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(54) Handle structure for packaging

(57) A handle structure for a package, which handle structure comprises a first wall 2, connected to opposed end walls, and a grip panel 6 secured to a strap member 154, which strap member is secured at opposed ends thereof respectively to handle flaps 4 formed in part from the first wall and in part from a respective one of the opposed end walls, said grip panel 6 being detachably connected at its opposite ends to said handle flaps 4 respectively so that said grip panel 6 and handle flaps 4extend continuously across an exterior surface of the first wall 2.

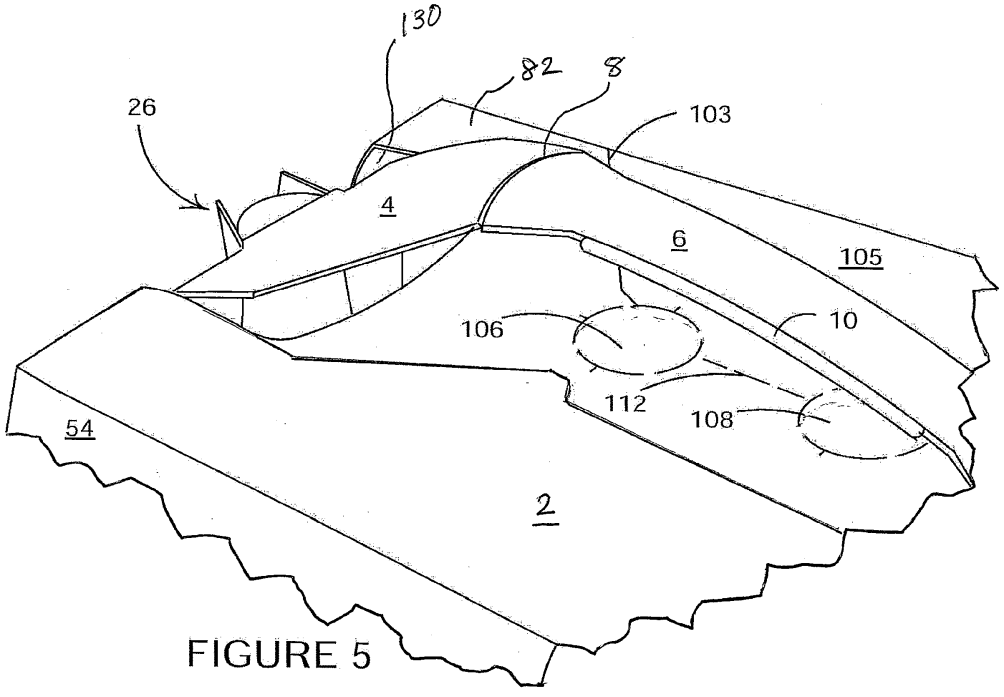

FIGURE 5

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Description

Field of the Invention

[0001] The present invention relates generally to handle structures for packaging. More specifically though not exclusively, the present invention relates to a handle structure having a reinforcing strap member.

Background of the Invention

[0002] Cartons having handle structures are known from the prior art, and often require multi-ply thickness of material (such as paperboard) to gain sufficient strength so as to be able to support the weight of the carton once it has been fully loaded with articles.

[0003] It would therefore be advantageous to provide a carton which requires less material and which could robustly support the weight of the articles loaded in the carton.

[0004] In order to provide the space for a user's hand to be inserted under the handle, it is often necessary to oversize the handle panel itself. This additional material is wasteful and increases the cost of the carton.

[0005] There is, therefore, also a requirement for the handle structure to provide space for a user's hand without requiring additional material to increase the length of the handle structure.

[0006] The present invention seeks to overcome or at least mitigate the identified disadvantages associated with the prior art.

Summary of the Invention

[0007] A first aspect of the invention provides a handle structure for a package, which handle structure comprises a first wall, connected to opposed end walls, and a grip panel secured to a strap member, which strap member is secured at opposed ends thereof respectively to handle flaps formed in part from the first wall and in part from a respective one of the opposed end walls, said grip panel being detachably connected at its opposite ends to said handle flaps respectively so that said grip panel and handle flaps extend continuously across an exterior surface of the first wall.

[0008] Preferably, the handle flaps each comprise an upper portion disposed along the first wall and a lower portion hingedly connected to the upper portion, the lower portion being disposed along, and hingedly connected to, an adjacent wall.

[0009] Preferably, the first wall across which the grip panel and handle flaps extend is a two ply structure, the grip panel and handle flaps being formed in an outer ply, the handle structure comprising reinforcing flaps and an inner ply that are secured to the handle flaps respectively, thereby sandwiching portions of the strap member therebetween.

[0010] Preferably, the handle flaps straighten when the handle structure is used, and move inwardly of the package so as to bring the ends of the handle flaps closer to one another and thereby to provide a space between the inner ply and the outer ply beneath the grip panel and the strap member.

[0011] A second aspect of the invention provides a handle structure for a package comprising;

a first outer panel hinged to a second outer panel by a first hinged connection; and a first inner panel hinged to a second inner panel having a second hinged connection wherein;
the first outer panel overlies the first inner panel and the second outer panel overlies the second inner panel;
the structure further comprising a handle strap struck in part from the first outer panel and in part from the second outer panel;
a reinforcing flap struck in part from the first inner panel and in part from the second inner panel;
wherein the reinforcing flap is secured to and reinforces an end portion of the handle strap;
wherein the handle strap and reinforcing flap are deployable to a position in which a portion of the handle strap is spaced apart from the first inner panel whereby exposing the first inner panel and an end portion of the handle strap and the reinforcing flap are moveable inwardly of the package in use, and
wherein the handle strap comprises a central portion which is severably attached to an outer portion of the handle strap, the handle strap comprising a reinforcing strip coupling the central portion to outer portions

[0012] Preferably, the handle strap is severably connected to the first outer panel.

