(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 135 296 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
19.11.2003 Bulletin 2003/47

(21) Application number: **99965092.2**

(22) Date of filing: **02.12.1999**

(51) Int Cl.[7]: **B65D 1/00**

(86) International application number:
PCT/US99/28555

(87) International publication number:
WO 00/032481 (08.06.2000 Gazette 2000/23)

(54) **HEAVY DUTY ARTICLE CARRIER**

HOCHBEANSPRUCHBARER TRAGBEHÄLTER

DISPOSITIF ROBUSTE DE TRANSPORT D'ARTICLES

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(30) Priority: **02.12.1998 GB 9826397**

(43) Date of publication of application:
26.09.2001 Bulletin 2001/39

(73) Proprietor: **MeadWestvaco Packaging Systems LLC**
Stamford, Connecticut 06905 (US)

(72) Inventors:
- **AUCLAIR, Jean-Michel**
  F-36000 Chateauroux (FR)
- **LEBRAS, Philippe**
  F-36000 Chateauroux (FR)

(74) Representative: **Hepworth, John Malcolm et al**
Hepworth Lawrence Bryer & Bizley
Bloxam Court
Corporation Street
Rugby, Warwickshire CV21 2DU (GB)

(56) References cited:
WO-A-96/21604 **US-A- 5 307 932**

Remarks:
WIPO A3 publication data is not currently available.

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 135 296 B1

Description

Background of the Invention

[0001] This invention relates generally to hand held article carriers for accommodating one or more articles, for example bottles or the like formed from one or more blanks of paperboard or other suitable foldable sheet material. More particularly, the invention is concerned with providing a handle structure including score lines formed in the top wall together with weakened severance lines which interrelate these score lines with diagonal score lines at each corner thereof.

[0002] US Patent No 5 307 932 issued May 3, 1994 and owned by the proprietor of this invention discloses a fully enclosed article carrier having special score lines formed in its top wall and arranged so as to aid in distributing the load of the carrier.

[0003] Another example is illustrated in US 5, 379, 944 which shows a top wall with score lines arranged to extend from the end of the hand gripping aperture outwardly in an emerging path toward corners of the top wall. The score lines terminate at cut lines extending across the top wall and into the adjacent side and end walls. Notably, the corners are formed from the top, side and end wall panels secured together to form a fully enclosed corner.

[0004] Multiple ply handles are also common in cartons of the end loading type usually by overlapping part of the wall panels forming the top wall panel. However, for cartons of the "over the top" style in which articles are loaded from above or below, the known approach of overlapping wall panels is unsatisfactory as it relies on accurate alignment of wall panels during the loading process which is undesirable to the packaging speeds of known machines.

[0005] The present invention and its preferred embodiments seek to overcome or at least mitigate the problems of the prior art by providing an improved structure for distributing the stresses around the handle and an improved multiply handle arrangement.

[0006] According to one aspect of the invention, there is provided an article carrier for accommodating a plurality of articles such as cans which carrier comprises a top wall, a base wall, side and end walls interconnecting the top wall and the base wall. A handle strap formed in the top wall is defined at least in part by hand apertures in the top wall, means for enhancing local folding in the top wall so that the top wall is encouraged to bow upwardly when lifted by the handle strap. The stress relief cut operatively associated with the local folding-enhancing means are provided in the top and side walls adjacent a corner of the top will so that the lifting stresses are transmitted to the side and end walls to relieve the stresses acting on the handle strap when the carrier is lifted by the handle strap.

[0007] According to an optional feature of this aspect of the invention, the local folding enhancing means may comprise a plurality of score lines formed in the top wall, each of the score lines extending from one of the hand apertures to terminate at the stress relief cut.

[0008] Preferably, the score lines may diverge outwardly from one hand aperture to the corner of the top wall.

[0009] According to another optional feature of this aspect of the invention, there may further comprise a pair of diverging fold lines extending from a central portion of each hand aperture to terminate at a side edge of the top wall.

[0010] According to a further optional feature of this aspect ofthe invention the stress reliefcut may be provided by a weakened severance line formed in the top will and extending into the side wall, the weakened severance line being disposed adjacent the corner of the top wall.

[0011] According to yet another optional feature of this aspect of the invention the weakened severance line may be diagonally oriented at the corner. Alternatively, the weakened severance line may be generally arcuate at the corner.

[0012] According to a further optional feature of this aspect of the invention a corner panel may be disposed between the side and end panels to form a bevelled corner structure at a corner of the carrier. Preferably, the corner panel may be separated from the top wall thereby to reduce handling stress.

[0013] A second aspect of the invention provides a blank for forming an article carrier for accommodating a plurality of articles which carrier may comprise a top wall, a base wall, side and end walls interconnecting the top wall and the base wall. A handle strap is formed in the top wall defined at least in part by hand apertures provided in the top wall, means for enhancing local folding in the top wall is encouraged to bow upwardly when lifted by the handle strap. There comprises a stress relief cut operatively associated with the local folding-enhancing means and provided in the top and side walls adjacent a corner of the top wall so that the lifting stresses are transmitted to the side and end walls to relieve the stresses acting on the handle when the carrier is lifted by the handle strap.

