



(11) **EP 2 035 285 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:  
**17.11.2010 Bulletin 2010/46**

(21) Application number: **07811914.6**

(22) Date of filing: **21.05.2007**

(51) Int Cl.:  
**B65D 5/46 (2006.01)**

(86) International application number:  
**PCT/US2007/069380**

(87) International publication number:  
**WO 2007/137231 (29.11.2007 Gazette 2007/48)**

(54) **CARTON WITH CARRYING HANDLE**

KARTON MIT TRAGEGRIFF

CARTON AVEC POIGNÉE

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR**

(30) Priority: **19.05.2006 GB 0610005**

(43) Date of publication of application:  
**18.03.2009 Bulletin 2009/12**

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## Description

### Background of the Invention

**[0001]** The present invention relates to carrying handles for cartons and more specifically, but not exclusively to a strengthening and cushioning arrangement.

**[0002]** It is known in the art to provide carrying handles for cartons containing a plurality of articles such as bottles of beverages. When such cartons are loaded, they are heavy and therefore the handles by which the loaded cartons are carried need to be strong and durable.

**[0003]** A simple and well known technique for providing a handle is disclosed for example in WO2005/100174 to Blln in which a handle aperture is struck from a wall of the carton and a user can grasp the carton for lifting using the handle aperture. The cut edge of the handle aperture can however cut into a user's palm which is undesirable. WO2005/100174 discloses a carton arrangement wherein a series of handle flaps are provided which fold around the edge of the handle aperture thereby to reinforce the handle structure and to alleviate the discomfort that can be suffered by a user. This arrangement however provides only limited reinforcement and when cartons are heavy it is desirable to provide greater reinforcement and cushioning of the handle.

**[0004]** Further handle arrangements are shown in EP0394730 and US4058250. EP0394730 discloses a package made from a blank having at least four wide and narrow side walls, connected via fold lines to form a tubular box, with lid and bottom closure tabs articulated thereon, all the wide and narrow side walls being of at least double layer construction by means of an inside frame the full inside volume of the package and its rigidity to be maintained in a powder tight design, a gripping opening is formed in an outer side wall by folding a gripping tab. In US4058280, a side carry carton is disclosed wherein complete inward folding of hand hole forming panel is prevented by an extension panel, which extension panel serves to reinforce the hand hole forming panel.

**[0005]** The present invention serves to at least mitigate these and other problems of the prior art by providing an improved handle arrangement.

### Summary of the Invention

**[0006]** According to a first aspect, the invention provides, a carton for containing articles, the carton comprising a handle for lifting the carton, said handle comprising a handle flap and a handle aperture each formed from one carton wall and a handle flap support structure disposed internally of said carton, the handle flap being foldable, internally of the carton, through the handle aperture thereby to facilitate lifting of the carton, the handle flap support structure resists the folding of said handle flap completely inwardly of the carton into overlapping relationship with said one carton wall and provides a re-

silient cushion for the carrying handle and the handle flap support structure comprises a panel, said panel including a connected part connected to an internal face of said handle flap, and a deformable part that is deformable such that when the handle flap is folded inwardly, the folded handle flap abuts the deformable part of said panel and further inward folding of the handle flap is thereby restricted.

**[0007]** Preferably, the handle flap support structure is set-up automatically by virtue of folding the handle flap inwardly of the carton.

**[0008]** Optionally said panel may include another connected part connected to a top panel of the carton and the deformable part of the panel is juxtaposed by each of the connected parts of the panel.

**[0009]** Preferably, at least a portion of the deformable part of said panel is deformable, upon moving the handle flap inwardly of the carton, to provide a strut that braces between the handle flap and said one carton wall. Even more preferably, at least a portion of the deformable part of said panel is deformable to provide a strut between a second wall of the carton and said one carton wall.

**[0010]** Preferably the deformable part comprises a series of parallel fold lines. The fold lines predetermine the deformation of the handle flap support structure such that a tubular structure is set-up when the handle flap is folded inwardly of the carton. The tubular structure is formed from the deformable part and the one carton wall and is substantially triangular in cross section.

**[0011]** The handle flap may optionally be foldable around the handle flap support structure such that the handle flap support structure provides a cushion. Optionally, the deformable part of said panel substantially is co-extensive with said handle flap.

**[0012]** According to a second aspect the invention provides a flat pre-glued sleeve for forming a tubular carton, comprising a handle for lifting the carton, said handle comprising a handle flap and a handle aperture each formed from one carton wall and a handle flap support structure disposed internally of said carton, the handle flap being foldable, internally of the carton, through the handle aperture thereby to facilitate lifting of the carton, the handle flap support structure comprising a panel, said panel comprising a first part connected to an internal face of said handle flap, a second part that is deformable and a third part connected to a wall of the sleeve such that when the handle flap is folded inwardly, a strut between said handle flap and said one carton wall is formable and further inward folding of the handle flap is thereby restricted.

**[0013]** According to a further aspect, the invention provides a blank for forming a carton having a carrying handle, the blank comprising a series of hinged panels for forming the carton walls, a handle flap struck from one of said carton walls and a handle flap support structure provided by and hinged to another of said carton walls, the handle flap support structure comprising a deformable panel and a connecting panel, the connecting panel

for connecting the handle flap support structure to an inside face of said handle flap and said deformable panel for forming a tubular structure between the handle flap and said one carton wall.

**[0014]** Preferably said handle flap support structure is hinged to an inner top wall of the carton and said one carton wall is hinged to an outer top panel and provides a side wall of the carton.

**[0015]** Optionally the handle flap support structure is hinged to the inner top wall by a fold line aligned with a fold line between the outer top wall and said one carton wall. Alternatively the handle flap support structure is hinged to the inner top wall by a fold line off set from a fold line between the outer top wall and said one carton wall.

**[0016]** Optionally the deformable panel comprises at least a pair of fold lines to predetermine the deformation of said deformable panel when said tubular structure is formed. Optionally, a hinged connection between the inner handle flap and deformable portion is aligned with a fold line connecting the handle flap to said one carton wall. Alternatively a hinged connection between the inner handle flap and deformable portion is off set from a fold line connecting the handle flap to said one carton wall.

#### Brief Description of the Drawings

**[0017]** Two exemplary embodiments of the invention will now be described by way of example only. The two embodiments illustrated and described do not represent the only envisaged implementations of the invention. The embodiments are described with reference to the accompanying drawings in which:

Fig. 1 is a plan view of a blank for forming a carton with a handle according to a first embodiment of the invention;

Fig. 1A is an enlarged plan view of a section of the blank of figure 1;

Fig 2 shows a cross-sectional view of the set-up carton before the handle of the present invention is deployed;

Fig. 2A shows a second cross-sectional view of the set-up carton once the handle of the first embodiment has been fully deployed;

Fig. 3 shows an internal view of a handle structure of the present invention;

Fig. 4 is a perspective view of a carton formed from the blank of figure 1 with a handle structure illustrated in a position of use;

Fig. 5 is a plan view of a blank for forming a carton with a handle according to a variation of the first em-

bodiment of the invention:

Fig. 5A is an enlarged plan view of a section of the blank of figure 5;

Fig. 6 shows a cross-sectional view of the set-up carton formed from the blank of Figure 5 before the handle of the second embodiment is deployed; and

Fig. 6A shows a second cross sectional view of the set-up carton of Fig. 6 once the handle of the second embodiment has been fully deployed.

#### Detailed Description of the Preferred Embodiments

**[0018]** Referring to the drawings, and in particular Figure 1 thereof, there is shown a blank 10 for forming an end-loading carton 100 (see Figure 4) made from paper board or similar foldable sheet material. The blank 10 comprises a series of main panels 20, 18, 16, 14 and 12 hinged one to the next along fold lines 22, 24, 26 and 28 respectively.

**[0019]** Turning to the Figures, a blank 10 is shown in Figure 1; the blank 10 may be formed from paperboard or other suitable sheet material that can be folded to construct a carton 100, which is shown in Figure 4. The carton 100, of the present embodiment is used for packaging beverage containers such as bottles; other uses are of course envisaged.

