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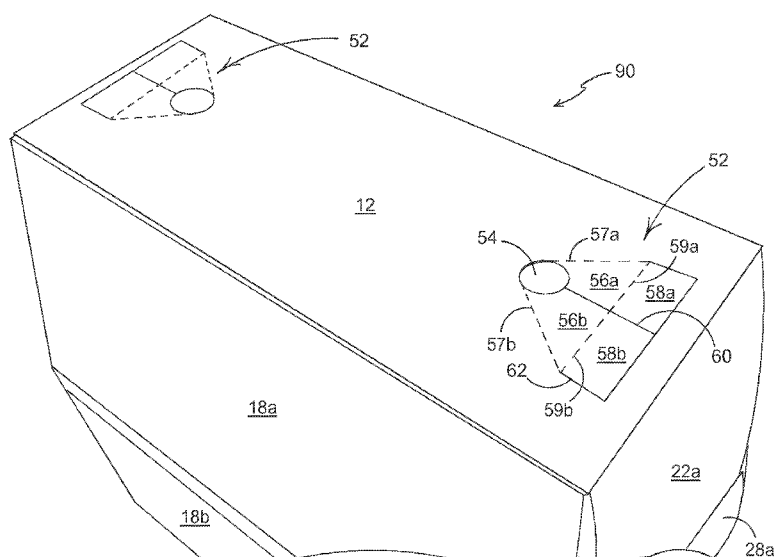


FIGURE 5

(57) Abstract: A carton for receiving one or more articles is formed by a plurality of panels (12, 14a, 14b, 16, 18a, 18b, 20). One (12) of the panels has a handle receiving device (52) including at least one receiving aperture (54) and at least one anchoring member (56a, 58a) formed from part of the one panel. The at least one receiving aperture is defined at least in part by the at least one anchoring member to receive a portion (A) of a handle (H) such that a first section of the at least one receiving aperture is closed by the at least one anchoring member when the portion of the handle is received in the at least one receiving aperture.

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CARTON AND CARTON BLANK

TECHNICAL FIELD

The present invention relates to a carton and blank for forming the same, more specifically,
5 but not exclusively to a carton adapted to receive a separate handle structure.

BACKGROUND

In the field of packaging it is often required to provide consumers with a package comprising multiple primary product containers, such multi-packs are desirable for shipping
10 and distribution and for display of promotional information. For cost and environmental considerations, such cartons or carriers need to be formed from as little material as possible and cause as little wastage in the materials from which they are formed as possible. Another consideration is the strength of the packaging and its suitability for holding and transporting large weights of articles.

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It is desirable to provide a handle in packaging to facilitate users to transport the package. It is also desirable for the handle to be provided separately from the carton, one advantage of this is that it allows the handle to be formed of different material to the carton, or material having different properties of those of the carton, the material from which the
20 carton is constructed.

It is also desirable for the handle to be stowed away when not in use.

SUMMARY

25 The present invention seeks to overcome or at least mitigate the problems of the prior art. According to a first aspect of the present invention, there is provided a carton for receiving one or more articles which carton comprises a plurality of panels comprising a top panel, first and second side panel and a bottom panel, wherein one of said plurality of panels comprises a handle receiving structure for receiving a handle, said handle receiving
30 structure comprising at least one anchoring mechanism for receiving an end of the handle,

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the anchor mechanism being adapted to receive the handle anchor and to retain the handle anchor therein.

Preferably, the carton comprises a handle at least one end of which comprises an anchor.

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Preferably, the anchor mechanism comprises an alignment device for aligning the handle therein.

Preferably, the anchor mechanism comprises an aperture defined in part by a first tab.

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Preferably, the aperture is defined in part by a second tab.

Preferably, the aperture comprises a first edge and a second edge said first and second edges being convergent with respect to each other so as to form the alignment device.

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Preferably, the first and second tabs are coupled to the said one panel along the first and second edges respectively.

Preferably, a first flap is hingedly connected to the first tab and a second flap is hingedly connected to the second tab.

20

Preferably, the first and/or second tabs are substantially triangular in shape.

Preferably, the first tab comprises a first arcuate cut out.

25

Preferably, the second tab comprises a second arcuate cut out.

Preferably, the first and second arcuate contacts are substantially semicircular such that together they form a circular aperture.

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Preferably, the first and second arcuate cut lines co-operate to form an aperture.

Preferably, the carton further comprises a second panel disposed in overlapping relationship with said one of said plurality of panels and said second panel comprises at least one aperture disposed in registry with the anchor mechanism.

Preferably, the anchor mechanism comprises an aperture which receives a handle strap.

Preferably, the anchor mechanism comprises one or more tabs displaceable to receive a portion of the handle.

Preferably, said portion of the handle is an anchor.

Preferably, the handle is deformable, preferably by bending, such that in use ends of the handle are moved towards each other and/or into carrying engagement with the said one of said plurality of panels.

Preferably, the anchor comprises at least one engaging edge whilst in use is located at least partially with said one of said plurality of panels.

Preferably, the first or each of the first and second tabs retains a portion of the handle within the carton.

BRIEF DESCRIPTION OF THE DRAWINGS

Exemplary embodiments of the invention will now be described with reference to the accompanying drawings, in which:

FIGURE 1 illustrates a plan view from above of a blank for forming a carton according to a first embodiment;

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FIGURE 2 illustrates a plan view from above a first stage of assembly of the blank of Figure 1 into a carton;

FIGURE 3 illustrates a plan view from above of a second stage of assembly of the blank
5 of Figure 1 into flat collapsed tubular structure;

FIGURE 4 illustrates a perspective view from above of a carton formed from the blank of Figure 1;

10 FIGURE 5 illustrates an enlarged perspective view from above of an upper portion of the carton of Figure 4;

FIGURE 6 illustrates an enlarged perspective view from above of an upper portion of the carton of Figure 4 and a handle;

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FIGURE 7 illustrates an enlarged perspective view of the carton of Figure 4, showing insertion of the handle;

FIGURE 8 illustrates an internal view of a portion of the carton of Figure 4 in which the
20 handle has been inserted;

FIGURE 9 illustrates an enlarged perspective view from above of an upper portion of the carton of Figure 4 in which a handle is shown in a deployed configuration; and

25 FIGURE 10 illustrates a plan view of blank for forming a carton according to a second embodiment.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

Detailed descriptions of specific embodiments of the package, blanks and cartons are
30 disclosed herein. It will be understood that the disclosed embodiments are merely

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examples of the way in which certain aspects of the invention can be implemented and do not represent an exhaustive list of all of the ways the invention may be embodied. Indeed, it will be understood that the packages, blanks and cartons described herein may be embodied in various and alternative forms. The figures are not necessarily to scale and some features may be exaggerated or minimised to show details of particular components. Well-known components, materials or methods are not necessarily described in great detail in order to avoid obscuring the present disclosure. Any specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the invention.