[0014] According to an optional feature of the second aspect of the invention the stress relief cut may be provided by a weakened severance line formed in the top wall and extending into the side wall, the weakened severance line being disposed adjacent the corner of the top wall.

[0015] A third aspect of the invention provides an article carrier for accommodating a plurality of articles such as cans which carrier comprises a top wall, a base wall, side and end walls interconnecting the top wall and the base wall thereby forming a tubular structure and top and bottom end closure panels for closing opposite ends ofthe tubular structure. The base is formed by securing together overlapping oppositely disposed base panels by locking means and wherein the bottom end

closure panels are secured to the outer surfaces of the base panels. Preferably the bottom end closure panels are secured to the base panels by glue.

[0016] A fourth aspect of the invention provides a method of forming the base of an article carrier, according to the preceding paragraph which method comprises the steps of overlapping the oppositely disposed base panels, securing the base panels together by suitable locking means, folding the bottom end closure panels into face contacting relationship with the base panels and securing the bottom end closure panels to the outer surface of the base panels.

[0017] A fifth aspect of the invention provided an article carrier for accommodating a plurality of articles such as cans which carrier comprises a top wall, a base wall, side and end walls interconnecting the top wall and the base wall thereby forming a tubular structure, top and bottom end closure panels for closing opposite ends of the tubular structure. A handle strap is formed in the top wall and defined at least in part by hand apertures in the top wall, wherein the top wall comprises a pair of oppositely disposed top wall panels overlapping each other. The handle strap is a triple ply structure formed from an overlapping portion of the top wall panels and a support panel extending from one of the top wall panels, the support panel being foldable into face contacting relationship with one of the top wall panels. Preferably, the support panel comprises two parts hingedly connected to lateral free edges of one of the top wall panels. More preferably, the support panel is hingedly connected to a longitudinal free edge of one of the top wall panels.

[0018] Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIGURE 1 is a plan view of a blank for forming a carton according to one preferred embodiment of the invention;

FIGURE 2 is a plan view of a blank for forming a carton according to a second preferred embodiment of the invention;

FIGURE 3 is a plan view of a blank for forming a carton according to another preferred embodiment of the invention;

FIGURE 4 shows the position which the carrier parts occupy when the blank of FIGURE 1 is manipulated into a collapsed carrier;

FIGURE 5 illustrates a carton in a set up condition formed from the blank shown in FIGURE 1; and

FIGURE 6 is an enlarged view of the corner arrangement of the carton shown in Figure 5.

Detailed Description of the Preferred Embodiments

[0019] Referring first to Figure 1 there is shown a blank 10 for forming a carton or article carrier made from one or more blanks of paperboard of similar foldable sheet material. The blank 10 comprises in series of a first side wall panel 12, first end wall panel 14, second side wall panel 16, second end wall panel 18 hingedly connected together. In this embodiment, opposed side and end wall panels 12, 16; 14, 18 may be separated by corner panels 20, 22, 24, 26 adapted to form bevelled corners for the carton; corner panel 20 is hingedly connected to side wall panel 12 along fold line 28 and to first end wall panel 14 along fold line 30. Corner panel 22 is hingedly connected to first end wall panel 14 along fold line 32 and to second side wall panel 16 along fold line 34. Corner panel 24 is hingedly connected to second side wall panel 16 along fold line 36 and to second end wall panel 18 along fold line 38. Corner panel 26 is hingedly connected to second end wall panel 18 by fold line 40. Preferably, there may further comprise a glue flap 42 connected to the second end wall panel 18 and more preferably to the lateral edge of corner panel 26 along fold line 44.

[0020] The base of the carrier is formed from a plurality of base panels which in this embodiment is provided by base panels 46, 48, 50 and 52 hingedly connected to side wall panel 12, end wall panel 14, second side wall panel 16 and second end wall panel 18 respectively along fold lines 54, 56, 58 and 60. In some embodiments, there may comprise an intermediate panel 62 hingedly connected to base panels 46, 48, 50 and 52 and to the corresponding side or end wall panels, as shown in Figure 1.

[0021] The top wall of the carrier is a composite structure formed of two main parts designated by numerals 66 and 76. A hand gripping aperture 74 is formed in wall panel 66, and a similar hand gripping aperture 84 is formed in wall panel 76. Top wall panel 66 may be hingedly connected to an upper edge of side wall panel 12, although in this embodiment, an intermediate panel 70 is provided to interconnect the top and side wall panels 66, 12 along fold lines 72, 68 respectively. Preferably, there comprises one or more score lines extending outwardly from hand aperture 74 towards the opposed corner structure of top wall 66 adjacent intermediate panel 70. In this embodiment, a pair of diverging score lines 92, 94 and 96, 98 extend outwardly to each corner structure. There may further comprise a similar pair of score lines 106, 108 extending outwardly and diverging away from a substantially central portion of hand aperture 74.

[0022] Likewise, second top wall panel 76 is joined to opposing side wall panel 16 by intermediate panel 80 along fold lines 82 and 78 respectively. Second top wall panel 76 also comprises similar complementary pairs of score lines which correspond substantially to score lines 92, 94; 95, 98; 106, 108 of first top wall panel 66 and are therefore designated by the suffix "a" and are not described in any greater detail.