**[0020]** The blank 10 of Figure 1, comprises a series of main panels for forming the walls of the carton 100. The main panels include a top panel 20; first side panel 18, bottom panel 16, second side panel 14 and inner panel 12 hinged one to the next in series along fold lines 22, 24, 26 and 28 respectively.

**[0021]** Each end of the carton 100 is at least partially closable by end flaps 70a, 68a, 66a and 64a, 70b, 68b, 66b and 64b which are hinged to the main panels along fold lines 32a, 34a, 36a, 38a, 32b, 34b, 36b and 38b. Use of end flaps for closing cartons is well known and will not be described in detail other than in relation to lop end flaps 70a and 70b wherein a handle flap 50a/50b is struck therefrom and hinged thereto.

**[0022]** The handle flaps 50a/50b remain hinged to the respective top end flap 70a/70b along fold lines 30a/30b.

**[0023]** Finally blank 10 comprises an inner panel 12 hinged to each end of which, along fold line 40a, 40b is a deformable panel, collectively 52a/54a/56a and 52b/54b/56b. Each deformable panel 52a/54a/56a and 52b/54b/56b is defined by fold lines 55a & 57a and 55b & 57b. Fold lines 53a and 53b each connect an inner handle flap 62a, 62b to the respective deformable panel 52a/54a/56a or 52b/54b/56b. Hinged to the inner panel 12, along fold lines 67a, 67b are corner panels 60a, 60b, 60c and 60d, these corner panels 60a, 60b, 60c and 60d are entirely optional. The inner panel 12 and deformable panels 52a/54a/56a and 52b/54b/56b of the blank 10 are shown in enlarged form in Figure 1A.

**[0024]** illustrated in Figure 1 are areas designated for gluing, these include G1 on inner panel 12, G2a, G2b on each of the inner handle flaps 62a, 62b and G3a, G3b, G3c and G3d on the optional corner panels 60a, 60b, 60c and 60d. The deformable panels 52a/54a/56a and 52b/54b/56b optionally are spaced from corner panels 60a, 60b, 60c and 60d by cut out portions 61a, 61b, 61c and 61d.

**[0025]** Since the carton and blank are symmetrical and each end of the carton is identical, aspects of the present invention will be described only in relation to one end, it being understood that the other end is the same.

**[0026]** Whereas the present invention is being described and illustrated in relation to an end-loading carton, commonly known in the art, it will be obvious to one skilled in the art upon reading this description that the handle arrangement of the present invention has application outside end-loading cartons and protection for the invention should not therefore be considered as limited to only one application.

**[0027]** Turning to the construction of the carton 100 from blank 10, a series of sequential folding and gluing operations are required, which preferably can be performed in a straight line machine, so that the carton 100 and/or blank 10 are not required to be rotated or inverted to complete the construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

**[0028]** Inner panel 12 is adhered to an inside face of top panel 20 by folding the blank 10 about fold line 26, so that the second side panel 14 and inner panel 12 overlay the bottom panel 16 and first side panel 18. Glue is then applied to areas G1, G2a/G2b, G3a/G3b/G3c and G3d. The top panel 20 is then folded about fold line 22 so that it overlays the inner panel 12 and becomes adhered thereto. Simultaneously, the corner panels 60a, 60b, 60c and 60d and inner handle flaps 62a, 62b are adhered to the top end flaps 70a and 70b respectively.

**[0029]** Deformable panel 52a/54a/56a and 52ab/54b/56b, is disposed between the adhered portions of the inner panel 12 and inner handle flaps 62a, 62b and remains free of connection of the top panel 20 so that it may be deformed and erected into a handle flap support structure 80 as shown in Figures 2, 2A and 3 and described in detail below.

**[0030]** The pre-glued carton blank in flat form is then erected into a tubular structure, the carton is loaded with articles from one or both ends and then the end flaps 70a, 68a, 66a and 64a, 70b, 68b, 66b and 64b are folded and glued to provide end closures of the carton 100 as illustrated in Figure 4.

**[0031]** As the top end flaps 70a/70b are folded downwardly, the deformable panel 52a/54a/56a and 52ab/54b/56b may be partially set-up, this is illustrated in Figure 2. To carry the carton 100, one or each handle flap and inner handle flap pair 50a/62a, 50b/62b is folded inwardly of the respective top end flap 70a, 70b though a handle aperture 15a, 15b which is thereby formed. As the or

each handle flap and inner handle flap pair 50a/62a or 50b/62b is folded inwardly, the respective fold lines 55a, 57a or 55b, 57b cause a tubular handle flap support structure 80 to be set-up from portions 52a, 54a or 52, 54b of the respective deformable panel and a portion of the respective top end flap 70a or 70b, as shown in Figures 2A and 3. As the handle flap support structure is set-up, further inward folding of the or each handle flap and inner handle flap pair 50a/62a, 50b/62b becomes limited. The or each handle flap and inner handle flap pair 50a/62a, 50b/62b is prevented from being folded 180 degrees into alignment with the inside face of top end flap 70a/70b due to the handle flap support structure 80 providing a resilient cushion.

**[0032]** This is illustrated in Figure 3 which shows an internal view of the folded handle flap and inner handle flap pair 50a/62a and the handle flap support structure 80 providing the resilient cushion and resisting further inward folding of the handle flap and inner handle flap pair 50a/62a. In this way the handle flap support structure 80 provides reinforcement of the handle structure and provides a structure which is more comfortable by which a user can grasp the carton 100 for lifting.

**[0033]** In the first exemplary embodiment described and illustrated, the series of parallel lines 53a, 55a, 57a and 40a predetermine the shape and arrangement of the handle flap support structure 80 and determine the degree to which the inward folding of the or each handle flap and inner handle flap pair 50a/62a, 50b/62b is resisted. The series of parallel lines define a deformable portion which is juxtaposed and disposed between the inner handle flap 62a and the inner panel 12. The inner handle flap 62a and the inner panel 12 are each adhered to internal faces of the carton and thereby provide length to the carton 100 and to the handle structure.

**[0034]** In the first embodiment shown, fold lines 40a & 40b are offset and not in alignment with the fold line 32a/32b between the top end flap 70a/70b and the top panel 20. The off-set arrangement of fold lines 40a/40b facilitates the partial automatic set-up of the handle flap support structure 80 when the blank 10 is set-up into a carton 100. This is illustrated in figures 2 and 2a. As the top-end flaps 70a/70b are folded downwardly to close the carton end, panel 56a/56b of the handle flap support structure 80 does not fold around the contour of the corner that is created between the top panel 20 and top-end flap 70a 70b, instead, due to the geometry of the deformable portion, panel 56a/56b is pushed outwardly of the internal corner and thus panel 54a/54b is also forced out of overlapping relationship with the top end flap 70a/70b as depicted in Figure 2A. In this way the specific but exemplary arrangement depicted facilitates an optional initial set-up of the handle flap support structure 80 when the carton is first erected.

**[0035]** Similarly the fold lines 53a/53b between the inner handle flap 62a/62b and the deformable panel 52a/54a/56a and 52a/54a/56a are offset and not in alignment with the fold line 30a/30b about which the handle flap

50a/50b hinges such that when the carton 100 is erected, inward movement of the handle flap 50a causes portion 52a/52b of the deformable panel 52a/54a/56a, 52b/54b/56b to be pushed inwardly and upwardly toward the inner panel 12. This action causes the handle flap support structure 80 automatically to be set-up by virtue of deploying the handle.

**[0036]** The deformable portion concertinas as the handle flap and inner handle flap pair 50a/62a and 50b/62b are folded inwardly and thereby a cushion is provided around which the handle flap and inner handle flap pair 50a/62a and 50b/62b may be folded. In this way the handle flap support structure 80 is automatically set-up by virtue of deploying the handle flap attached internally to the carton as it is set-up and formed. The handle flap support structure 80 may be formed from material not integral to the blank 10 from which the main body of the carton 100 is formed.