[0013] Preferably, the handle strap is severably connected to the second outer panel.

[0014] Preferably, the central portion of the handle strap is struck form the first outer panel and the outer portion of the handle strap is struck in part from the first outer panel and in part from the second outer panel.

[0015] Preferably, the handle strap extends over an aperture in the first inner panel.

[0016] Preferably, the handle structure comprises a third outer panel hinged to the first outer panel by a hinged connection.

[0017] Preferably, the handle structure comprises a third inner panel hinged to the first inner panel by a hinged connection, the third outer panel overlying the third inner portion.

[0018] Preferably, the handle strap is struck in part from the third outer panel.

[0019] A third aspect of the invention provides a carton for articles, which carton comprises top and bottom walls, connected by opposed side walls and end walls for closing the ends thereof, and a handle structure comprising a grip panel secured to a strap member, which strap

member is secured at either end thereof to handle flaps that are connected to the carton, said grip panel being detachably connected at its opposite end to said handle flaps respectively so that said grip panel and handle flaps extend continuously across an exterior surface of a wall of the carton.

[0020] Preferably, the handle flaps each comprise an upper portion disposed along the top wall and a lower portion hingedly connected to the upper portion, the lower portion being defined in, and hingedly connected to, an adjacent wall.

[0021] Preferably, said wall of the carton across which the grip panel and handle flaps extend comprises reinforcing flaps that are secured to the handle flaps respectively, thereby sandwiching portions of the strap member therebetween.

[0022] Preferably, the handle flaps straighten when the handle structure is used to support the weight of the carton, such that portions of the handle flaps move inwardly of the carton so as to bring the ends of the handle flaps closer to one another and thereby to provide a space beneath the grip panel and the strap member.

[0023] Preferably, the handle flaps comprise an article aperture through which a portion of one or more articles protrudes as the handle flaps move relative to the carton.

[0024] Preferably, the article aperture comprises tabs that are struck from the aperture and hinged to the handle flaps, and the weight of the carton forces the handle flaps inwardly against upper portions of the articles in the carton, when those articles are present.

[0025] A fourth aspect of the invention provides a blank for forming a carton, which blank comprises panels for forming top and bottom walls of the carton, connected by opposing side walls, and end walls for closing the carton, and a handle structure comprising a grip panel and handle flaps, each of the handle flaps being connected at one end to a panel for forming a wall of the carton, the grip panel and the handle flaps being each securable to a common strap member, wherein the grip panel is detachably connected at its opposite ends to the handle flaps respectively, and the handle structure being foldable onto a panel forming a wall of the carton such that that the grip panel and the handle flaps extend continuously over that wall of the carton between opposing edges thereof.

[0026] Alternatively, the handle flaps each comprise an upper portion disposable along a panel for forming the top wall and a lower portion hingedly connected to the upper portion, the lower portion being defined in, and hingedly connected to, a panel for forming an adjacent wall.

[0027] Preferably, said wall of the carton across which the grip panel and handle flaps extend comprises reinforcing flaps that are securable to the handle flaps respectively, thereby to sandwich portions of a strap member therebetween.

[0028] Preferably, the handle flaps of the erected carton straighten when the handle structure is used to support the weight of that carton, such that portions of the handle flaps move inwardly of the carton so as to bring the ends of the handle flaps closer to one another and thereby to provide a space beneath the grip panel and strap member attached thereto.

[0029] Preferably, the handle flaps comprise an article aperture through which a portion of one or more articles may protrude as the handle flaps move relative to the carton when the erected carton is in use.

[0030] Preferably, the article aperture comprises tabs that can be struck from the aperture and hingable to the handle flaps, and the weight of the erected carton forces the handle flaps inwardly against upper portions of articles loaded in the carton, when those articles are present.

Brief Description of the Drawings

[0031] A preferred embodiment of the present invention will be described below, with reference to the accompanying Figures, of which:

Figure 1 illustrates a plan view of a blank for forming a first embodiment of a carton comprising a handle structure according to an aspect of the present invention;

Figure 2 illustrates a preferred first step of a sequence of folding and gluing operations to partially form the blank of Figure 1 into a carton;

Figure 3 illustrates a second step of a preferred sequence of folding and gluing operations to partially form the blank of Figure 1 into a carton;

Figure 4 illustrates a fully set up carton formed from the blank of Figure 1; and

Figure 5 illustrates the hinging motion of the handle structure of the carton of Figure 4 when in use.

Detailed Description of the Preferred Embodiments

[0032] Figure 1 shows a preferred embodiment of a blank 1 for forming a carton 162 shown in Figure 4. The blank 1 is formed from foldable sheet material, such as paperboard, corrugated board, cardboard, plastic, combinations thereof, or the like. A linear series of panels is provided comprising a glue panel 2, first side wall 54/60, bottom panel 68, second side wall 74/78 and top panel 82 hinged together one to the next about fold lines 18, 66, 72, 80. Each of the side walls comprises an upper 54, 78 and lower 60, 74 part, hinged to each other by a fold line 56, 76.

[0033] The blank 1 is entirely symmetrical about the longitudinal axis of the linear series of panels described above. The accompanying Figures have, therefore, been numbered along one side only, and this side has been described below. One skilled in the art would readily ap-

preciate that the other side of the blank has the same characteristics as that described.

[0034] The handle structure comprises a grip panel in the form of a top grip panel 6 that is severably connected, by a weakened line 8 of severance, to an upper handle flap portion 4, at each end thereof. Preferably, the grip panel 6 tapers outward slightly at these ends.