[0023] There may further comprise one or more upper end flaps 86, 90: upper end flap 86 is hingedly joined to end wall panel 14 along fold line 88 and complementary end flap 90 is hingedly joined to opposing end wall panel

18 along fold line 87.

[0024] The corner structure of the top wall is now described by reference to first top wall panel 66. There comprises one or more stress relief cuts 100, 104 and, 101, 105 formed at each corner of the top wall panel 66 which are configured in like but opposed fashion. The stress relief cuts may be provided by weakened severance lines or by cut lines.

[0025] Turning in detail to the construction of the stress relief cut 100, it preferably extends from the inner end of fold line 102 diagonally to terminate at fold line 72, Of course, in other embodiments the fold line could be arcuate or parallel to a side edge of top wall panel. A second cut line 104 extends beyond the cut 100 into side wall panel 12 to terminate at a point towards the upper corner of side wall panel 12 shown in Figure 1. It will be seen that score lines 92 and 94 terminate at cut 100.

[0026] The opposing corner structure likewise includes a stress relief 101 extending from the inner end of fold line 103 to terminate at fold line 72. Preferably, stress relief cut 101 is oriented diagonally across the corner, although it could be arcuate or parallel to a side edge of top wall panel without departing from the scope of invention. A second stress relief cut 105 extends beyond cut line 100 across bevelled panel 70 and into side wall panel 12 to terminate at a point towards the upper corner of side wall panel 12, shown in Figure 1.

[0027] The corner structures of the second top wall panel 76 are similar to stress relief cut 100, 104; 103, 105, and are designated by the suffix "a". They are not therefore described in any more detail.

[0028] In one class of embodiments, there may further comprise a support panel 110 hingedly connected to one of the main top wall panels 66, 76 along fold line 112. In use the support panel 310 is folded about fold line 112 to abut the inner surface of top wall panel 76 to provide a multiply handle thereby to provide additional support.

[0029] It is envisaged the cartons can vary depending upon the shape and/or quantity of articles to be packaged. The principal arrangements which are likely to be varied are shown in Figure 1 is the overall height of the set up carton equivalent to the distance of the side or end wall and the overall length and/or width of the carton when the base panels have been closed.

[0030] Turning to the second and third embodiments illustrated in Figures 2 and 3 respectively, the blanks 210, 310 substantially correspond to blank 10 shown in Figure 1, so the reference numerals are prefixed by "2" or "3" respectively and therefore only the differences are described below. In the second embodiment shown in Figure 2, the handle structure 264 includes a support panel formed from two parts 293, 295 hingedly connected to lateral edges of top wall panel 276 along fold lines 297, 299 respectively. In use, the handle parts are folded to abut the underside of top wall panel 276 and are contiguous therewith, thereby providing a multiply handle strap 264 to improve the strength. Also, panel engaging means is provided to secure base panels 243, 245 together, described in more detail below. In the third embodiment, shown in Figure 3 support for the handle strap 364 is provided by the upper end flaps 386, 390 which are shaped to correspond with the end regions of handle apertures 374, 384 respectively. Thus, pairs of recesses 385; 391, 393 are formed along the free end edges of end flaps 386 and 390 respectively.

[0031] The construction of the carton from the blank shown in Figure 1 is illustrated with reference to Figures 4 and 5: whereby end wall panel 18, top end flap 90 and base panel 52 are folded along fold line 38 and into face contacting relationship with the side wall panel 16, top wall panel 76 and base panel 50. Thereafter, side wall panel 12, top wall panel 66 and base panel 46 are folded about fold lines 30 and into face contacting relationship with end wall panel 14, end flap 86 and base support panel 48, such that side wall panel 12 overlaps glue flap 42 to be secured together by glue or other suitable means known in the art. The glue flap 42 can be connected to the inner or outer surface of side wall panel 12. After this operation is complete, the carton is in a flat collapsed condition ready to be supplied to a user for loading with articles.

[0032] In order to load the carton, the side and end wall panels are moved out of face contacting relationship and into a substantially rectangular arrangement whereby a sleeve is formed. In this embodiment, the bevelled corners are also constructed by folding bevelled corner panels 20, 22, 24, 26 along fold lines 28, 30; 32, 34; 36, 38, 40 respectively and out of alignment with their adjacent side and end wall panels. Thereafter, articles are loaded by relative vertical movement between the carton and articles from above or below, as is well known in the art and the top and base are constructed, as described below. It is envisaged that one or more layers of articles can be stored within the carton in horizontal or vertical positions according to user requirements.

[0033] In this embodiment, it is preferred the sleeve is placed over the top of the articles held in vertical orientation and the base is then formed by folding base panels 46, 50 inwardly into overlapping relationship to be secured together by glue, or other suitable securing means. For example the second embodiment is provided with the locking tab 243 and tab receiving flap 245 in base panels 250; 246 for forming and securing the base panels together. Thereafter base support panels 48, 52; 248, 252 are secured to base panels 46, 50; 246,250 by glue or other suitable means known in the art.

[0034] It is envisaged the folding steps for forming the base structure can be altered so that for example the support panels 48, 52 are first folded and thereafter base panels 46, 50 are folded into abutment with base support panels 48, 52 and are secured together by suitable means for example glue.