**[0037]** A second embodiment of the invention is illustrated in Figures 5 to 6A. The second embodiment is similar to the first embodiment and therefore like reference numerals have been used to denote like features, albeit the reference numerals have been raised by a factor '100' to indicate that they relate to the second embodiment. Since the second embodiment is similar in many respects to the arrangement illustrated in respect of the first embodiment, only the differences are described in detail.

**[0038]** In the second embodiment the fold lines 153a/153b are in alignment with fold lines 130a/130b and fold lines 140a/140b are in alignment with fold lines 132a/132b.

**[0039]** The handle flap support structure 180 of the second embodiment is created utilizing the slack provided by the deformable portion 152a/154a/156a which is created upon folding the outer handle flap 150a inwardly of the top-end flap 170a. In the second embodiment, it is the excess material, or slack provided between fold lines 140a and 153a relative to the spacing between fold lines 132a and 130a that facilitates the formation of the 3-dimensional handle flap support structure 180, without depending upon the offset arrangement of the fold lines 30a and 53a and 32a and 56a, as in the first embodiment. Whereas in the first embodiment both the off-set fold arrangement and the excess material provided by the deformable portion contribute to the setting-up of the handle flap support structure 80.

**[0040]** The second embodiment also differs from the first embodiment in that the deformable portion is separated, by means of cuts/slits 151a, 161b, 161c and 161d, from the adjacent glued portions 160 and 160 although in both embodiments the gaps 61a, 61b, 61c, 61d or slits 161a, 161b, 161c and 161d enable the deformable portion 52a/54a/56a and 152a/154a/156a to be erected into a 3D structure.

**[0041]** It will be obvious to one skilled in the art upon reading the foregoing that various amendments and ameliorations may be made without departing from the

scope of the present invention as defined by the claims, for example, the size and shape of the panels may be adjusted to accommodate articles of differing size or shape. The handle aperture and flap may be shaped in a different manner; the handle flap support structure may take various forms and indeed may not solely be formed from an inner panel integral with the remainder of the blank. Indeed a carton formed of more than a single part blank may incorporate the invention and the handle flap support structure may be formed from a separate piece of material. The handle flap support structure being automatically set-up upon deployment of the handle flap is an optional feature and it is envisaged that the handle flap support structure may be set-up internally of the carton in a number of ways, for example, during construction of the carton, preferably when the top-end flap 70a/70b is folded into position to close the end of the carton 100. Alternatively the handle flap support structure 80 may take the form of a pre-folded cushion.

**[0042]** It will be recognised that as used herein, directional references such as "top", "bottom", "front", "back", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only; indeed it is envisaged that hinged connection can be formed from one or more of the following, a score line, a frangible line or a fold line without departing from the scope of the invention as defined by the claims.

## Claims

1. A carton for containing articles, the carton comprising a handle for lifting the carton, said handle comprising a handle flap (50a, 150a) and a handle aperture (15a) each formed from one carton wall (70a, 170a) and a handle flap support structure disposed internally of said carton, the handle flap (50a, 150a) being foldable, internally of the carton, through the handle aperture thereby to facilitate lifting of the carton, the handle flap support structure resisting the folding of said handle flap completely inwardly of the carton into overlapping relationship with said one carton wall and providing a resilient cushion for the carrying handle, the handle flap support structure comprising a panel, said panel comprising a first part (62a, 162a) connected to an internal face of said handle flap, **characterised in that** said panel further comprises a second part (52a/54a/56a, 152a/154a/156a) that is deformable such that when the handle flap (50a, 150a) is folded inwardly, the first part of said panel abuts the second part of said panel and complete inward folding of the handle flap is thereby restricted.
2. A carton according to claim 1 wherein the handle

flap support structure is set-up automatically by virtue of folding the handle flap inwardly of the carton.

3. A carton according to claim 1 or claim 2 wherein said panel further comprises a third part (12, 112) connected to a top panel (20, 120) of the carton and the second part of the panel which is deformable is juxtaposed by each of the first and third parts of the panel.
4. A carton according to any of claims 1 to 3 wherein at least a portion of the second part of said panel is deformable, upon moving the handle flap inwardly of the carton, to provide a strut (54a, 154a) that braces between the handle flap and said one carton wall (70a, 170a).
5. A carton according to any of claims 1 to 4 wherein at least a portion of the second part of said panel is deformable to provide a strut (56a) between a second wall of the carton and said one carton wall.
6. A carton according to any of claims 1 to 5 wherein the second part of the panel comprises a series of parallel fold lines (53a, 55a, 57a, 153a, 155a, 157a) for predetermining the deformation of said panel such that a tubular structure is set-up when the handle flap is folded inwardly of the carton, the tubular structure being substantially triangular in cross section.
7. A carton according to any of claims 1 to 6 wherein the handle flap is foldable around the handle flap support structure such that the handle flap support structure provides a cushion.
8. A carton according to any of claims 5 to 7 wherein the second part of said panel substantially is co-extensive with said handle flap.
9. A flat pre-glued sleeve for forming a tubular carton, comprising a handle for lifting the carton, said handle comprising a handle flap (50a, 150a) and a handle aperture (15a) each formed from one carton wall and a handle flap support structure disposed internally of said carton, the handle flap being foldable, internally of the carton, through the handle aperture thereby to facilitate lifting of the carton, the handle flap support structure comprising a panel, said panel comprising a first part (62a, 162a) connected to an internal face of said handle flap, **characterised by** a second part (52a/54a/156a, 152a/154a/156a) that is deformable and a third part (12, 112) connected to a wall of the sleeve such that when the handle flap is folded inwardly, a strut (54a, 154a) between said handle flap and said one carton wall is formable and further inward folding of the handle flap is thereby restricted.

10. A package comprising a carton according to any one of claims 1 to 8 and one or more articles, the package liftable by the carrying handle of the carton.

- 5 11. A blank for forming a carton having a carrying handle, the blank comprising a series of hinged panels for forming the carton walls, a handle flap (50a, 150a) struck from one of said carton walls (70a, 770a) and a handle flap support structure provided by and hinged to another of said carton walls, the handle flap support structure comprising a deformable panel (52a, 152a) and an inner handle flap (62a, 162a), wherein the inner handle flap (62a, 162a) is for connecting the handle flap support structure to an inside face of said handle flap (50a, 150a) and **characterised by** said deformable panel for forming a tubular structure between the handle flap and said one carton wall.
- 10 12. A blank according to claim 11 wherein said handle flap support structure is hinged to an inner top wall (12, 112) of the carton and said one carton wall provides an end closure of the carton and is hinged to an outer top panel (20, 120) of the carton.
- 15 13. A blank according to claim 12 wherein the handle flap support structure is hinged to said inner top wall (112) by a fold line (140a) aligned with a fold line (132a) between the outer top wall (120) and said one carton wall (170a) or wherein the handle flap support structure is hinged to said inner top wall (12) by a fold line (40a) offset from a fold line (32a) between the outer top wall (20) and said one carton wall (70a).
- 20 14. A blank according to any one of claims 11 to 13 wherein the deformable panel comprises at least a pair of fold lines (53a, 55a, 57a, 153a, 155a, 157a) to predetermine the deformation of said deformable panel when said tubular structure is formed.
- 25 15. A blank according to any one of claims 11 to 14 wherein a hinged connection (153a) between the inner handle flap and deformable portion is aligned with a fold line (130a) connecting the handle flap to said one carton wall or wherein a hinged connection (53a) between the inner handle flap and deformable portion is offset from a fold line (30a) connecting the handle flap to said one carton wall.
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#### Patentansprüche

1. Schachtel zum Aufnehmen von Artikeln, wobei die Schachtel einen Griff zum Anheben der Schachtel aufweist, wobei der Griff eine Griffklappe (50a, 150a) und eine Grifföffnung (15a) aufweist, die jeweils aus einer Schachtelwand (70a, 170a) ausgebildet sind, und eine Griffklappen-Stützstruktur, die im Inneren