[0035] The top grip panel 6 has finger flaps 12, 10 extending from opposing side edges thereof. These finger flaps 12, 10 are hinged to the top grip panel 6 by fold lines 14, 16. Preferably, these finger flaps 12, 10 extend along the majority of the length of the grip panel 6.

[0036] The upper flap portion 4 is hinged to a handle end flap 22, along a fold line 24. The fold line 24 is positioned opposite to the end of the upper flap portion 4 that is severably connected to the grip panel 6.

[0037] Article flaps 26 are defined in the handle end flap 22 by a curved weakened line 30 of severance that extends from a point on fold line 24, into that handle end flap 22, and back to another point on that fold line 24. Between the two intersections between the curved weakened line of severance 30 and the fold line 24 is a cut line portion 20. Extending between a midpoint on this cut line 20 and the most distal point of the curved weakened severance line 30, is a further weakened severance line 28 that bisects the area into two articles flaps 26 each hinged to the end handle flap 22 by respective portions of the curved weakened line 30 of severance.

[0038] A weakened line of severance 34 extends into the handle end flap 22 from a terminal point on the fold line 24 connecting the upper flap portion 4 to the handle end flap 22. This weakened line of severance 34 extends away from the fold line 24 parallel to a longitudinal axis of the grip panel 6, and is coaxial with an edge of the upper handle flap portion 4. Between this weakened line of severance 34 and a furthest edge of the handle end flap 22, a lower handle flap portion 32 is defined within the handle end flap 22.

[0039] A transverse edge (relative to the longitudinal axis of the linear series of panels) of the lower portion 60 of the first side wall 54/60 is hinged by a fold line 62 to a lower side end flap 64. This lower side end flap 64 is then hinged, along a fold line 50, to a lower webbing panel 48. This lower webbing panel 48 is hinged to an upper webbing panel 42 via a small articulating intermediate webbing panel 44. An aperture 46 is formed between the small articulating webbing panel 44 and the edge of the upper portion 54 of the first side wall 54/60. This aperture 46 separates the remainder of the lower webbing panel 48 from the upper webbing panel 42. The upper webbing panel 42 is hinged to a portion of the handle end flap 22 via an articulated panel 38 defined between one fold line 40 hinging the panels 38, 42 together and an opposing fold line 36 hinging the panels 22, 40 together. An aperture 58 separates the remainder of the upper webbing panel 42 from the handle end flap 22. The upper webbing panel 42 is also hinged to the adjacent transverse edge of the upper portion 54 via a fold line 52. Optionally, this transverse edge may be partially or entirely tapered so as to provide a gabled carton 162.

[0040] A transverse edge (relative to the linear series of panels) of the bottom panel 68 is connected to a bottom end flap 70, that extends the entire length of the bottom panel 68, by a fold line 71. The bottom end flap 70 is free to fold about the fold line 71 and is not connected to the lower side end flaps 64. It is, however, contemplated that an intermediate articulating panel similar to the panel 38 or 44 could also be provided to hinge the lower side end panel 64, or indeed the lower webbing panel 48 itself, to the bottom end panel 70.

[0041] Except for the part 102 of the detachable access means 96, the second side wall 78/74 is identical to the first 54/60 in that it comprises the same end flap and webbing arrangement as for the first side wall 54/60. The webbing arrangement for the second side wall 78/74 hinges the lower side end panel of the second side wall 78/74 to the top end flap 90 described below.

[0042] In the top panel 82, an upper reinforcing flap portion 86 is defined proximate a transverse edge along which a top end flap 90 is hinged to the top panel 82 by a fold line 94. The side edges of the upper reinforcing flap portion 86 are defined by a curved weakened line of severance 84 that extends perpendicular from that fold line 94 into the top panel 82 before curving back on itself to return perpendicular to that fold line 94 to form a "U" shape. This curved weakened line of severance 84 also extends across the fold line 94 and part way into the top end flap 90, defining therebetween a lower reinforcing flap portion 92 hinged to the upper reinforcing flap portion 86 in the top panel 82.

[0043] The top end flap 90 comprises an article aperture 88 defined between the portions of the curved weakened line of severance 84 that extend into the top end flap 90. Optionally, this article aperture extends across, and interrupts the fold line 94 hinging the top end panel 90 to the top panel 82. The top end flap 90 is hinged to the adjacent second side wall 74/78 via an identical webbing arrangement as the arrangement 38, 42, 44, 48 hinging the handle end flap 22 to the first side wall 54/60.

[0044] In part formed in the top panel 82, and in part formed in the adjacent upper portion 78 of the second side wall 74/78, is a detachable access means 96. This detachable access means 96 comprises a first detachable portion 105 defined within the top panel 82 between weakened lines of severance 103, 98. These weakened lines of severance 103, 98 are angled partially toward one another and extend from the fold line 80 toward a central longitudinal axis of the top panel 82. The terminal points of these two weakened lines of severance 103, 98 are connected by a further weakened line of severance 112 along the aforesaid central longitudinal axis of the top panel 82.

[0045] A further part 102 of the detachable access means 96 is defined in the upper portion 78 of the second side wall 74/78, between parallel weakened lines of severance 104, 100. These weakened lines of severance

104,100 extend from the fold line 80 connecting the top panel 82 to the upper portion 78 of the second side wall 74/78. The parallel weakened line of severance 104, 100 extend to the fold line 76 connecting the upper 78 and lower 74 portions of the second side wall 78/74. The fold line 76 connecting the upper portion 78 to the lower portion 74 also serves to hinge the detachable access means 96 to the lower portion 74 of carton 162 once the weakened lines of severance 98, 100, 103, 104, 112 connecting the detachable access means 96 to the carton 162 have been severed.