[0035] In all three embodiments described above, the top structure is preferably provided with a multiply car-

rying means or handle strap 64. In the first embodiment, the handle support panel 110 is folded about fold line 112 into face contacting relationship with top wall panel 76 and is secured thereto by glue or other suitable means known in the art. In the second embodiment the handle support panels 293, 295 are folded about fold lines 297, 299 respectively into face contacting relationship with top wall panel 276 and are secured by glue or other suitable means known in the art.

[0036] The composite top wall is then formed, by reference to Figures 4 and 5, whereby top end flaps 86, 90 are folded in a downward direction and into a substantially perpendicular relationship with end wall panels 14, 18. Thereafter, top wall panels 66, 86 are folded in an inward direction to abut top end flaps 86, 90. It will be seen from Figure 5 that portions of top wall panel 66, 76 forming the handle panels are brought into overlapping face to face relationship and are secured together by glue or other suitable means known in the art to form a triple ply handle structure 64. In some embodiments, the support panel 110 may be sandwiched between top panels 66, 76 to form an integral multiply structure. The composite top wall can be additionally secured to end flaps, particularly at the portion of the corner structure between fold lines 102, 72 and stress relief cut 100. Thus, the carton is in a set up and loaded condition, as shown in Figure 5.

[0037] The carton of the present invention can be formed by a series of sequential folding and gluing operations which can be performed in a straight line machine so that the carton is not required to be rotated or invited to complete its construction. The folding processes are not limited to that described above and can be altered according to particular manufacturing requirements.

[0038] In use, each pair of score lines 92, 94; 96, 98; 106, 108 interconnects with the diagonal (or arcuate) corner stress relief cuts 100, 103 to avoid unintended or unwanted folding of the top wall panel structure by directing any folding along these fold lines. Thus a significant reduction in stress which is transmitted to the handle occurs due to the collection of the score lines with the weakened severance lines from each corner of the top wall.

[0039] Commonly, the corner structure of known cartons is fully enclosed and the fold lines defining top or bottom, and side and end wall panels intersect to define the corners. This approach is undesirable, because it can cause a concentration in stresses at the corners when the carton is lifted. By contrast, the carton of the present invention incorporates bevelled corners between the side and end walls and preferably include bevelled upper and lower carton walls which results in corner structures with apertures 120, shown in Figure 5. Thus, by providing a corner arrangement as shown in Figure 6, the aperture 120 leads to a reduction in stress, but it can be less rigid. The portion 122 of top and side wall panels is formed by the extension of severance lines 104 extending across the upper bevelled panel and into the side walls, in use, the central portion of bevelled panels 70, 80 and/or the upper portions of side wall panels 12, 16 between opposing cut lines 68, 72; 78, 82 flex when the top wall structure is lifted whilst the integrity of the corner arrangement is retained. Thus, the stresses from the lifting action of the handle panel are transmitted through to the side wall panels of the carrier.

[0040] With significant reductions of stress provided by this invention it is possible to reduce the calliper of paperboard required to form a secured package for the cans. Thus, according to this invention significant savings in the cost of paperboard are achieved without impairing the package integrity.

[0041] Furthermore, the combination of lacking and gluing the base in which the bottom panels are first locked then the end flaps are glued onto the lapped panels prorvides a more secure base structure to support articles contained in the carrier than other known base structures.

[0042] It will be recognized that as used herein directional references such as top, base, end and side 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 the hinged connection can be formed from one or more of the following: a score line, frangible connection or a fold line without departing from the scope of invention.

[0043] The present invention and its preferred embodiments relate to a package, carton or article carrier which is shaped to provide a satisfactory rigidity to hold items such as cans with a degree of flexibility. The shape of the blank minimizes the amount of paperboard required for the carton. The carton can be constructed from a flap collapsed condition to a position of use by hand or automatic machinery. It is anticipated that the invention can be modified, without departing from the scope of invention, for example the top wall panel structure can be applied to wraparound or end loaded cartons of a known type.

Claims

1. An article carrier for accommodating a plurality of articles such as cans which carrier comprises a top wall (66, 76), a base wall (46, 48, 50, 52), side and end walls (12, 16, 14, 18) interconnecting the top wall and the base wall, a handle strap (64) formed in the top wall (66, 76) and defined at least in part by hand apertures (74, 84) in the top wall, means for enhancing local folding in the top wall (66, 76) so that the top wall is encouraged to bow upwardly when lifted by the handle strap (64), **characterised in that** there comprises stress relief cut (100, 101;

100a, 101a) operatively associated with the local folding-enhancing means and provided in the top and side walls adjacent a corner of the top wall (66, 76) so that the lifting stresses are transmitted to the side and end walls (12, 16, 14, 18) to relieve the stresses acting on the handle strap when the carrier is lifted by the handle strap.

2. An article carrier according to claim 1 wherein said local folding enhancing means comprises a plurality of score lines (92, 94, 96, 98; 92a, 94a, 96a, 98a) formed in said top wall (66,76), each of said score lines extending from one of said hand apertures (74, 84) to terminate at said stress relief cut (100, 101; 100a, 101a),

3. The article carrier according to claim 2 wherein said score lines diverge outwardly from said one hand aperture (74, 84) to said corner of the top wall.