- der Schachtel angeordnet ist, wobei die Griffklappe (50a, 150a) faltbar ist, in das Innere der Schachtel, und zwar durch die Grifföffnung, um so das Anheben der Schachtel zu ermöglichen, wobei die Griffklappen-Stützstruktur einem vollständigen Falten der Griffklappe in das Innere der Schachtel in überlappender Beziehung mit der einen Schachtelwand entgegenwirkt und eine nachgiebige Dämpfung für den Tragegriff vorsieht, wobei die Griffklappen-Stützstruktur eine Wandfläche aufweist, wobei die Wandfläche einen ersten Bereich (62a, 162a) aufweist, der mit einer inneren Fläche der Griffklappe verbunden ist,
- dadurch gekennzeichnet, dass** die Wandfläche ferner einen zweiten Bereich (52a/54a/56a, 152a/154a/156a) aufweist, der deformierbar ist, so dass, wenn die Griffklappe (50a, 150a) nach innen gefaltet wird, der erste Bereich der Wandfläche mit dem zweiten Bereich der Wandfläche in anstoßende Beziehung gelangt und das vollständige Falten der Griffklappe nach innen **dadurch** eingeschränkt ist.
2. Schachtel nach Anspruch 1, wobei die Griffklappen-Stützstruktur automatisch aufgrund des Falten der Griffklappe in das Innere der Schachtel aufgestellt wird.
  3. Schachtel nach Anspruch 1 oder 2, wobei die Wandfläche ferner einen dritten Bereich (12, 112) aufweist, der mit einer Deckenwandfläche (20, 120) der Schachtel verbunden ist, und der zweite Bereich der Wandfläche, der deformierbar ist, in Juxtaposition sowohl mit dem ersten, als auch mit dem dritten Bereich der Wandfläche ist.
  4. Schachtel nach einem der Ansprüche 1 bis 3, wobei mindestens ein Abschnitt des zweiten Bereichs der Wandfläche deformierbar ist, und zwar bei Bewegungen der Griffklappe in das Innere der Schachtel, um einen Holm (54a, 154a) vorzusehen, der sich zwischen der Griffklappe und der einen Schachtelwand (70a, 170a) abstützt.
  5. Schachtel nach einem der Ansprüche 1 bis 4, wobei mindestens ein Abschnitt des zweiten Bereichs der Wandfläche deformierbar ist, um einen Holm (56a) zwischen einer zweiten Wand der Schachtel und der einen Schachtelwand vorzusehen.
  6. Schachtel nach einem der Ansprüche 1 bis 5, wobei der zweite Bereich der Wandfläche eine Reihe von parallelen Faltlinien (53a, 55a, 57a, 153a, 155a, 157a) zum Festlegen der Deformation der Wandfläche aufweist, so dass eine röhrenförmige Struktur aufgestellt wird, wenn die Griffklappe in das Innere der Schachtel gefaltet wird, wobei die röhrenförmige Struktur im Wesentlichen dreieckförmig im Querschnitt ist.
  7. Schachtel nach einem der Ansprüche 1 bis 6, wobei die Griffklappe um die Griffklappen-Stützstruktur faltbar ist, so dass die Griffklappen-Stützstruktur eine Dämpfung aufweist.
  8. Schachtel nach einem der Ansprüche 5 bis 7, wobei der zweite Bereich der Wandfläche im Wesentlichen koextensiv mit der Griffklappe ist.
  9. Flache vorgeklebte Röhre zum Ausbilden einer röhrenförmigen Schachtel, die einen Griff zum Anheben der Schachtel aufweist, wobei der Griff eine Griffklappe (50a, 150a) und eine Grifföffnung (15a) aufweist, die jeweils aus einer Schachtelwand ausgebildet sind, und eine Griffklappen-Stützstruktur, die im Inneren der Schachtel angeordnet ist, wobei die Griffklappe faltbar ist, in das Innere der Schachtel, und zwar durch die Grifföffnung, um so das Anheben der Schachtel zu ermöglichen, wobei die Griffklappen-Stützstruktur eine Wandfläche aufweist, wobei die Wandfläche einen ersten Bereich (62a, 162a) aufweist, der mit einer inneren Fläche der Griffklappe verbunden ist, **gekennzeichnet durch** einen zweiten Bereich (52a/54a/56a, 152a/154a/156a), der deformierbar ist, und einen dritten Bereich (12, 112), der mit einer Wand der Röhre verbunden ist, so dass, wenn die Griffklappe nach innen gefaltet wird, ein Holm (54a, 154a) zwischen der Griffklappe und der einen Schachtelwand ausbildbar ist und ferner ein Falten der Griffklappe nach innen **dadurch** eingeschränkt ist.
  10. Verpackung, die eine Schachtel nach einem der Ansprüche 1 bis 8 aufweist und einen oder mehrere Artikel, wobei die Verpackung durch den Handgriff der Schachtel anhebbar ist.
  11. Zuschnitt zum Ausbilden einer Schachtel, die einen Tragegriff hat, wobei der Zuschnitt eine Reihe von gelenkig miteinander verbundenen Wandflächen zur Ausbildung der Schachtelwände aufweist, eine Griffklappe (50a, 150a), die aus einer der Schachtelwände (70a, 170a) ausgestanzt ist, und eine Griffklappen-Stützstruktur, die durch eine der Schachtelwände vorgesehen ist und mit einer anderen der Schachtelwände gelenkig verbunden ist, wobei die Griffklappen-Stützstruktur eine deformierbare Wandfläche (52a, 152a) aufweist und eine innere Griffklappe (62a, 162a), wobei die innere Griffklappe (62a, 162a) zum Verbinden der Griffklappen-Stützstruktur mit einer inneren Fläche der Griffklappe (50a, 150a) vorgesehen ist, und **gekennzeichnet ist durch** die deformierbare Wandfläche zum Ausbilden einer röhrenförmigen Struktur, zwischen der Griffklappe und der einen Schachtelwand.
  12. Zuschnitt nach Anspruch 11, wobei die Griffklappen-Stützstruktur gelenkig mit einer inneren Decken-

wand (12, 112) der Schachtel verbunden ist, und die eine Schachtelwand einen Endverschluss der Schachtel vorsieht und gelenkig mit einer äußeren Deckenwandfläche (20, 120) der Schachtel verbunden ist.

13. Zuschnitt nach Anspruch 12, wobei die Griffklappen-Stützstruktur gelenkig mit einer inneren Deckenwand (112) verbunden ist, durch eine Faltlinie (140a), die ausgerichtet ist mit einer Faltlinie (132a) zwischen der äußeren Deckenwand (120) und der einen Schachtelwand (170a) oder wobei die Griffklappen-Stützstruktur gelenkig mit der inneren Deckenwand (12) verbunden ist, durch eine Faltlinie (40a), die versetzt von einer Faltlinie (32a) zwischen der äußeren Deckenwand (20) und der einen Schachtelwand (70a) angeordnet ist.
14. Zuschnitt nach einem der Ansprüche 11 bis 13, wobei die deformierbare Wandfläche mindestens ein Paar von Faltlinien (53a, 55a, 57a, 153a, 155a, 157a) aufweist, um die Deformation der deformierbaren Wandfläche festzulegen, wenn die röhrenförmige Struktur ausgebildet wird.
15. Zuschnitt nach einem der Ansprüche 11 bis 14, wobei eine gelenkige Verbindung (153a) zwischen der inneren Griffklappe und dem deformierbaren Abschnitt mit einer Faltlinie (130a) ausgerichtet ist, welche die Griffklappe mit der einen Schachtelwand verbindet, oder wobei eine gelenkige Verbindung (53a) zwischen der inneren Griffklappe und dem deformierbaren Abschnitt versetzt von der Faltlinie (30a) ist, welche die Griffklappe mit der einen Schachtelwand verbindet.