[0046] Centred along the aforesaid central axis of the top panel 82, and formed partially in the first detachable portion 105, are finger apertures 108 and 106. These finger apertures 108, 106 are defined by circular weakened lines of severance 114, 110. Portions of the circular weakened lines of severance 114, 110 join terminal points of the weakened lines of severance 103, 98 in the top panel 82 with the weakened line of severance 112 extending between the two finger apertures 106, 108.

[0047] To form the carton 162 from the blank 1, glue is applied to a first area 120 of the upper handle flap portions 4 (as best shown in Figure 1) and to a second area 122 of the grip panel 6 such that a strap member 154 is secured thereto (as best shown in Figure 2) spanning across the grip panel 6. The strap member 154 is a length of tape capable of supporting the weight of the carton 162 and its contents. It is preferred that such tape is formed of material having a greater tensile strength than the material from which the blank 1 is formed. Such material for the strap member 154 may also have a greater elasticity than the material for the blank 1. The material useful to form the strap member 154 is not limited to but includes paperboard, laminated paperboard, laminated fabric, plastic, fiber-plastic composite material (e.g., fiber-reinforced plastics) or the like. The strap member 154 is secured to the grip panel 6 as well as to the upper flap portions 4 such that the grip panel 6 and the upper flap portions 4 extend continuously along the strap member 154. Between the second area 122 and each of first area 120, there is a third area that is free of glue and thus both the grip panel 6 and the respective upper handle flap portion 4 are free of restraint of the strap member 154. Each weakened line of severance 8 is formed in the respective third area. Stated differently, the upper flap portions 4 include areas alongside the weakened lines of severance 8 respectively such that such areas are detached from the strap member 154. The grip panel 6 also includes areas alongside the weakened lines of severance 8 such that such areas are detached from the strap member 154.

[0048] The upper portion 78 of the second side wall 78/74 is then folded over onto the lower portion 74 of the second side wall, thereby substantially disposing the top panel 82 onto the bottom panel 68. This is best shown in Figure 2. Once this fold has been achieved, a glue strip 206 is then applied to the upper surface running proximate to and the full length of the terminal edge of the top panel 82 and into the top end flaps 90. Upper surfaces of the upper reinforcing flap portions 86 are then allied with glue at glue areas 208, 207. A portion of each glue area 207 extends across the fold line 94 between the top panel 82 and the top end panel 90, over the lower reinforcing flap portion 92 and then into the top end panel 90 itself.

[0049] The upper portion 54 of the first side wall 54/60 is then folded over onto the lower portion 60 of that first side wall so as to bring the grip panel 6 into contact with the surface of the top panel 82. This is best shown in Figure 3. This also brings the handle end flaps 22 into contact with the top end flaps 90, which thereby become secured to one another. The upper and lower reinforcing flaps 86, 92 become secured to the underside of the corresponding upper and lower flap portions 4, 32 thereby sandwiching portions of the strap member 154 between them. Also, the glue strip 206 secures the top panel 82 to the glue panel 2, thereby forming a tubular structure.

[0050] The sizing and position of the articles apertures 88, and the article flaps 26, is such that they are brought into registry with one another.

[0051] The carton 162 can then be erected by hinging the upper 78, 54 portions and lower 74, 60 portions of each of the first 60/54 and second 74/78 side walls into a substantially coplanar orientation, thereby setting those side walls substantially perpendicular to the top panel 82 and bottom panel 68.

[0052] The carton 162 is thus ready for loading with articles, which may take place now that the carton is in a tubular configuration or once one of the two ends of the tubular structure have been closed.

[0053] To close the ends of the tubular structure, the lower webbing panels 42 are folded inwardly into the plane of the end of the tubular structure, which has the effect of automatically folding the handle end flap 22 of that end at least partially into that plane also. Additional folding is then applied as required to bring those end closure flaps into contact with one another, whereby they may preferably be secured to one another by some means known in the art such as glue. The bottom end flap 70 is then folded upwardly into the plane of the end of the tubular structure and secured to the end closure panels as necessary.

[0054] Both ends are closed in this manner to result in a fully enclosed carton 162 loaded with articles such as shown in Figure 4.

[0055] In use, the user inserts his fingers beneath the grip panel 6, either folding the finger flaps 12, 10 upwardly or downwardly as preferred. In so doing, the handle flaps 4/32, and the reinforcing flaps 86/92 to which they are secured, are drawn in toward one another and the increasing stress, as the upward lifting force on the handle grows, breaks the weakened lines of severance 34 that connect the lower flap portion 32 to the handle end flap 22 and also breaks the curved weakened lines of severance 84 defining the reinforcing flaps 86/92. Once complete, this tearing frees these flaps to straighten and hinge

inwardly of the ends of the carton 162 so as to protrude through a channel 130 (as best shown in Figure 5) left in the upper end edges of the carton 162 by the folding of the reinforcing flaps 86/92 in the top panel 82 and top end flaps 90.

[0056] Once the stress imposed upon the weakened lines of severance 8 connecting the grip panel 6 to the upper flap portion 4, exceeds a certain threshold, these weakened lines of severance 8 also break and the strap member 154 takes the weight of the carton 162.

[0057] If the articles loaded into the carton 162 are bottles, or similarly tapered, the article apertures 88 allow tapered upper portions thereof to protrude outwardly of the carton after breaking the weakened lines of severance 28 connecting the article flaps 26.

[0058] Naturally, more apertures could be included side-by-side as need be to accommodate more than one article protruding through those article flaps.