4. The article carrier according to any of claims 1 to 3 further comprising a pair of diverging fold lines (106, 108; 106a, 108a) extending from a central portion of each hand aperture (74, 84) to terminate at an adjacent side edge of the top wall (66, 76).

5. An article carrier according to any preceding claim wherein said stress relief cut (100, 101; 100a, 101a) is provided by a weakened severance line formed in said top wall (66, 76) and extending into the side wall (12, 16), said weakened severance line being disposed adjacent said corner of the top wall (66,76).

6. An article carrier according to claim 5 wherein said weakened severance line is diagonally oriented at said corner.

7. An article carrier according to claim 5 wherein said weakened severance line is generally arcuate at said corner.

8. An article carrier according to any preceding claim further comprising a corner panel (20, 22, 24, 26) disposed between said side and end panels (12, 16; 14, 18) to form a bevelled corner structure at a corner of the carrier.

9. An article carrier according to claim 8 wherein the corner panel (20, 22, 24, 26) is separated from the top wall (66, 76) thereby to reduce handling stress.

10. A blank (10) for forming an article carrier for accommodating a plurality of articles which carrier comprises a top wall (66, 76), a base wall (46, 48, 50, 52), side and end walls (12, 16 and 14, 18) interconnecting the top wall and the base wall, a handle strap (64) formed in the top wall (66, 76) and defined at least in part by hand apertures (74, 84) in the top wall, means for enhancing local folding in the top wall so that the top wall is encouraged to bow upwardly when lifted by the handle strap (64), **characterized in that** there comprises stress relief cut (100, 101; 100a, 101a) operatively associated with the local folding-enhancing means and provided in the top and side walls adjacent a corner of the top wall (66, 76) so that the lifting stresses are transmitted to the side and end walls (12, 16; 14, 18) to relieve the stresses acting on the handle strap (64) when the carrier is lifted by the handle strap (64).

11. A blank (10) as claimed in claim 10 wherein said stress relief cut (100, 101; 100a, 101a) is provided by a weakened severance line formed in said top wall (66,76) and extending into the side wall (12, 16), said weakened severance line being disposed adjacent said corner of the top wall (66, 76).

12. An article carrier for accommodating a plurality of articles such as cans which carrier comprises a top wall (266, 276), a base wall (246, 248, 250, 252), side and end walls (212, 216; 214, 218) interconnecting the top wall and the base wall thereby forming a tubular structure, and top and bottom end closure panels (248, 252) for closing opposite ends of the tubular structure, **characterised in that** the base wall is formed by securing together overlapping oppositely disposed base panels (246, 250) by locking means (245, 243) and wherein said bottom end closure panels (248, 252) are secured to the outer surfaces of said base panels (246, 250).

13. An article carrier as claimed in claim 12 wherein the bottom end closure panels (248, 252) are secured to the base panels (246, 250) by glue.

14. A method of forming the base of an article carrier according to claim 12, which method comprises the steps of overlapping said oppositely disposed base panels (246, 250), securing said base panels (246, 250) together by suitable locking means (243, 245), folding the bottom end closure panels into face contacting relationship with said base panels (246, 250) and securing said bottom end closure panels to the outer surface of the base panels (246, 250).

15. An article carrier for accommodating a plurality of articles such as cans which carrier comprises a top wall, a base wall (46, 48, 50, 52), side and end walls (12, 16; 14, 18) interconnecting the top wall and the base wall thereby forming a tubular structure, top and bottom end closure panels for closing opposite ends of the tubular structure, and a handle strap (64) formed in the top wall and defined at least in part by hand apertures (74, 84) in the top wall (66, 76), wherein said top wall comprises a pair of op-

positely disposed top wall panels (66, 76; 266, 276; 366, 376) overlapping each other, **characterised in that** the handle strap (64) is a triple ply structure formed from an overlapping portion of said top wall panels (66, 76) and a support panel (110, 293, 295, 386, 390) extending from one of the top wall panels (66, 76), said support panel being foldable into face contacting relationship with said one of the top wall panels (66, 76).

16. An article carrier according to claim 15 wherein the support panel (293, 295) comprises two parts hingedly connected to lateral free edges of said one of the top wall panels (266,276).

17. An article carrier according to claim 16 wherein the support panel (110) is hingedly connected to a longitudinal free edge of said one of the top wall panels (66, 76).

18. A package comprising a plurality of articles supported by an article carrier as claimed in any of claims 1 to 9, claims 12 to 13 or claims 15 to 17.

Patentansprüche

1. Gegenstandsträger zum Aufnehmen einer Vielzahl von Gegenständen wie Dosen, wobei der Träger eine Deckenwand (66, 76) umfasst, eine Basiswand (46, 48, 50, 52), Seiten- und Endwände (12, 16, 14, 18), die die Deckenwand und die Basiswand miteinander verbinden, einen Handriemen (64), der in der Deckenwand (66, 76) ausgebildet ist und wenigstens zum Teil durch Handöffnungen (74, 84) in der Deckenwand definiert ist, Mittel zum Verstärken der lokalen Faltung in der Deckenwand (66, 76), so dass die Deckenwand darin unterstützt wird, sich nach oben zu biegen, wenn sie durch den Handriemen (64) angehoben wird, **dadurch gekennzeichnet, dass** eine Spannungsentlastungsstanzung (100, 101; 100a, 101a) umfasst ist, die mit den Faltungsverstärkungsmitteln wirksam verbunden ist und in der Decken- und den Seitenwänden angrenzend an eine Ecke der Deckenwand (66, 76) derart bereitgestellt ist, dass die Anhebespannungen auf die Seiten- und Endwände (12, 16, 14, 18) übertragen werden, um die auf den Handriemen wirkenden Spannungen zu verringern, wenn der Träger durch den Handriemen angehoben wird.