## Revendications

1. Carton destiné à contenir des articles, le carton comprenant une poignée permettant de soulever le carton, ladite poignée comportant une encoche de manutention (50a, 150a) et une ouverture de poignée (15a), chacune étant réalisée dans une paroi de carton (70a, 170a) et une structure de support d'encoche de manutention disposée à l'intérieur du carton, l'encoche de manutention (50a, 150a) étant repliable, à l'intérieur du carton, à travers l'ouverture de poignée, ce qui facilite le soulèvement du carton, la structure de support d'encoche de manutention résistant au pliage de ladite encoche de manutention complètement à l'intérieur du carton, en une relation de chevauchement avec ladite une paroi de carton, et fournissant à la poignée de transport un coussin élastique, la structure de support d'encoche de manutention comprenant un panneau, ledit panneau comprenant une première partie (62a, 162a) reliée à une surface interne de ladite encoche de manu-

5 tention, **caractérisé en ce que** ledit panneau comprend en outre une deuxième partie (52a/54a/56a, 152a/154a/156a) qui est déformable de sorte que, lorsque l'encoche de manutention (50a, 150a) est pliée vers l'intérieur, la première partie dudit panneau vient en butée contre la deuxième partie dudit panneau et le pliage complet vers l'intérieur de l'encoche de manutention est donc restreint.

- 10 2. Carton selon la revendication 1, dans lequel la structure de support d'encoche de manutention est mise en oeuvre automatiquement en pliant l'encoche de manutention à l'intérieur du carton.
- 15 3. Carton selon la revendication 1 ou la revendication 2, dans lequel ledit panneau comprend en outre une troisième partie (12, 112) reliée à un panneau supérieur (20, 120) du carton et la deuxième partie du panneau, cette dernière étant déformable, est juxtaposée par chacune des première et troisième parties du panneau.
- 20 4. Carton selon l'une quelconque des revendications 1 à 3, dans lequel au moins une portion de la deuxième partie dudit panneau est déformable, lorsque l'encoche de manutention se déplace à l'intérieur du carton, de manière à pouvoir fournir un élément de support (54a, 154a) qui sert de fixation entre l'encoche de manutention et ladite une paroi de carton (70a, 170a).
- 25 5. Carton selon l'une quelconque des revendications 1 à 4, dans lequel au moins une portion de la deuxième partie dudit panneau est déformable de manière à pouvoir fournir un élément de support (56a) entre une deuxième paroi du carton et ladite une paroi de carton.
- 30 6. Carton selon l'une quelconque des revendications 1 à 5, dans lequel la deuxième partie du panneau comprend une série de lignes de pliage parallèles (53a, 55a, 57a, 153a, 155a, 157a) pour prédéterminer la déformation dudit panneau de sorte qu'une structure tubulaire peut être mise en oeuvre lorsque l'encoche de manutention est pliée à l'intérieur du carton, la structure tubulaire étant sensiblement triangulaire en section transversale.
- 35 7. Carton selon l'une quelconque des revendications 1 à 6, dans lequel l'encoche de manutention est pliable autour de la structure de support d'encoche de manutention de sorte que la structure de support d'encoche peut servir de coussin.
- 40 8. Carton selon l'une quelconque des revendications 5 à 7, dans laquelle la deuxième partie dudit panneau est sensiblement coextensive avec ladite encoche de manutention.

9. Manchon préencollé plat destiné à former un carton tubulaire, comprenant une poignée permettant de soulever le carton, ladite poignée comportant une encoche de manutention (50a, 150a) et une ouverture de poignée (15a), chacune étant réalisée dans une paroi de carton et une structure de support d'encoche de manutention disposée à l'intérieur du carton, l'encoche de manutention étant repliable, à l'intérieur du carton, à travers l'ouverture de poignée, ce qui facilite le soulèvement du carton, la structure de support d'encoche de manutention comprenant un panneau, ledit panneau comprenant une première partie (62a, 162a) reliée à une surface interne de ladite encoche de manutention, **caractérisé par** une deuxième partie (52a/54a/56a, 152a/154a/156a) qui est déformable et une troisième partie (12, 112) reliée à une paroi du manchon de telle sorte que, lorsque l'encoche de manutention est repliée vers l'intérieur, il peut se former un élément de support (54a, 154a) entre ladite encoche de manutention et ladite une paroi de carton et le pliage plus complet vers l'intérieur de l'encoche de manutention est donc restreint.
10. Emballage comprenant un carton selon l'une quelconque des revendications 1 à 8 et un ou plusieurs articles, l'emballage pouvant être soulevé par la poignée de transport du carton.
11. Découpe pour former un carton présentant une poignée de transport, la découpe comprenant une série de panneaux articulés destinés à former les parois de carton, une encoche de manutention (50a, 150a) réalisée dans une des parois de carton (70a, 170a) et une structure de support d'encoche de manutention fournie par et reliée de manière articulée à une autre desdites parois de carton, la structure de support d'encoche de manutention comprenant un panneau déformable (52a, 152a) et une encoche de manutention interne (62a, 162a), dans laquelle l'encoche de manutention interne (62a, 162a) sert pour le raccordement de la structure de support d'encoche de manutention à une surface interne de ladite encoche de manutention (50a, 150a), et **caractérisée par** ledit panneau déformable destiné à former une structure tubulaire entre l'encoche de manutention et ladite une paroi de carton.
12. Découpe selon la revendication 11, dans laquelle ladite structure de support d'encoche de manutention est articulée sur une paroi supérieure interne (12, 112) du carton et ladite une paroi de carton sert de fermeture d'extrémité du carton et elle est articulée sur un panneau supérieur externe (20, 120) du carton.
13. Découpe selon la revendication 12, dans laquelle la structure de support d'encoche de manutention est articulée sur ladite paroi supérieure interne (112) par une ligne de pliage (140) alignée avec une ligne de pliage (132a) entre la paroi supérieure externe (120) et ladite une paroi de carton (170a), ou dans laquelle la structure de support d'encoche de manutention est articulée sur ladite paroi supérieure interne (12) par une ligne de pliage (40a) décalée par rapport à une ligne de pliage (32a) entre la paroi supérieure externe (20) et ladite une paroi de carton (70a).
14. Découpe selon l'une quelconque des revendications 11 à 13, dans laquelle le panneau déformable comprend au moins deux lignes de pliage (53a, 55a, 57a, 153a, 155a, 157a) pour prédéterminer la déformation dudit panneau déformable au moment où ladite structure tubulaire est formée.
15. Découpe selon l'une quelconque des revendications 11 à 14, dans laquelle le couplage articulé (153a) entre l'encoche de manutention interne et la portion déformable est aligné par rapport à une ligne de pliage (130a) reliant l'encoche de manutention à ladite une paroi de carton, ou dans laquelle le couplage articulé (53a) entre l'encoche de manutention interne et la portion déformable est décalé par rapport à une ligne de pliage (30a) reliant l'encoche de manutention à ladite une paroi de carton.