[0059] To access the articles, the user's fingers are used to punch through the finger apertures 106, 108 and to grip a portion of the terminal edge 112 of the detachable access means 96 that coincide with portions of the edges of those apertures 106, 108. Once gripped, the user can tear the access means 96 along the weakened lines of severance 100, 104, 103, 98, 112, while allowing it connected to the rest of the carton 162 along the fold line 76. By this means, the user can gain access to the articles. Optionally, the hinging fold line 76 itself may be severed such that the access means 96 is entirely detached from the carton 162.

[0060] The above exemplary embodiment of the present invention has been described with reference to numerous directional terms such as "top", "bottom", "side", "end", "upper", inwardly", "vertical" etc. It is to be understood that these directional terms are used purely for the benefit of aiding clarity of the description of the exemplary embodiment and are in no way limiting to the scope of the disclosure.

[0061] While the above description defines many features of the specific embodiment in terms of "weakened lines of severance", it is contemplated that many options exist for providing such lines including, though not exclusively, pre-cut lines including small nick portions, and score lines. These options may also be used to provide the "fold lines" referred to above. The "cut lines" referred to above may be pre-cut lines or may be severable weakened lines of severance.

[0062] Where the term "glue" has been used above, it is specifically contemplated that any other known form of adhesion or securement may be employed, such as different forms of chemical adhesive, mechanical fastening, thermal or sonic welding etc.

[0063] The cartons described above are specifically suitable for articles such as bottles but the disclosure is not limited to such articles and extends to any kind of articles that may be loaded into such a carton including cans or other beverage containers amongst other possibilities.

Claims

1. A handle structure for a package, which handle structure comprises a first wall, connected to opposed end walls, and a grip panel secured to a strap member, which strap member is secured at opposed ends thereof respectively to handle flaps formed in part from the first wall and in part from a respective one of the opposed end walls, said grip panel being detachably connected at its opposite ends to said handle flaps respectively so that said grip panel and handle flaps extend continuously across an exterior surface of the first wall.

2. The carton according to claim 1 wherein the handle flaps each comprise an upper portion disposed along the first wall and a lower portion hingedly connected to the upper portion, the lower portion being disposed along, and hingedly connected to, an adjacent wall.

3. The carton according to claim 1 or claim 2, wherein said first wall across which the grip panel and handle flaps extend is a two ply structure, the grip panel and handle flaps being formed in an outer ply, the handle structure comprising reinforcing flaps and an inner ply that are secured to the handle flaps respectively, thereby sandwiching portions of the strap member therebetween.

4. The carton according to claim 3 wherein the handle flaps straighten when the handle structure is used, and move inwardly of the package so as to bring the ends of the handle flaps closer to one another and thereby to provide a space between the inner ply and the outer ply beneath the grip panel and the strap member.

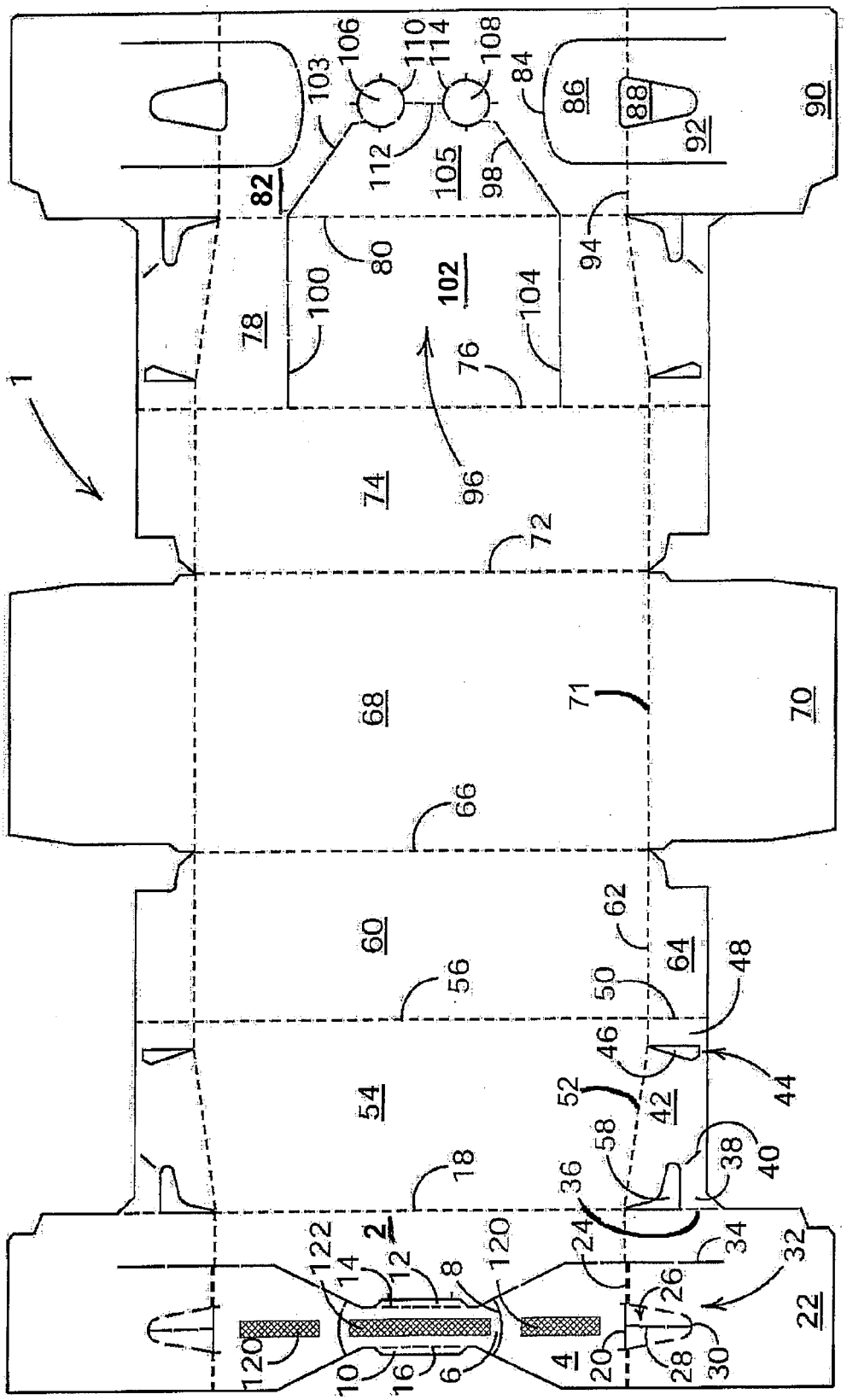
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FIGURE 1