Figure 1 illustrates a plan view of a blank 10 according to a first embodiment in which a series of main panels are provided hinged one to the next. The series comprises a first or outer top panel 12, a first side panel 14a, 14b, a bottom panel 16, a second side panel 18a, 18b and a second or inner top panel 20. The first side panel includes an upper first side panel 14a and a lower first side panel 14b hingedly connected to the upper side panel 14a by a fold line 15, 17. The bottom panel 16 is hingedly connected to the first side panel 14a, 14b by a fold line 19 and to the second side panel 18a, 18b by a fold line 21. The second side panel 18a, 18b includes a lower second side panel 18b and an upper second side panel 18a hingedly connected to the upper second side panel 18a by a fold line 25. The second or inner top panel 20 is hinged to second side panel by fold line 27.

First lower side panel 14b may optionally comprise a fold line 17 extending thereacross and spaced apart from and parallel to fold line 15.

Second lower side panel 18b may optionally comprise a fold line 23 extending thereacross and spaced apart from and parallel to fold line 25.

The blank 10 comprises a plurality of end closure panels for at least partially closing one or both ends of a tubular structure formed from the series of main panels.

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First and second top end closure panels 22a, 22b are hingedly connected to the opposing ends of the first top panel 12 by fold lines.

- 5 First and second bottom end closure panels 28a, 28b are hingedly connected to the opposing ends of the bottom panel 16 by fold lines.

First upper side end closure flaps 24a, 24b are hingedly connected to the opposing ends of first upper side panel 14a by fold lines.

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Second upper side end closure flaps 32a, 32b are hingedly connected to opposing ends of second upper side panel 18a by fold lines.

15

First lower side end closure flaps 26a, 26b are hingedly connected to the opposing ends of the first lower side panel 14b by fold lines.

Second lower side end closure flaps 30a, 30b are hingedly connected to the opposing ends of the second lower side panel 18b by fold lines.

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Glue flaps 38a, 38b are hingedly interconnected to upper side end closure flaps 32a, 32b by first gusset panels 36a, 36b.

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First gusset panel 36a is defined in part by a fold line between it and glue flap 38a, in part by a fold line between it and upper side end closure flap 32a and in part by an aperture 46a.

First gusset panel 36b is defined in part by a fold line between it and glue flap 38b, in part by a fold line between it and upper side end closure flap 32b and in part by an aperture 46b.

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Aperture 46a is defined by glue flap 38a, gusset panel 36a, and upper side end closure flap 32a. An identical aperture 46b is defined by glue flap 38b, gusset panel 36b and the upper side end closure flap 32b.

- 5 A substantially triangular shaped aperture 42a, 42b is provided between each of the second upper side end closure flaps 32a, 32b and the second lower side end closure flaps 30a, 30b. Apertures 42a, 42b extend from the hinged connection between the second upper and lower side end closure flaps 32a, 32b, 30a, 30b and the second upper and second lower side panels 18a, 18b, such that an edge of each aperture 42a, 42b is co-
10 linear with fold line 25.

Similar apertures 40a, 40b are provided between first upper side end closure flaps 34a, 24b and first lower side end closure flaps 256a, 26b.

- 15 A third gusset panel 34a is provided hingedly interconnecting first top end closure panel 22a and first upper side end closure flap 24a.

A fourth gusset panel 34b is provided hingedly interconnecting second top end closure panel 22b and first upper side end closure flap 24b.

20

Gusset panels 34a, 34b are defined in part by a fold line hingedly connecting the gusset panels 34a, 34b to respective first and second top end closure panels 22a, 22b and in part by fold lines between the gusset panels 34a, 34b and the respective one of the first upper side end closure flaps 24a, 24b to which they are hinged.

25

Aperture 44a is provided between gusset panel 34a and upper side panel 14a.

Aperture 44b is provided between gusset panel 34b and upper side panel 14a.

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First or outer top panel 12 comprises a pair of handle receiving structures 52. Second or inner top panel 20 comprises a pair of inner handle receiving apertures 50. Handle receiving structures 52 are arranged so as to be in substantial registry with inner receiving apertures 50 which together form handle receiving devices 50, 52 when first and second top panels 12, 20 are placed in overlaying relationship with one another.

The handle receiving devices 50, 52 will be described in greater detail below in relation to Figures 5 to 9 which describe their implementation with a handle.

Turning to the construction of the carton 90 as illustrated in Figures 2, 3 and 4, it is envisaged that the carton 90 can be formed by a series of sequential folding operations in a straight line machine so that the carton 90 is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and may be altered according to particular manufacturing requirements.

A first stage in constructing the carton 90 of Figure 4 from blank 10 is shown in Figure 2. The second top panel 20 and second upper side panel 18A are folded about fold line 23 to overlay the bottom panel 16 and the second lower side panel 18b respectively glue G is applied to the second top panel and to glue flaps 38a, 38b.

In a second stage illustrated in Figure 3 the first top panel 12 and first upper side panel 14a are folded about fold line 17 to overlay the second top panel 20 and the first lower side panel 14b respectively.

Pressure may be applied to the first top panel 12 to secure the first and second top panels 12, 20 together.

Figure 3 illustrates a flat collapsed tubular structure capable of being erected to form a tubular structure. The tubular structure in this form may be readily distributed.

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The flat collapsed tubular structure is constructed into a tubular structure by separating the first and second top panels 12, 20 from the bottom panel 16. In doing so the first and second upper side panels 14a, 18a are unfolded about respective fold lines 17, 23 with respect to the first and second lower side panels 14b, 18b. Once the tubular structure is loaded with articles (not shown) the end closure panels and end closure flaps are folded to at least partially close the ends of the tubular structure, preferably as illustrated in Figure 4, the ends of the tubular structure are fully enclosed by the end closure panels and end closure flaps.

Figure 5 illustrates an enlarged view of an upper portion of the carton 90 of Figure 4.

The handle receiving structures 52 are in substantial registry with the inner handle receiving apertures 50.

Each handle receiving structure 52 comprises an opening 54, preferably circular although other shapes are envisaged.

Each handle receiving structure 52 further comprises a pair of anchoring members 56a, 58a; 56b, 58b. The anchoring members include tabs 56a, 56b, respectively. Preferably each tab 56a, 56b is generally triangular in shape. The anchoring members 56a, 58a; 56b, 58b are disposed adjacent to one another and separated or separable from one another by a cut line or weakened line of severance line 60.

The anchoring members further include flaps 58a, 58b. The first flap 58a is hingedly connected to the first tab 56a along a fold line 59a. The second flap 58b is hinged to the second tab 56b along a fold line 59b. First and second flaps 58c, 58d each is preferably substantially rectangular in shape.

First tab 56a is hinged to the first top panel 12 by a first fold line 57a. Second tab 56b is hinged to the first top panel 12 by a second fold line 57b. First and second fold lines 57a,

- 10 -

57b are arranged so as to be convergent with respect to one another and converge towards the opening 54 at first ends thereof. First and second flaps 58a, 58b are separated from the first top panel 12 by an angled cut line 62 which is substantially C-shaped and extends between the second ends of the first and second fold lines 57a, 57b.
5 Outline 60 extends between the opening 54 and angled cutline 62.

Figure 6 illustrates the carton 90 of Figure 4 in which a handle H has been placed upon the top panel 12. The handle is made from a flexible sturdy material such as plastic or paper-plastic composite material.