2. Gegenstandsträger nach Anspruch 1, in welchem die lokalen Faltungsverstärkungsmittel eine Vielzahl von Kerblinien (92, 94, 96, 98; 92a, 94a, 96a, 98a) umfassen, die in der Deckenwand (66, 76) ausgebildet sind, wobei sich jede der Kerblinien von einer der Handöffnungen (74, 84) erstreckt, um an der Spannungsentlastungsstanzung (100, 101; 100a, 101a) zu enden.

3. Gegenstandsträger nach Anspruch 2, in welchem die Kerblinien nach außen von einer der Handöffnungen (74, 84) hin zu der Ecke der Deckenwand divergieren.

4. Gegenstandsträger nach einem der Ansprüche 1 bis 3, der ferner ein Paar von divergierenden Faltlinien (106, 108; 106a, 108a) umfasst, die sich von einem zentralen Abschnitt jeder Handöffnung (74, 84) erstrecken, um an einer angrenzenden Seitenkante der Deckenwand (66, 76) zu enden.

5. Gegenstandsträger nach einem der vorstehenden Ansprüche, in welchem die Spannungsentlastungsstanzung (100, 101; 100a, 101a) durch eine schwache Trennlinie bereitgestellt ist, die in der Deckenwand (66, 76) ausgebildet ist und sich in die Seitenwand (12, 16) erstreckt, wobei die schwache Trennlinie angrenzend an die Ecke der Deckenwand (66, 76) angeordnet ist.

6. Gegenstandsträger nach Anspruch 5, in welchem die schwache Trennlinie an der Ecke diagonal ausgerichtet ist.

7. Gegenstandsträger nach Anspruch 5, in welchem die schwache Trennlinie an der Ecke im Wesentlichen bogenförmig vorliegt.

8. Gegenstandsträger nach einem der vorstehenden Ansprüche, der ferner eine Eckwandfläche (20, 22, 24, 26) umfasst, die zwischen den Seiten- und Endwandflächen (12, 16; 14, 18) angeordnet ist, um eine abgeschrägte Eckenstruktur an einer Ecke des Trägers auszubilden.

9. Gegenstandsträger nach Anspruch 8, in welchem die Eckwandfläche (20, 22, 24, 26) von der Deckenwand (66, 76) getrennt ist, wodurch die Handhabungsspannung verringert wird.

10. Zuschnitt (10) zum Ausbilden eines Gegenstandsträgers zum Aufnehmen einer Vielzahl von Gegenständen, wobei der Träger eine Deckenwand (66, 76) umfasst, eine Basiswand (46, 48, 50, 52), Seiten- und Endwände (12, 16 und 14, 18), die die Dekkenwand und die Basiswand miteinander verbinden, einen Handriemen (64), der in der Deckenwand (66, 76) ausgebildet ist und wenigstens zum Teil durch Handöffnungen (74, 84) in der Deckenwand definiert ist, Mittel zum Verstärken der lokalen Faltung in der Deckenwand, so dass die Deckenwand darin unterstützt wird, sich nach oben zu biegen, wenn sie durch den Handriemen (64) angehoben wird, **dadurch gekennzeichnet, dass** eine Spannungsentlastungsstanzung (100, 101; 100a,

101a) umfasst ist, die mit den Faltungsverstärkungsmitteln wirksam verbunden ist und in der Decken- und den Seitenwänden angrenzend an eine Ecke der Deckenwand (66, 76) derart bereitgestellt ist, dass die Anhebespannungen auf die Seiten- und Endwände (12, 16; 14, 18) übertragen werden, um die auf den Handriemen (64) wirkenden Spannungen zu verringern, wenn der Träger durch den Handriemen (64) angehoben wird.

11. Zuschnitt (10) nach Anspruch 10, in welchem die Spannungsentlastungsstanzung (100, 101; 100a, 101a) durch eine schwache Trennlinie bereitgestellt ist, die in der Deckenwand (66, 76) ausgebildet ist und sich in die Seitenwand (12, 16) erstreckt, wobei die schwache Trennlinie angrenzend an die Ecke der Deckenwand (66, 76) angeordnet ist.

12. Gegenstandsträger zum Aufnehmen einer Vielzahl von Gegenständen wie Dosen, wobei der Träger eine Deckenwand (266, 276) umfasst, eine Basiswand (246, 248, 250, 252), Seiten- und Endwände (212, 216; 214, 218), die die Deckenwand und die Basiswand miteinander verbinden, wodurch eine röhrenförmige Struktur ausgebildet wird, und Decken- und Bodenendverschlusswandflächen (248, 252) zum Verschließen gegenüberliegender Enden der röhrenförmigen Struktur, **dadurch gekennzeichnet, dass** die Basiswand durch Befestigen von überlappenden, gegenüber angeordneten Basiswandflächen (246, 250) aneinander durch Verschlussmittel (245, 243) ausgebildet ist, und in welchem die Bodenendverschlusswandflächen (248, 252) an den äußeren Flächen der Basiswandflächen (246, 250) befestigt sind.