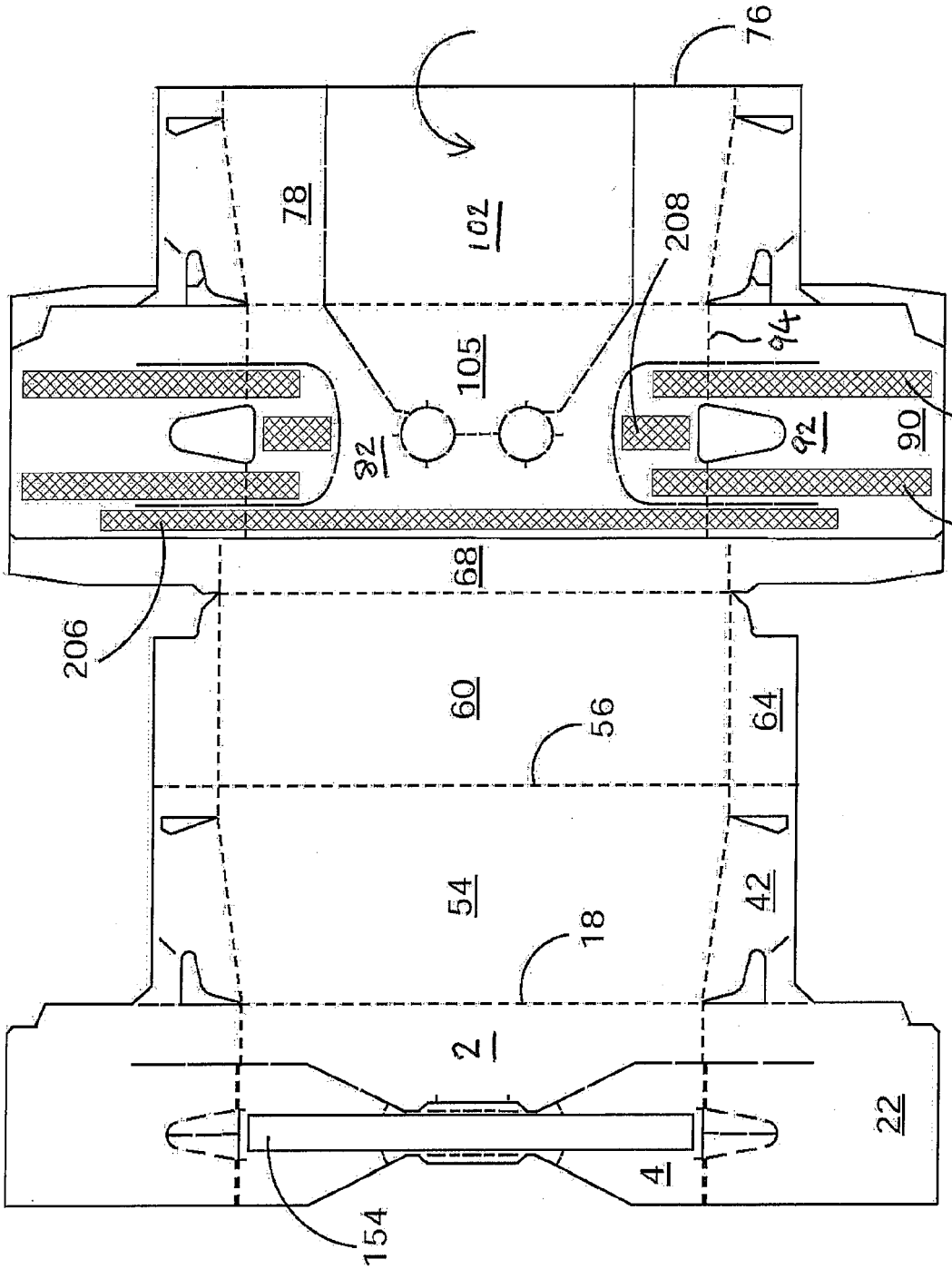
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FIGURE 2