10 In some embodiments it is envisaged that the handle H may be distributed in this configuration for application by an end user. In these embodiments, it is envisaged that the handle H will be removably secured to the top panel 12 for example by a removable adhesive or tape; such as a pressure sensitive adhesive. The handle H comprises a strap
15 S having opposite ends to each of which an anchor A is attached or formed integrally therewith. Each anchor A comprises at least one, preferably two engaging edges E1, E2.

Each anchor A is arranged such that the engaging edges E1, E2 extend substantially perpendicularly from the strap S.

20 The anchoring members 56a, 58a; 56b, 58b are sized and arranged so as to form in the top panel 12 outer handle receiving apertures which, when the anchoring members are folded out of the plane of the top panel 12, are capable of receiving or otherwise accommodating the anchors A. Such outer handle receiving apertures are disposed in
25 substantial vertical registry with the inner handle receiving apertures respectively. To facilitate placement of the anchors A into the registered inner and outer receiving apertures, the handle receiving devices 52, 50 are preferably arranged to be located at both ends of the handle H.

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The handle H is engaged with the carton 90 by displacing the anchoring members 56a, 58a; 56b, 58b of each handle receiving device by pressing the handle ends/anchors A against the anchoring members. The anchoring members 56a, 58a; 56b, 58b yield the anchors A by rotating themselves inward of the carton about the fold lines 57a, 57b respectively. During this rotation, the first and second flaps 58c, 58b may also rotate about the fold lines 59a, 59b with respect to the tabs 56a, 56b to facilitate reception of the anchors A through the registered receiving apertures. The strap portions S are pressed against the tabs 56a, 56b and facilitate the inward rotation of the tabs 56a, 56b.

The handle ends are pushed into the carton 90 until the anchors A clear the anchoring members 56a, 58a; 56b, 58b and are located below them. Once the anchors A are inside the carton and the strap portions S are received in the openings 54, the anchoring members 56a, 58a; 56b, 58b rotate back to their respective initial positions within the plane of the top panel 12 and thereby partially closing the outer receiving apertures. This is best shown in Figure 8 which illustrates an internal view of the ends of the handle H within the carton 90. In the sense that the anchoring members 56a, 58a; 56b, 56b closes only a part of the respective outer receiving apertures and that the openings 54 remain open throughout the handle connecting process, the opening 54 of the each handle receiving device 50, 52 may be considered to be a permanently open section of the respective outer receiving aperture. After the anchoring members 56a, 58a; 56b, 58b reclose, the anchors A of the handle H are trapped under the anchoring members.

When the handle H is unloaded, i.e. not being used as a handle H to bear the weight of the carton 90, the anchors A of each end of the handle H are located below the anchoring members 56a, 58a; 56b, 58b.

When handle H is utilized and bears the load of the carton 90, the opposite ends of the handle H and the anchors A move towards one another; shortening the distance between them. The centre portion of the handle H, located above the top panel 12 moves upwardly. In doing so the anchors "A" are moved from their unloaded positions in registry

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with the flaps 58a, 58b of the handle receiving devices 50, 52 to loaded positions where they are located below the top panel 12. In the loaded positions, the engaging edges E1, E2 of the anchors A engage with the inside surface of the portions of inner top panel 20 disposed adjacent the handle receiving apertures 50. The engaging edges E1, E2 may
5 engage with the inside surface of the portions of the outer top panel 12 adjacent to the openings 54 in an alternative embodiment wherein the inner top panel 20 is omitted.

It will be appreciated that the convergent fold lines 57a, 57b which partially define the outer receiving aperture are substantially vertically registered with the convergent edges of the
10 inner receiving aperture 50 so that the convergent fold lines and edges together serve to align the handle ends with the openings 54 respectively.

Referring now to Figure 10, there is shown alternative embodiment of the present invention. In the second illustrated embodiment, like numerals have, where possible, been
15 used to denote like parts, albeit with the addition of the prefix "100" and so on to indicate that these features belong to the second embodiment. The alternative embodiment shares many common features with the first embodiment and therefore only the differences from the embodiment illustrated in Figures 1 to 9 will be described in any greater detail.

20 Figure 10 illustrates an alternative embodiment in which the carton is adapted for being top or bottom loaded, whereas the embodiment of Figures 1 to 9 is adapted for being end loaded.

The blank 110 comprises a series of main panels hinged one to the next. The series of
25 main panels comprises a first end panel 172a/172b hinged to first side panel 114a/114b along a fold line; first side panel 114a/114b is hinged to second end panel 170a/170b along a second fold line; and second end panel 170a/170b is hinged to second side panel 118a/118b along a third fold line. First end panel 172a/172b comprises a first upper part 172a hinged to a second lower part 172b along a fold line 181.

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Second end panel 170a/170b comprises a first upper part 170a hinged to a second lower part 170b along a fold line 183.

5 A glue flap 174 is hinged to first end panel 172/172b along a fold line 185. A first top panel 112 is hinged to first side panel 114a/114b along a fold line 113. A second top panel 120 is hinged to second side panel 118a/118b along a fold line 127.

10 A first bottom panel 166a is hinged to first side panel 114a/114b along a fold line 179. A second bottom panel 166b is hinged to second side panel 118a/118b along a fold line 121. A first bottom end flap 176 is hinged to first end panel 117a/172b along a fold line 171. A second bottom end flap 178 is hinged to second end panel 170a/170b along fold line 173.

15 First and second bottom panels 166a, 166b each comprises apertures 186. Apertures 186 are substantially triangular in shape and can be engaged by a finger when securing the first bottom panel 166a to the second bottom panel 166b using the complementary locking mechanism 182/184.

20 The first end panel 172a/172b comprises a pair of convergent fold lines 167, 169 extending from fold line 181 to an upper edge of first part 172a. Second end panel 170a/170b comprises a pair of similar convergent fold lines extending from fold line 189 to an upper edge of first part 170a.

25 The first end panel 172a/172b comprise a fold line 161 which bisects both the first upper part 172a and second lower part 172b; second end panel 170a/172b comprises a similar bisecting fold line 163.

Convergent fold line 167 and fold line 165 defines in-part a web panel, convergent fold line 169 and fold line 189 define in part a second web panel.

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First and second web panels are folded into face contacting relationship with respect to the first or second upper side panel 114a, 118a to which they are hinged, in this way the upper ends of an assembled carton are tapered inwardly. This may be beneficial to secure tapered articles such as bottles. The first and second top panel 112, 120 are folded about
5 respective fold lines 113, 127 to close the top end of an assembled carton. Preferably, they are secured together with adhesive.

The first and second top panels 112/120 may optionally be dimensioned to extend between the tapered end panels 172a, 170a rather than along the entire length of the
10 upper side panels 114a, 118a.

The second embodiment of Figure 10 may be constructed into a carton by folding the first end panel 172a/172b about fold line 161. The second end panel 170a/170b and second side panel 118a/118b may be then folded about fold line 163 and secured to glue flap 174
15 with adhesive. This forms a flat collapsed tubular structure which may be assembled into a tubular structure by pulling apart the first and second side panels 114a/114b, 118a/118b. Once erected into a tubular structure the carton can be top or bottom loaded with articles, i.e. articles are received in aperture at the upper or lower end of the tubular structure by moving the articles with respect to the tubular structure.

20 One or both of the upper and lower ends of the tubular structure may then be closed by folding the top and/or bottom panels respectively.

