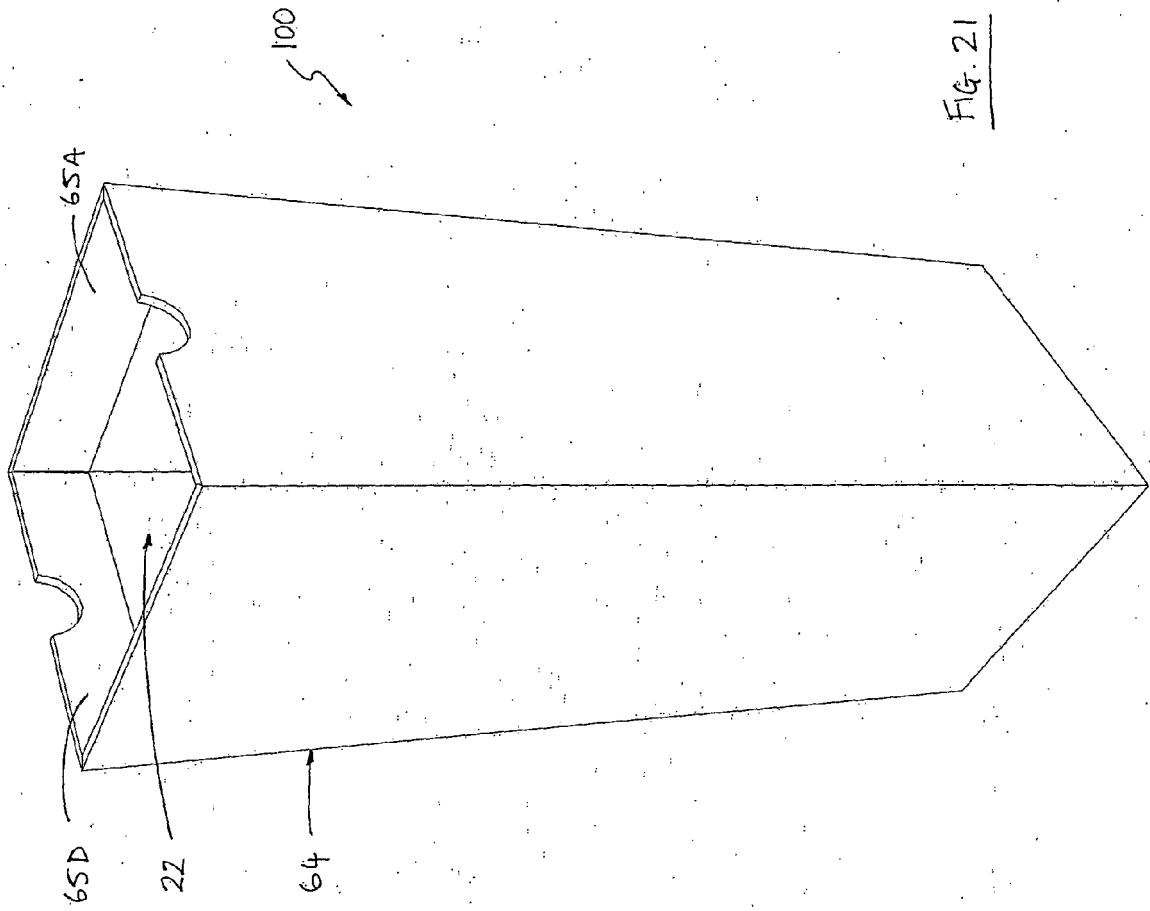


FIG. 17









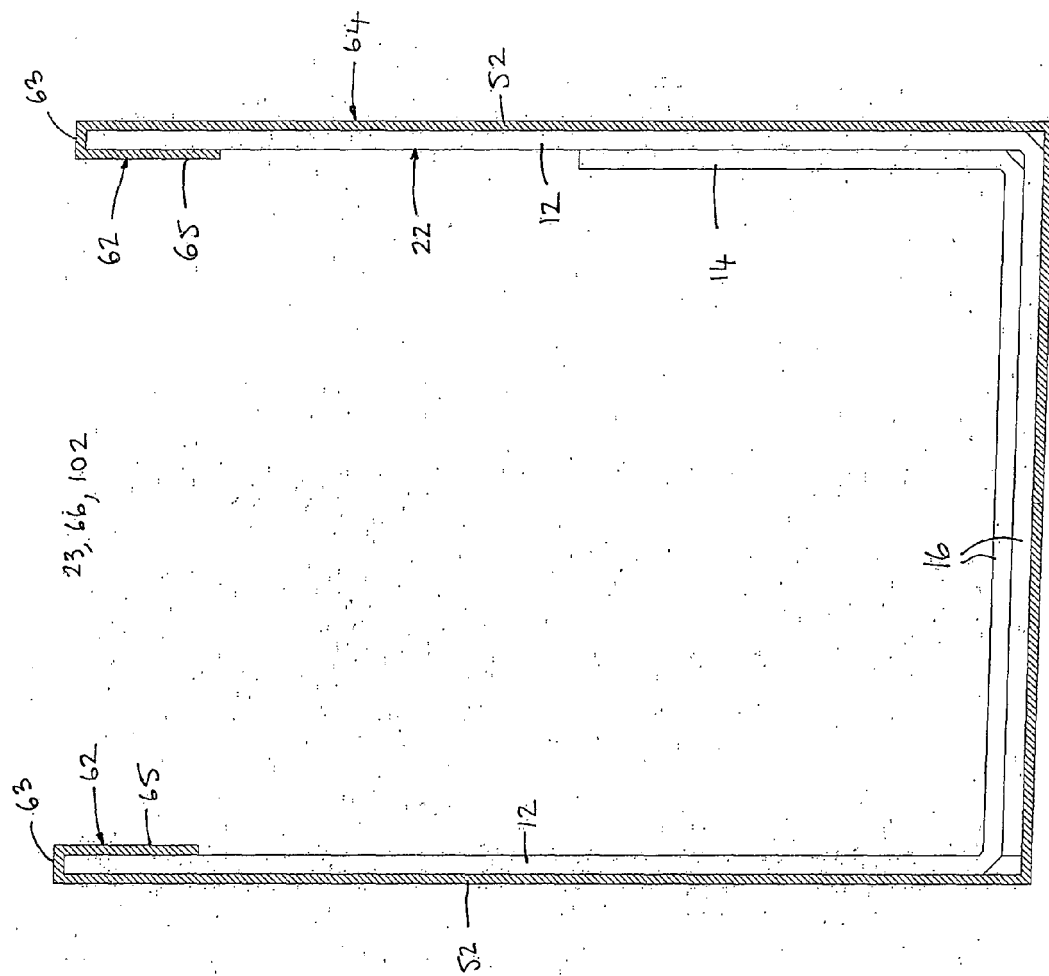


Fig. 22



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 00 2153

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 April 2008	Examiner Jervelund, Niels
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 00 2153

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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