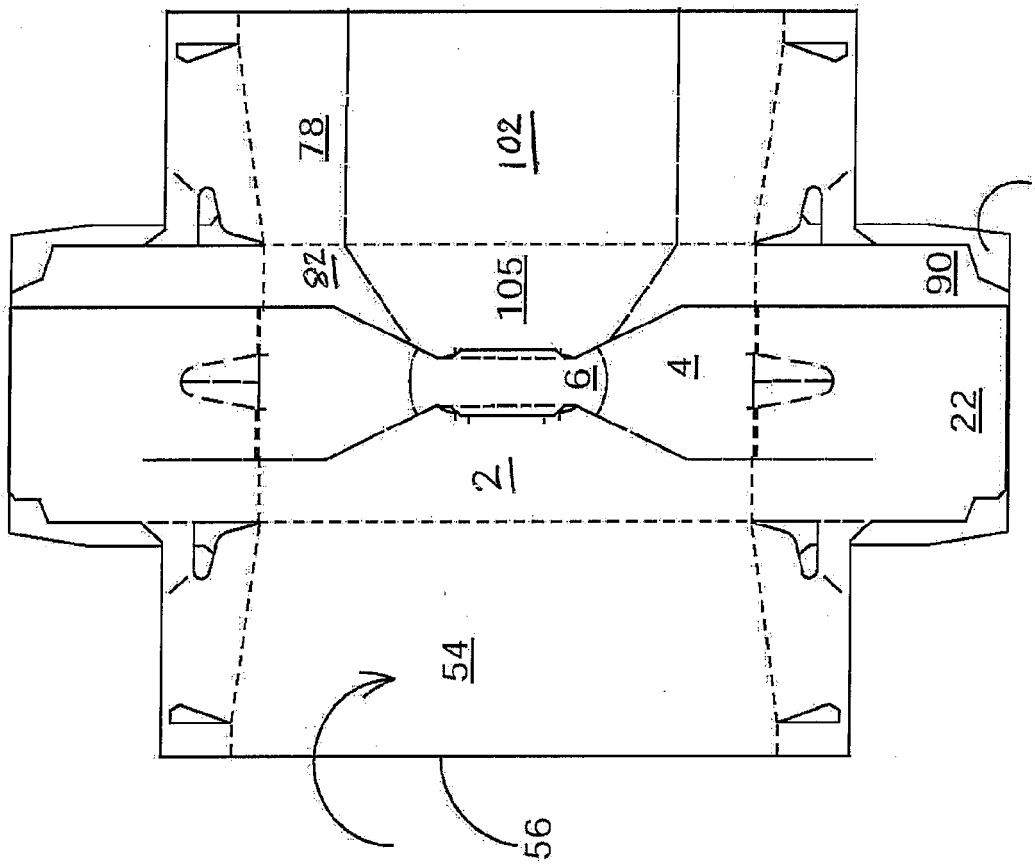

FIGURE 3

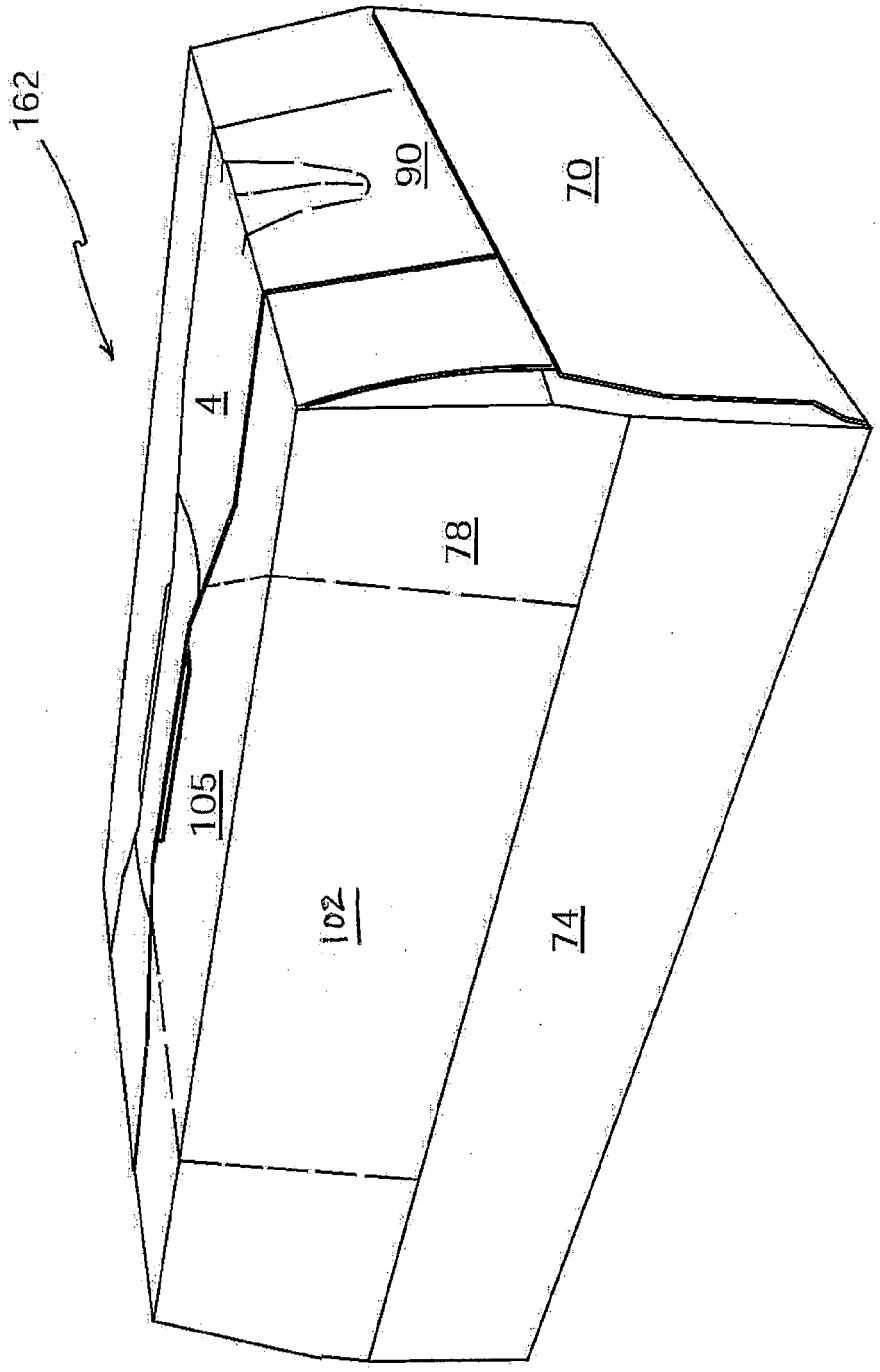

FIGURE 4

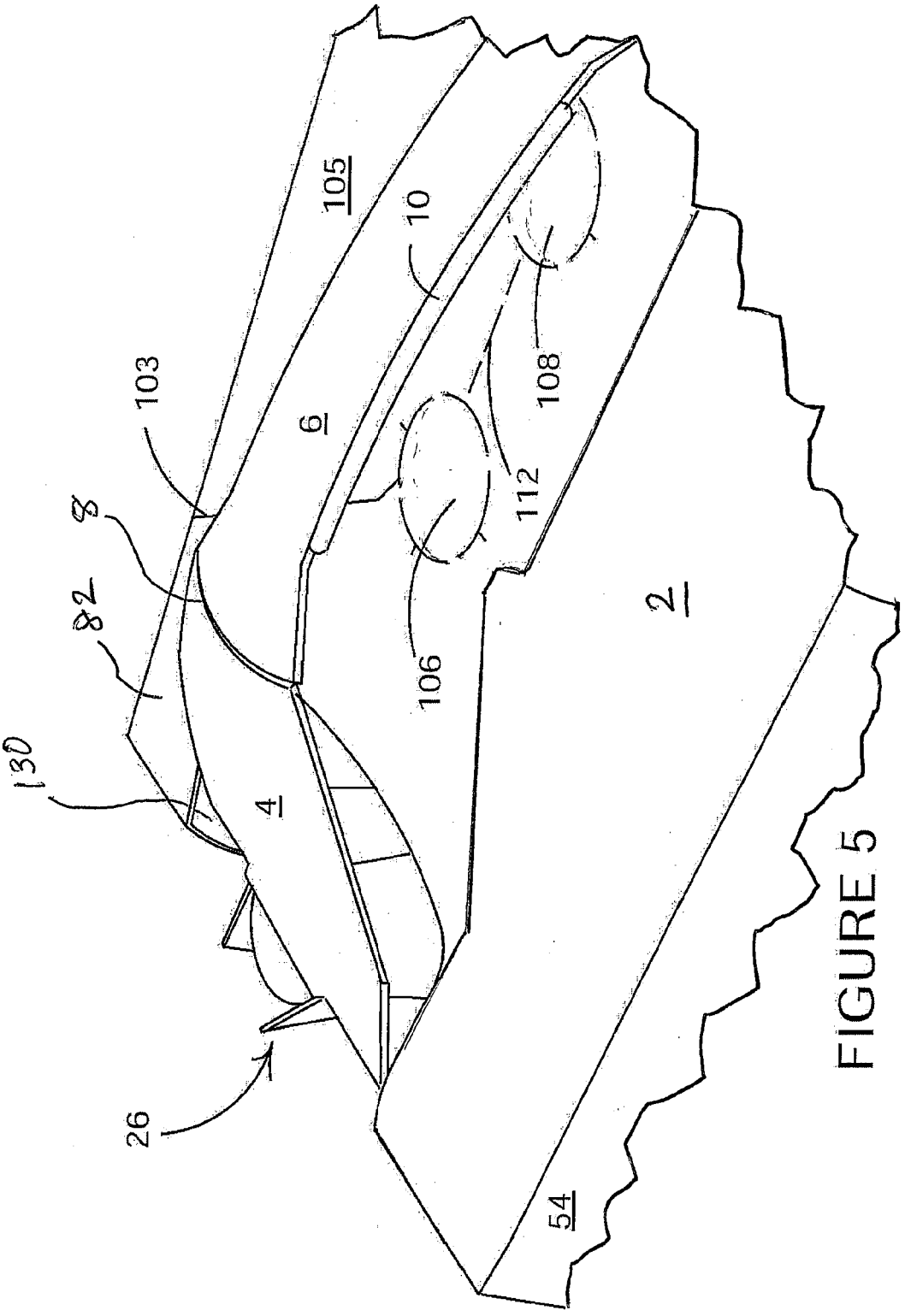

FIGURE 5

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European Patent Office
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EUROPEAN SEARCH REPORT

Application Number
EP 13 18 1991

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 02/055393 A (RIVERWOOD INT CORP [US]; SMALLEY BRIAN LESLIE [GB]) 18 July 2002 (2002-07-18) * page 3, line 1 - page 4, last paragraph; claims 1-10; figures 1-5 *	1-4	INV. B65D5/46
X	WO 96/27538 A (RIVERWOOD INT CORP [US]; RIVERWOOD INT LTD [GB]; GOMES JEAN MANUEL [FR) 12 September 1996 (1996-09-12) * page 3, line 13 - page 6, line 7; claims 1-12; figures 1-12 *	1-4	
X	US 2003/080180 A1 (HOLLEY JOHN M [US] ET AL HOLLEY JR JOHN M [US] ET AL) 1 May 2003 (2003-05-01) * paragraph [0031] - paragraph [0049]; claim 1; figures 1-15 *	1-4	
X	US 2007/095882 A1 (HOLLEY JR JOHN M [US]) 3 May 2007 (2007-05-03) * paragraph [0030] - paragraph [0043]; claims 1-8; figures 1-12 *	1-4	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 October 2013	Janosch, Joachim

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 18 1991

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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