It is envisaged that in some embodiments one of the top or bottom ends of the tubular
25 structure may be closed prior to loading with articles.

Once the first and second top panels 112, 120 have been folded to close the top end of the tubular structure a handle strap may be applied in the same way as described above in relation to the first embodiment.

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First top panel 112 may optionally comprise a fold line extending between the handle receiving structures 152 and also comprises optional fold lines disposed between each of the handle receiving structures 152 and a respective adjacent free end edge of the top panel 112. The fold line 113 hingedly connects the first top panel 112 to the first side panel 114a/114b. These fold lines are aligned to be co-linear with each other. Preferably, these fold lines are located so as to bisect the first top panel 112. The fold lines define how and where the first top panel 112 will bend when carried by the handle H.

It can be appreciated that various changes may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape. It will be appreciated that the handle receiving structure and the handle disclosed herein is not limited to use in fully enclosed cartons but may be employed in alternative carton types, including but not limited to wraparound carriers, basket carriers, and top gripping cartons.

It will be recognized 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 short slit, a frangible line or a fold line without departing from the scope of the invention.

CLAIMS

1. A carton for packaging one or more articles, the carton comprising a plurality of panels, wherein one of the panels has a handle receiving device which comprises at least one receiving aperture and at least one anchoring member formed from part of the one of the panels, the at least one receiving aperture is defined at least in part by the at least one anchoring member to receive a portion of a handle such that a first section of the at least one receiving aperture is closed by the at least one anchoring member when the portion of the handle is received in the at least one receiving aperture whereby the portion of the handle is retained in the at least one receiving aperture.
2. The carton of claim 1, further comprising a handle having a pair of opposed ends, wherein at least one of the opposed ends of the handle comprises an anchor which is received in the at least one receiving aperture and engaged by the at least one anchoring member to be retained in the at least one receiving aperture.
3. The carton of claim 1 or 2, wherein the handle receiving device further comprises an alignment mechanism for aligning the portion of the handle with the receiving aperture.
4. The carton of any of claims 1 to 3, wherein the at least one anchoring member comprises a pair of first and second tabs, and wherein the at least one receiving aperture is defined in part by the first tab and in part by the second tab.
5. The carton of claim 3, wherein the at least one receiving aperture is outlined at least in part by a first edge and in part by a second edge, the first and second edges being convergent with respect to each other so as to provide the alignment mechanism.
6. The carton of claim 5, wherein the at least one anchoring member comprises a pair of first and second tabs, wherein the at least one receiving aperture is defined in part by

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the first tab and in part by the second tab, and wherein the first and second tabs are hingedly connected to the one of the panels along the first and second edges respectively.

7. The carton of claim 4 or 6, wherein the at least one anchoring member further comprises a first flap and a second flap, the first flap being hingedly connected to the first tab, the second flap being hingedly connected to the second tab.

8. The carton of any of claims 4, 6 and 7, wherein each of the first and second tabs is generally triangular in shape.

9. The carton of any of claims 4, 6, 7 and 8, wherein each of the first and second tabs comprises a cutout, and wherein the cutouts of the first and second tabs cooperate with each other to form a single opening in the first and second tabs, the single section providing a second, permanently open section of the at least one receiving aperture.

10. The carton of claim 9, wherein each of the cutouts is generally semicircular in shape such that the single opening is circular in shape.

11. The carton of any of claims 1 to 13, further comprises an inner panel disposed in overlapping relationship with the one of the panels, and wherein the inner panel has at least one inner aperture disposed in substantial registry with the at least one receiving aperture.

12. The carton of claim 2, wherein the handle comprises a handle strap.

13. The carton of any of claims 1 to 3, wherein the at least one anchoring member comprises a pair of anchoring members displaceable to define the at least one receiving aperture.

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14. The carton of claim 2, wherein the handle is formed of deformable material such that in use, the opposed ends of the handle are moved towards each other and into carrying engagement with the one of the panels.

15. The carton of claim 2, wherein the anchor comprises at least one engaging edge disposed in engagement with an inside surface of the one of the panels.

16. The carton of any of claims 4 and 6 to 9, wherein the first and second tabs retain the portion of the handle within the at least one aperture.

17. The carton of any of the preceding claims, wherein the panels include a top panel, first and second side panels and a bottom panel.

18. The carton of claim 13, wherein the at least one receiving aperture comprises a pair of receiving apertures, each of the receiving aperture being defined by the pair of anchoring members.

19. The carton of claim 18, wherein each of the anchoring members comprises a tab hingedly connected to the one of the panels and a flap hingedly connected to the tab.