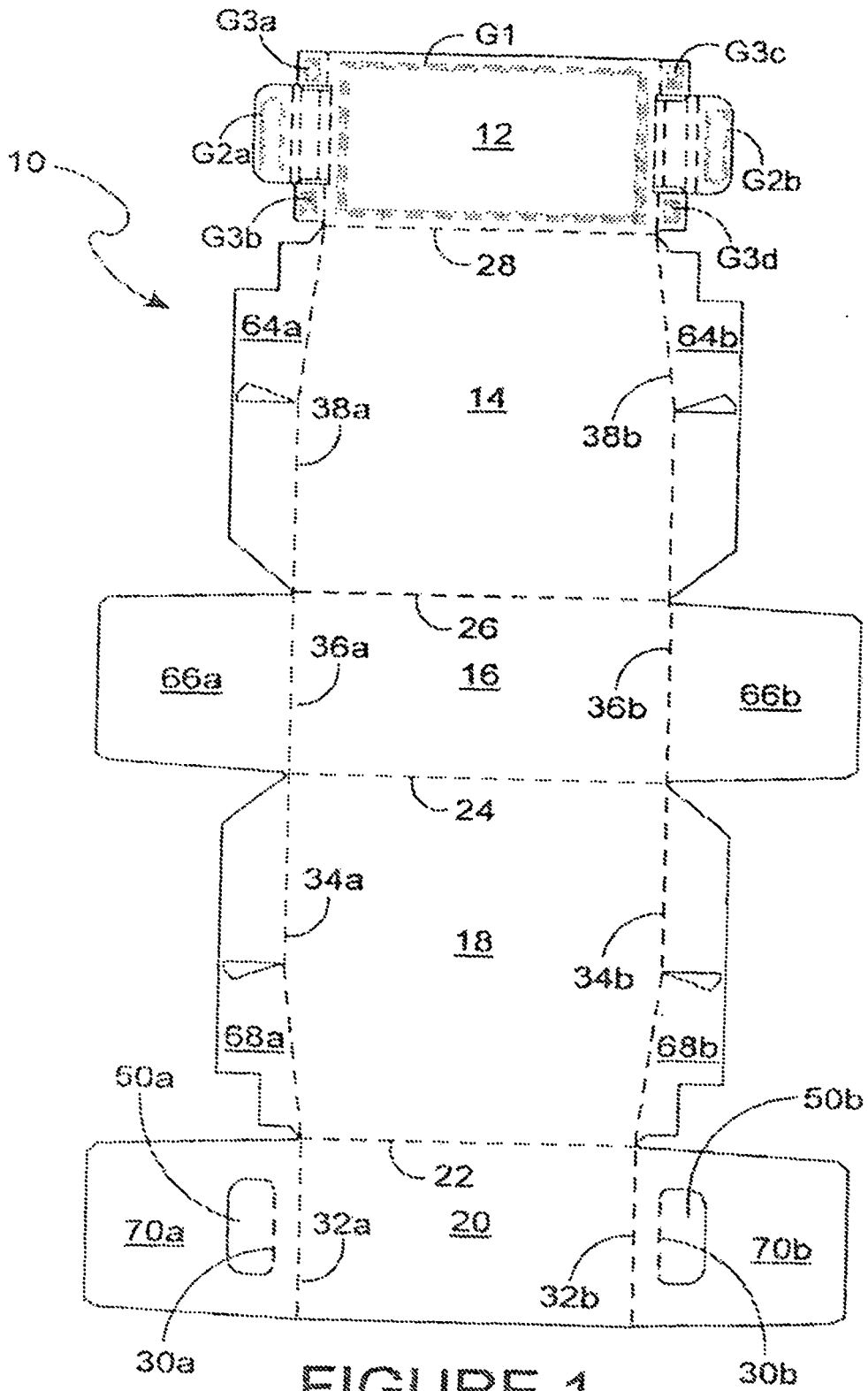


FIGURE 1



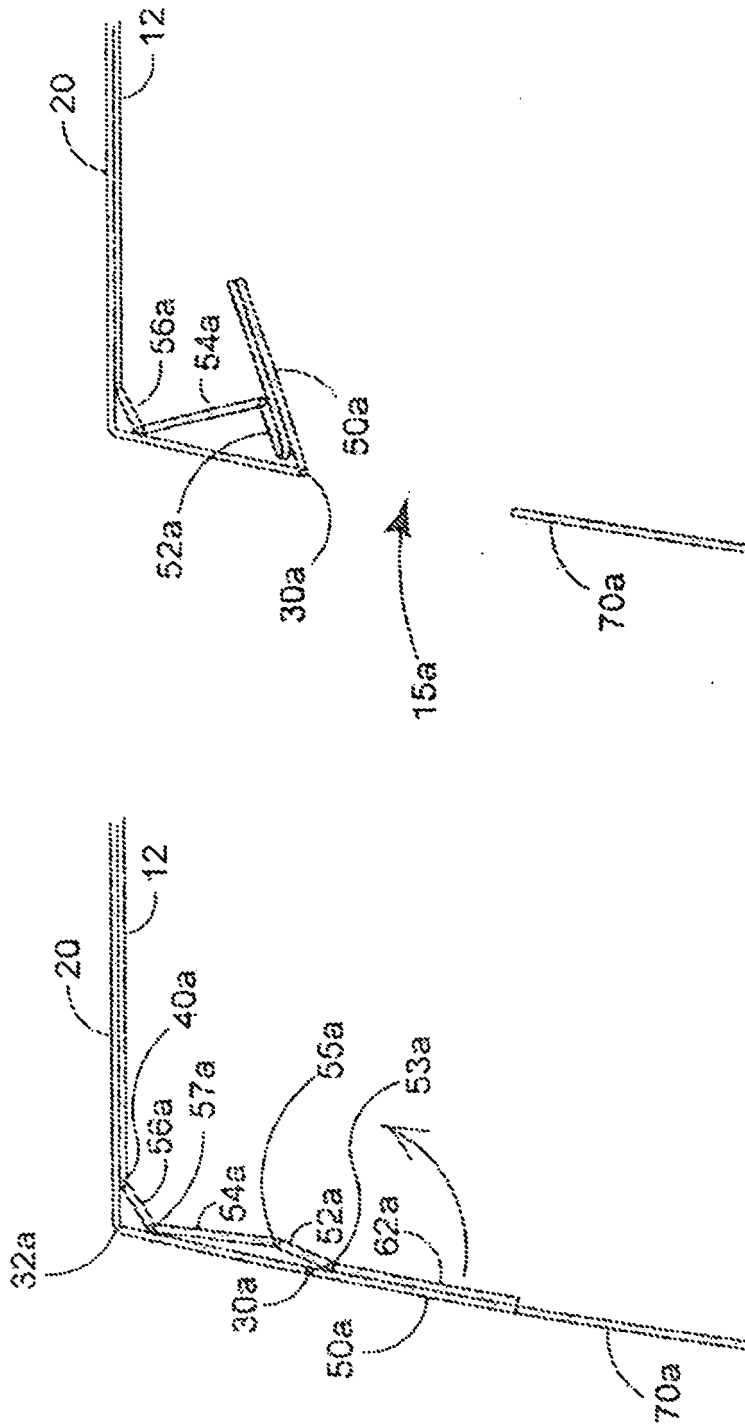


FIGURE 2A

FIGURE 2

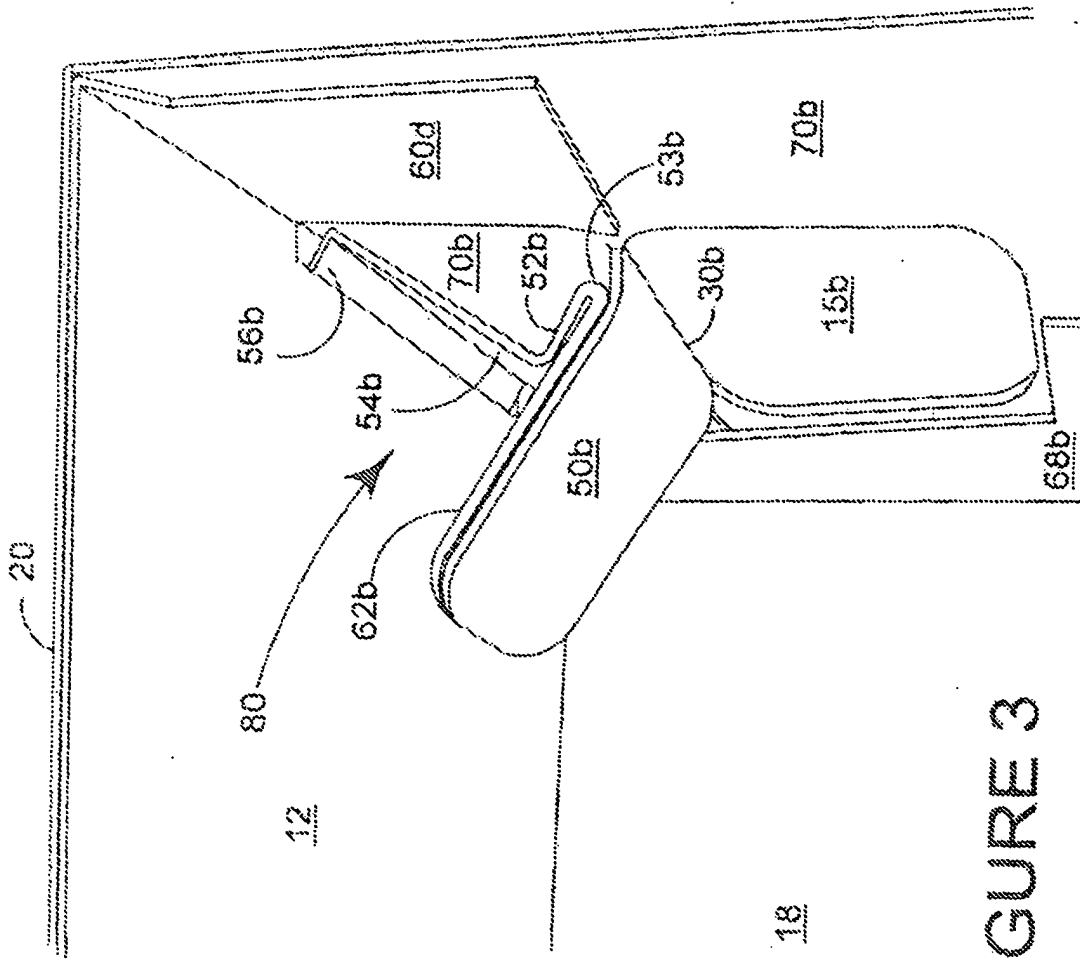


FIGURE 3