13. Gegenstandsträger nach Anspruch 12, in welchem die Bodenendverschlusswandflächen (248, 252) an den Basiswandflächen (246, 250) mittels Klebstoff befestigt sind.

14. Verfahren zum Ausbilden der Basis eines Gegenstandsträgers nach Anspruch 12, wobei das Verfahren die Schritte umfasst: In-Überlappung-Bringen der gegenüber angeordneten Basiswändflächen (246, 250), Befestigen der Basiswandflächen (246, 250) aneinander durch geeignete Verschlussmittel (243, 245), Falten der Bodenendverschlusswandflächen in flächenberührende Beziehung mit den Basiswandflächen (246, 250) und Befestigen der Bodenendverschlusswandflächen an der äußeren Fläche der Basiswandflächen (246, 250).

15. Gegenstandsträger zum Aufnehmen einer Vielzahl von Gegenständen wie Dosen, wobei der Träger eine Deckenwand umfasst, eine Basiswand (46, 48, 50, 52), Seitenund Endwände (12, 16; 14, 18), die die Deckenwand und die Basiswand miteinander verbinden, wodurch eine röhrenförmige Struktur ausgebildet wird, Decken- und Bodenendverschlusswandflächen zum Verschließen gegenüberliegender Enden der röhrenförmigen Struktur, sowie einen Handriemen (64), der in der Deckenwand ausgebildet ist und wenigstens zum Teil durch Handöffnungen (74, 84) in der Deckenwand (66, 76) definiert ist, wobei die Deckenwand ein Paar von gegenüber angeordneten Deckenwandflächen (66, 76; 266, 276; 366, 376) umfasst, die einander überlappen, **dadurch gekennzeichnet, dass** der Handriemen (64) eine dreilagige Struktur ist, die aus einem überlappenden Abschnitt der Deckenwandflächen (66, 76) und einer Stützwandfläche (110, 293, 295, 386, 390) ausgebildet ist, die sich von einer der Deckenwandflächen (66, 76) erstreckt, wobei die Stützwandfläche in flächenberührende Beziehung mit der einen Deckenwandfläche (66, 76) gefaltet werden kann.

16. Gegenstandsträger nach Anspruch 15, in welchem die Stützwandfläche (293, 295) zwei Teile umfasst, die mit den seitlichen freien Kanten der einen Deckenwandfläche (266, 276) gelenkig verbunden sind.

17. Gegenstandsträger nach Anspruch 16, in welchem die Stützwandfläche (110) mit einer freien Längskante der einen Deckenwandfläche (66, 76) gelenkig verbunden ist.

18. Verpackung, umfassend eine Vielzahl von Gegenständen, die durch einen Gegenstandsträger nach einem der Ansprüche 1 bis 9, der Ansprüche 12 bis 13 oder der Ansprüche 15 bis 17 gehalten werden.

Revendications

1. Dispositif de transport d'articles destiné à recevoir une pluralité d'articles, tels que des boîtes métalliques, lequel dispositif de transport comprend une paroi supérieure, une paroi de base, des parois latérales et d'extrémité reliant la paroi supérieure et la paroi de base, une bande-poignée formée dans la paroi supérieure et délimitée au moins en partie par des ouvertures de préhension aménagées dans la paroi supérieure, un moyen pour favoriser le pliage local dans la paroi supérieure, de sorte que cette paroi supérieure soit amenée à fléchir vers le haut lorsqu'elle est soulevée par la bande-poignée, et un moyen de relaxation des contraintes, associé fonctionnellement au moyen pour favoriser le pliage local et prévu dans les parois supérieure et latérales, à proximité d'un angle de la paroi supérieure, de sorte que les contraintes de levage soient transmises vers les parois latérales et d'extrémité, aux fins

de réduire les contraintes agissant sur la bande-poignée lorsque le dispositif de transport est soulevé par celle-ci.

2. Dispositif de transport d'articles selon la revendication 1, **caractérisé en ce que** le moyen pour favoriser le pliage local comprend une pluralité de stries formées dans la paroi supérieure, chacune de ces stries s'étendant à partir de l'une des ouvertures de préhension pour se terminer au niveau du moyen de relaxation des contraintes.

3. Dispositif de transport d'articles selon la revendication 2, **caractérisé en ce que** les stries divergent vers l'extérieur, depuis l'ouverture de préhension en direction de l'angle de la paroi supérieure.

4. Dispositif de transport d'articles selon l'une quelconque des revendications 1 à 3, **caractérisé en ce qu'**il comprend en outre une paire de lignes de pliage divergentes qui s'étendent depuis une partie centrale de chaque ouverture de préhension et se terminent au niveau d'un bord latéral adjacent de la paroi supérieure.