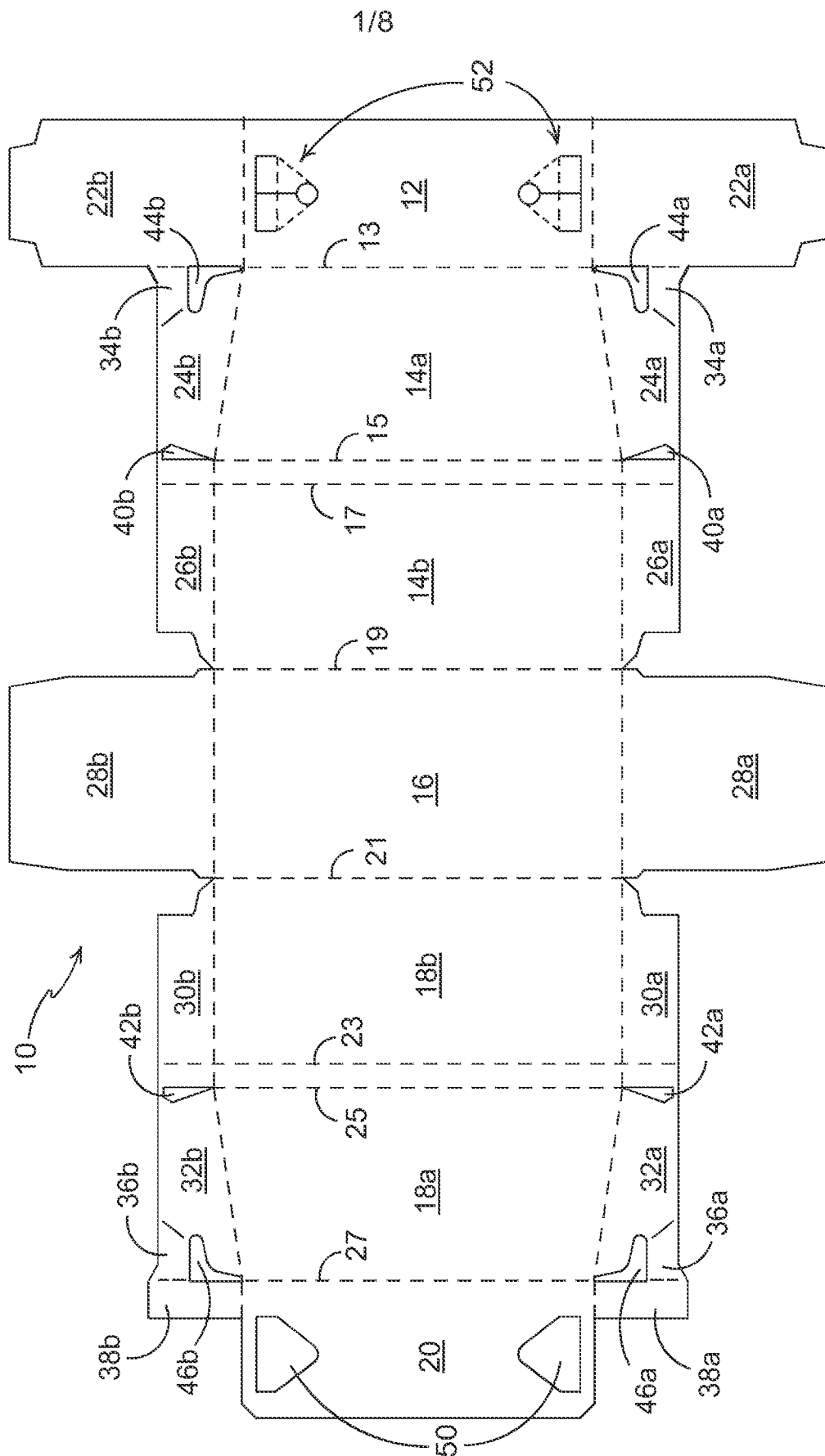
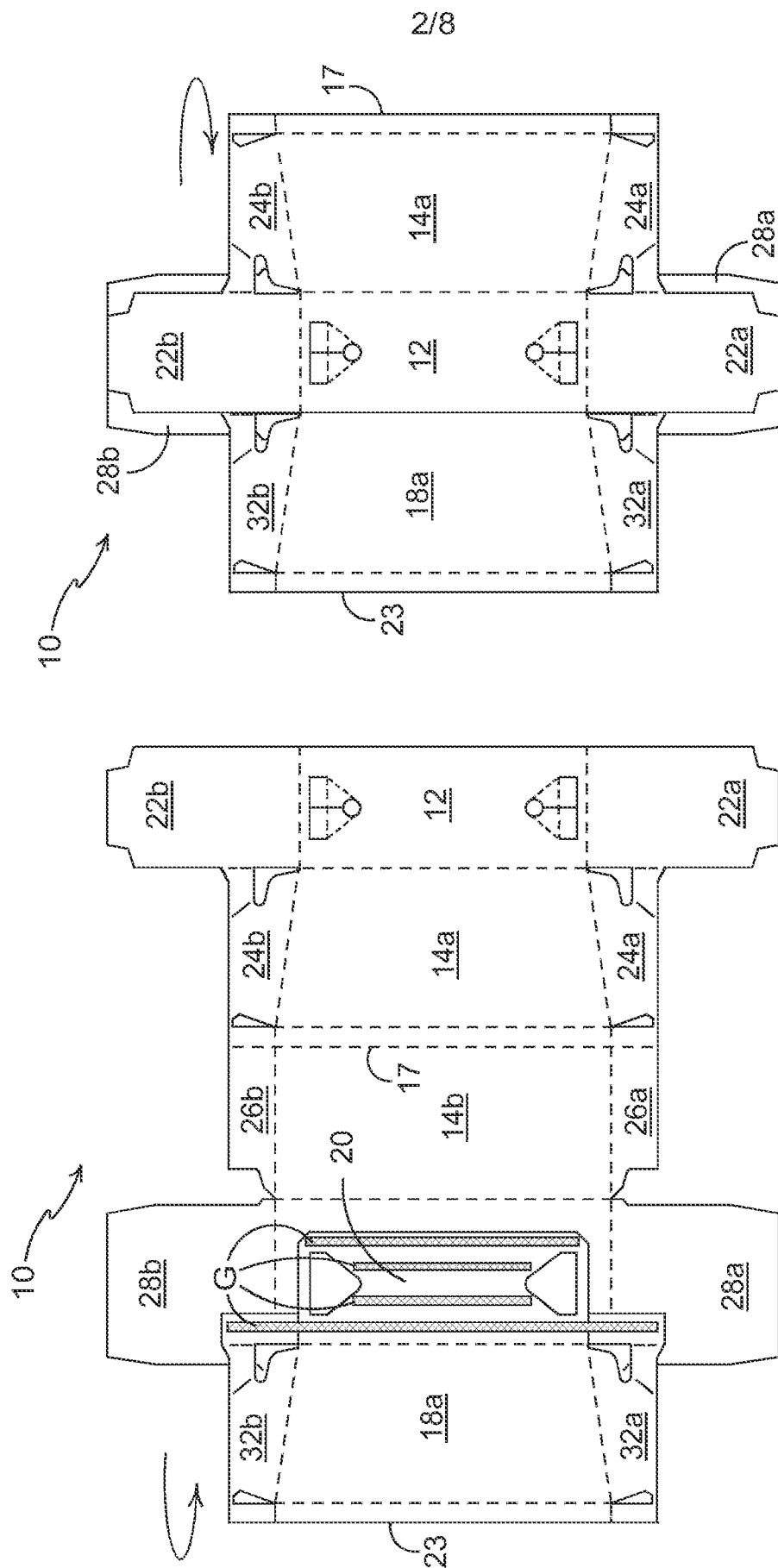