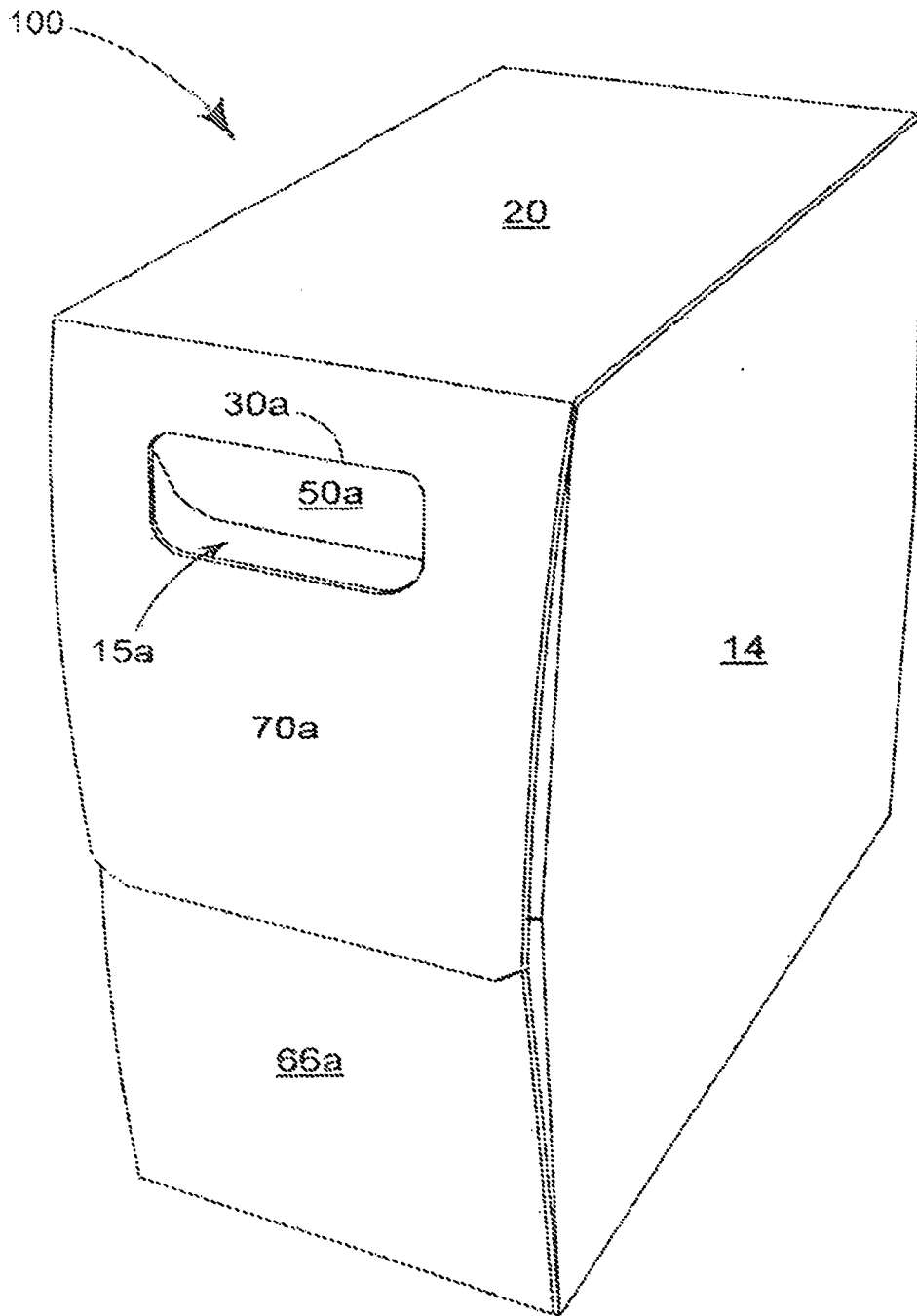


FIGURE 4

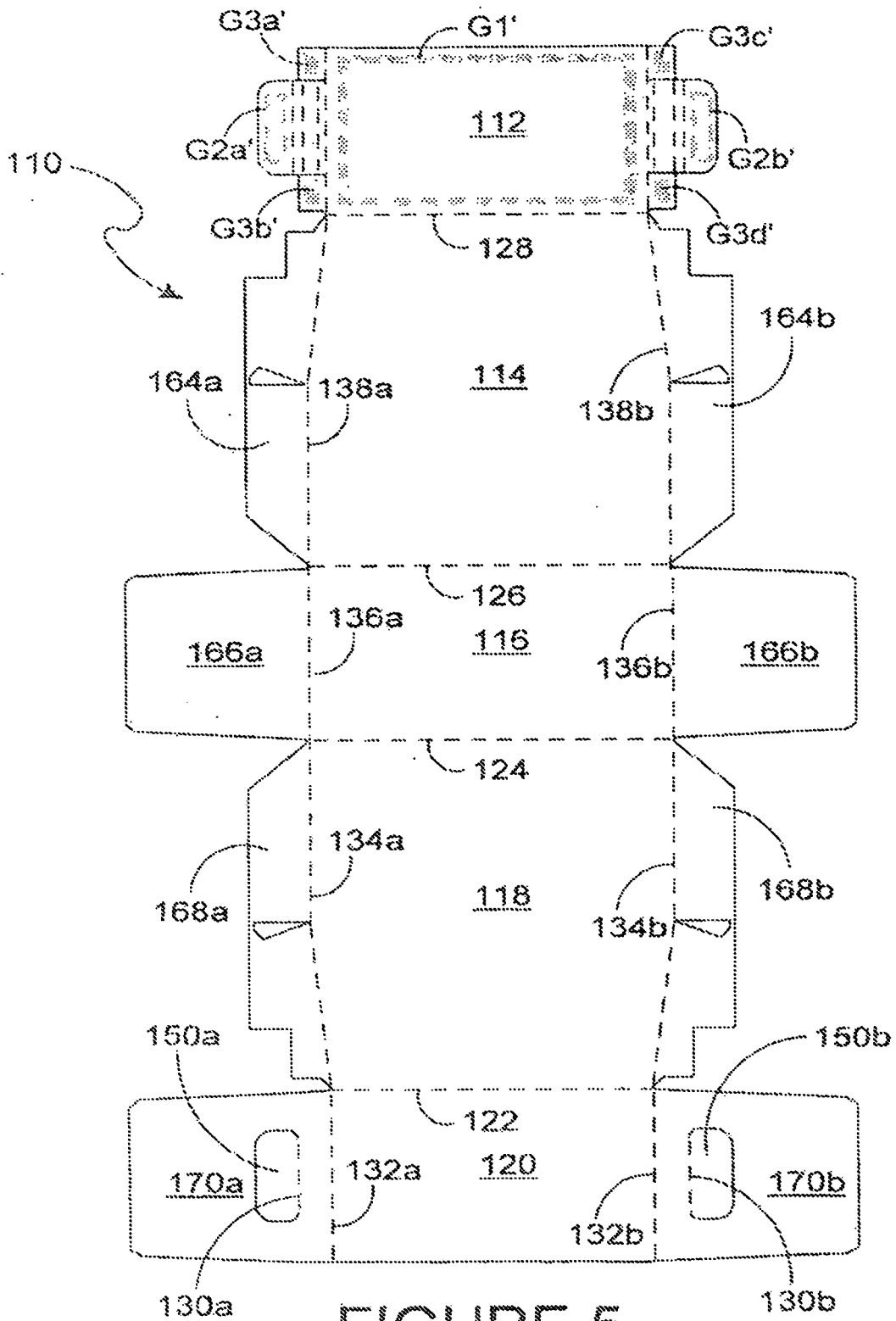


FIGURE 5

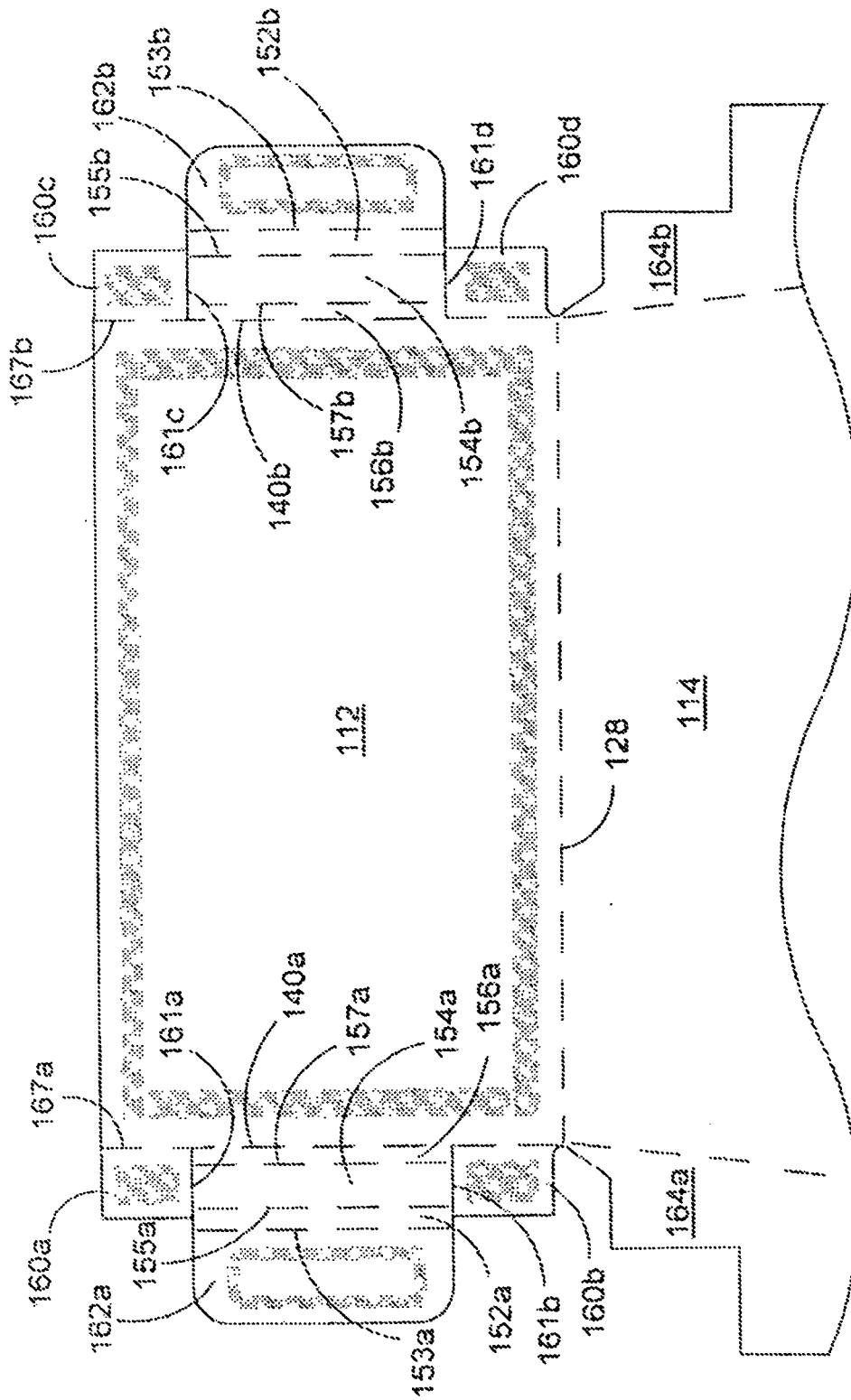


FIGURE 5A

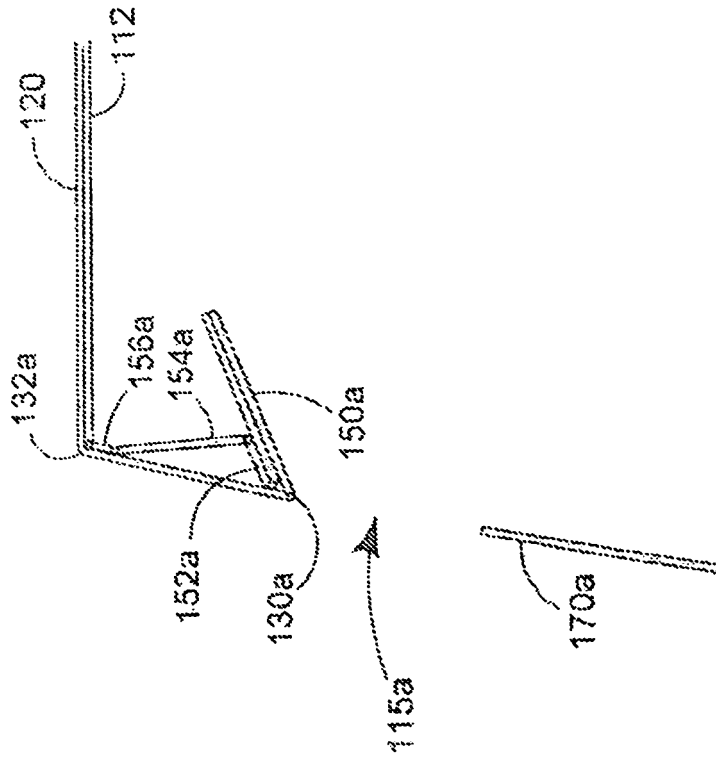