FIGURE 7



3
E
R
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G
E

FIGURE 2

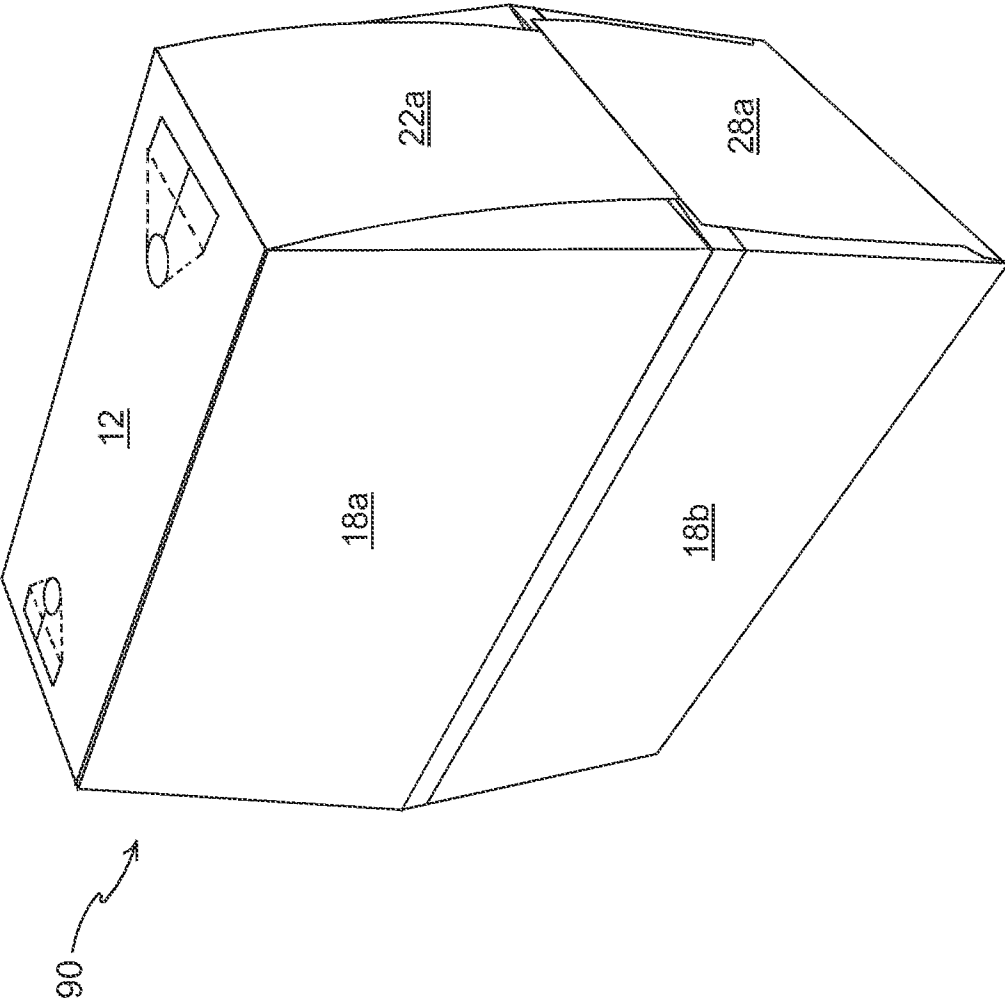


FIGURE 4

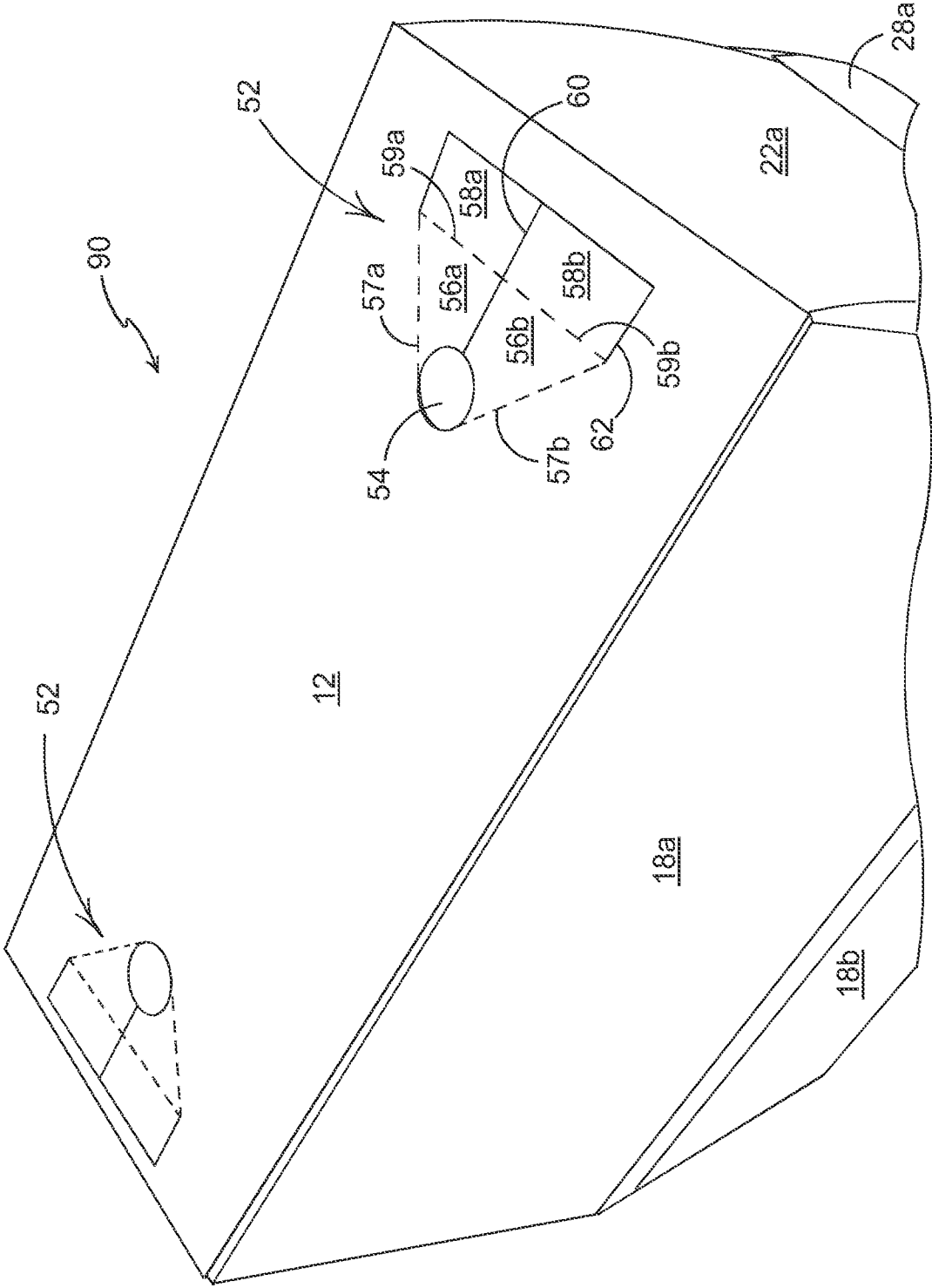


FIGURE 5

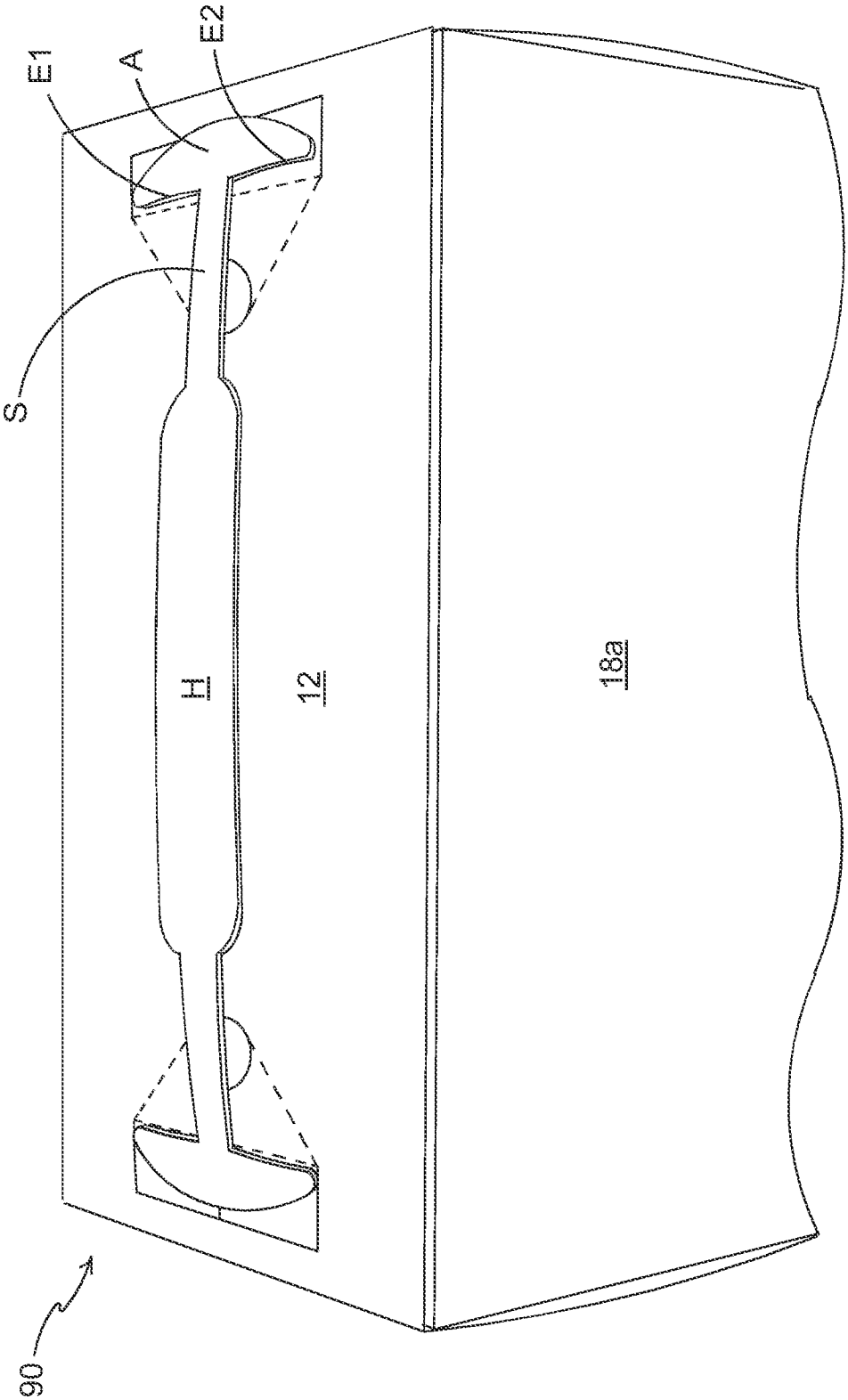


FIGURE 6

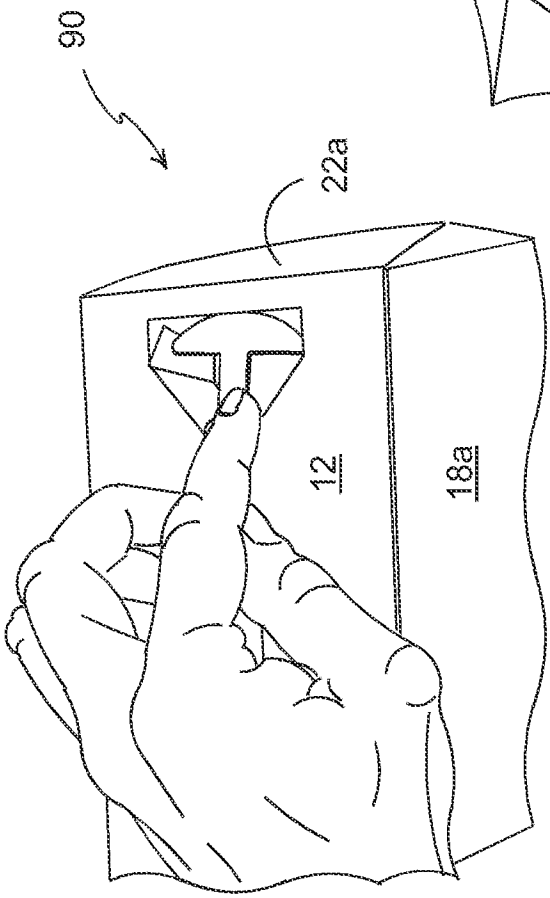


FIGURE 7

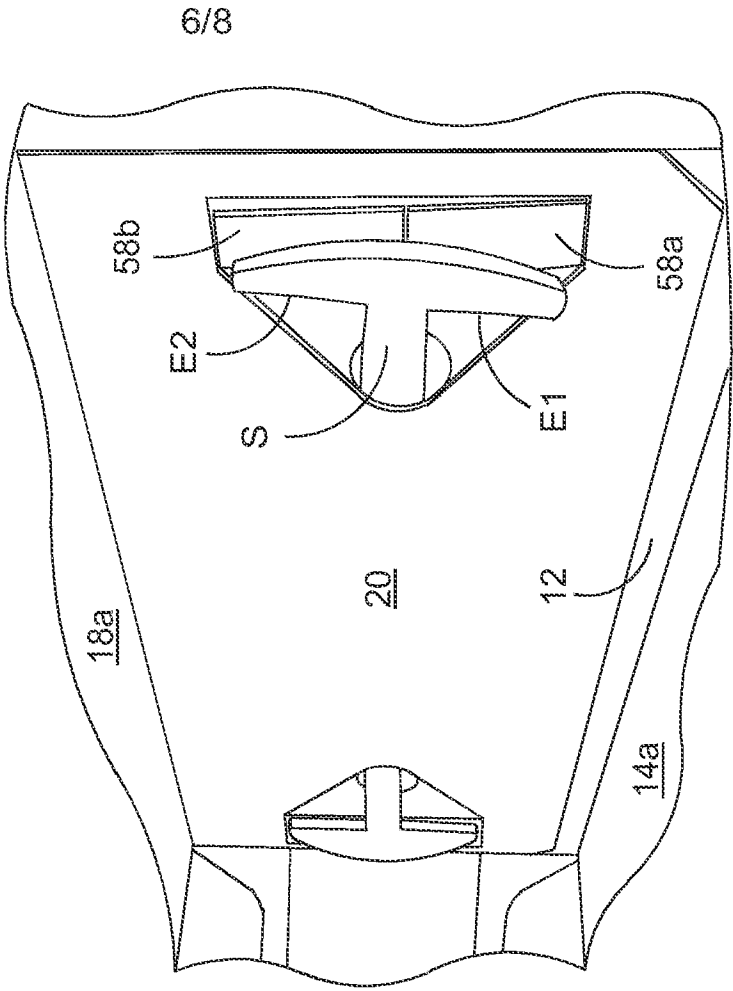


FIGURE 8

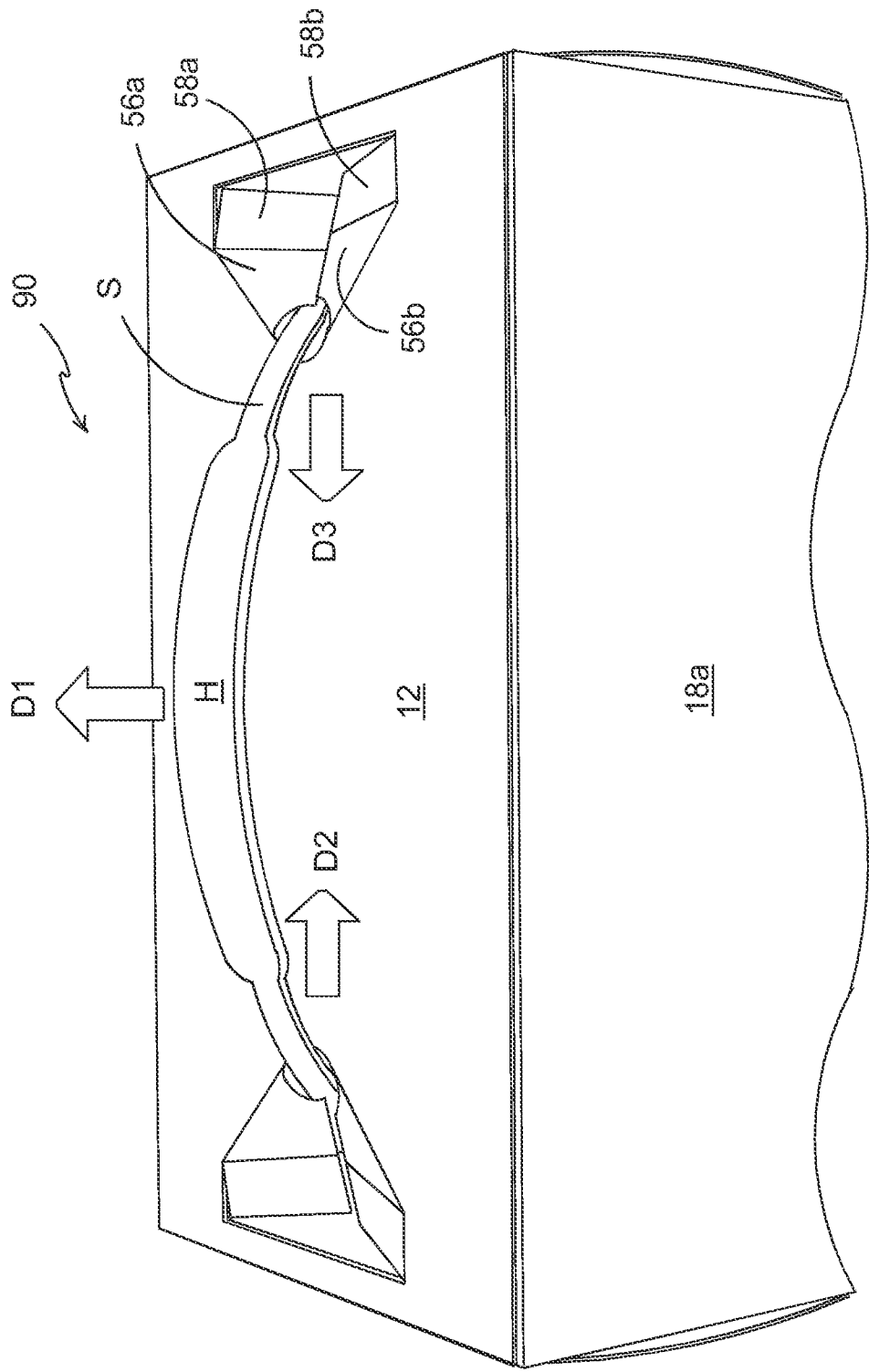


FIGURE 9

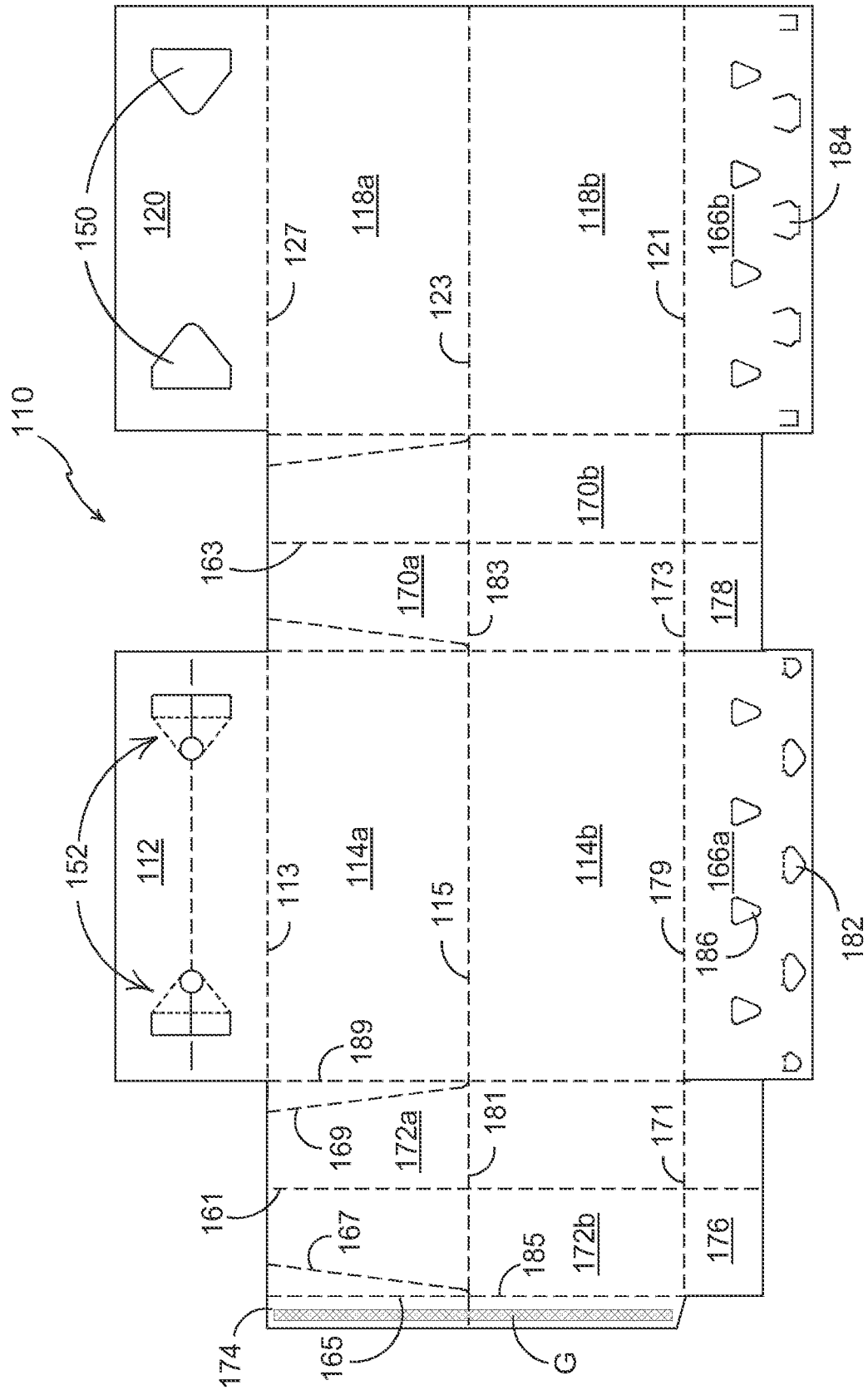


FIGURE 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/033735

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D5/46 B65D71/36
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 130 181 A (DRG UK LTD) 31 May 1984 (1984-05-31) abstract; figures 1-6 page 1, line 64 - page 2, paragraph 1 -----	1-19
A	US 2003/015579 A1 (LEBRAS PHILIPPE [FR] ET AL LABRAS PHILIPPE [FR] ET AL) 23 January 2003 (2003-01-23) abstract; figures 1A,1B,3-6,8 -----	1-19



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

8 June 2012

Date of mailing of the international search report

18/06/2012

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Segerer, Heiko

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/033735

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2130181	A	31-05-1984	NONE	

US 2003015579	A1	23-01-2003	NONE	