FIGURE 6A

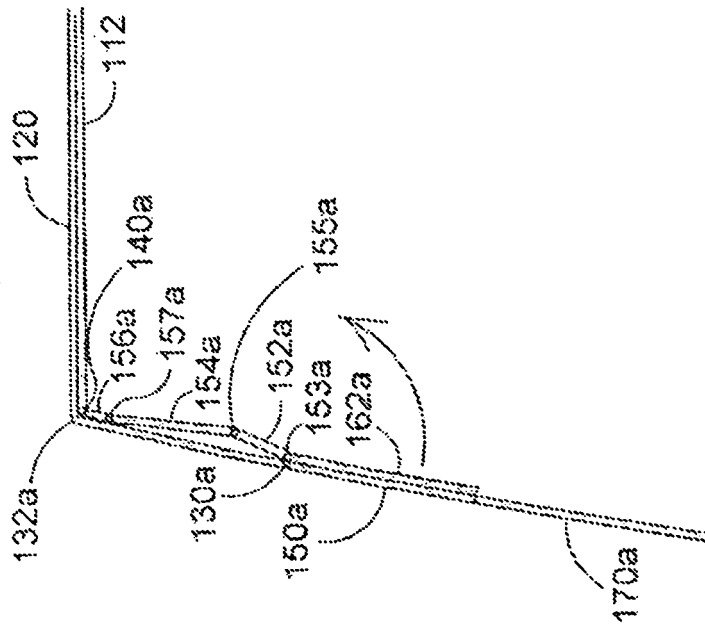


FIGURE 6

**REFERENCES CITED IN THE DESCRIPTION**

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