5. Dispositif de transport d'articles selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen de relaxation des contraintes comprend une ligne de séparation affaiblie, réalisée dans la paroi supérieure et s'étendant dans la paroi latérale; ladite ligne de séparation affaiblie étant prévue dans le voisinage de l'angle de la paroi supérieure.

6. Dispositif de transport d'articles selon la revendication 5, **caractérisé en ce que** la ligne de séparation affaiblie est orientée de façon diagonale au niveau de l'angle.

7. Dispositif de transport d'articles selon la revendication 5, **caractérisé en ce que** la ligne de séparation affaiblie présente en général une forme courbe au niveau de l'angle.

8. Dispositif de transport d'articles selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend en outre un panneau d'angle placé entre les panneaux latéraux et d'extrémité pour former une structure d'angle biseautée au niveau de l'angle du dispositif de transport.

9. Dispositif de transport d'articles selon la revendication 8, **caractérisé en ce que** le panneau d'angle est séparé de la paroi supérieure, afin de réduire ainsi les contraintes de manipulation.

10. Ebauche pour former un dispositif de transport d'articles destiné à recevoir une pluralité d'articles, lequel dispositif de transport comprend une paroi supérieure, une paroi de base, des parois latérales et d'extrémité reliant la paroi supérieure et la paroi de base, une bande-poignée formée dans la paroi supérieure et délimitée au moins en partie par des ouvertures de préhension aménagées dans la paroi supérieure, un moyen pour favoriser le pliage local dans la paroi supérieure, de sorte que ladite paroi supérieure soit amenée à fléchir vers le haut lorsqu'elle est soulevée par la bande-poignée, et un moyen de relaxation des contraintes, associé fonctionnellement au moyen pour favoriser le pliage local et prévu dans les parois supérieure et latérales, à proximité d'un angle de la paroi supérieure, de sorte que les contraintes de levage soient transmises vers les parois latérales et d'extrémité, aux fins de réduire les contraintes agissant sur la bande-poignée lorsque le dispositif de transport est soulevé par celle-ci.

11. Ebauche selon la revendication 10, **caractérisée en ce que** le moyen de relaxation des contraintes comprend une ligne de séparation affaiblie qui est réalisée dans la paroi supérieure et s'étend dans la paroi latérale, la ligne de séparation affaiblie étant placée à proximité de l'angle de la paroi supérieure.

12. Dispositif de transport d'articles destiné à recevoir une pluralité d'articles, tels que des boîtes métalliques, lequel dispositif de transport comprend une paroi supérieure, une paroi de base et des parois latérales et d'extrémité reliant la paroi supérieure et la paroi de base pour former ainsi une structure tubulaire, ainsi que des panneaux de fermeture d'extrémité supérieure et inférieure pour fermer les extrémités opposées de la structure tubulaire, **caractérisé en ce que** la paroi de base est formée en fixant entre eux, à l'aide de moyens de blocage, des panneaux de base disposés en opposition et se recouvrent mutuellement, et **en ce que** lesdits panneaux de fermeture d'extrémité inférieure sont fixés aux surfaces extérieures des panneaux de base.

13. Méthode pour former la base d'un dispositif de transport d'articles selon la revendication 12, **caractérisée en ce qu'**elle comprend les étapes consistant à faire chevaucher des panneaux de base disposés en opposition, à fixer ces panneaux de base entre eux, à plier les panneaux de fermeture d'extrémité inférieure pour les amener en contact de surface avec lesdits panneaux de base, et à fixer les panneaux de fermeture d'extrémité inférieure à la surface extérieure de ces panneaux de base.

14. Dispositif de transport d'articles destiné à recevoir une pluralité d'articles, tels que des boîtes métalliques, lequel dispositif de transport comprend une paroi supérieure, une paroi de base et des parois

latérales et d'extrémité reliant la paroi supérieure et la paroi de base pour former ainsi une structure tubulaire, des panneaux de fermeture d'extrémité supérieure et inférieure pour fermer les extrémités opposées de la structure tubulaire, et une bande-poignée formée dans la paroi supérieure et délimitée au moins en partie par les ouvertures de préhension de la paroi supérieure, **caractérisé en ce que** la paroi supérieure comprend une paire de panneaux de paroi supérieure disposés en opposition et se recouvrent mutuellement, et **en ce que** la bande-poignée est une structure à trois couches formées à partir d'une partie chevauchante des panneaux de paroi supérieure, un panneau-support s'étendant depuis l'un des panneaux de paroi supérieure et pouvant être plié pour venir en contact de surface avec le panneau de paroi supérieure.

15. Dispositif de transport d'articles selon la revendication 14, **caractérisé en ce que** le panneau-support comprend deux parties articulées sur des bords latéraux libres du panneau de paroi supérieure.

16. Dispositif de transport d'articles selon la revendication 15, **caractérisé en ce que** le panneau-support est articulé sur un bord longitudinal libre du panneau de paroi supérieure.

17. Paquet comprenant une pluralité d'articles portés par un dispositif de transport d'articles selon l'une quelconque des revendications 1 à 9, la revendication 12 ou les revendications 14 à 16.

18. Emballage comprenant une pluralité d'articles portés par un dispositif de transport d'articles selon l'une quelconque des revendications 1 à 9, les revendications 12 à 13 ou les revendications 15 à 17.

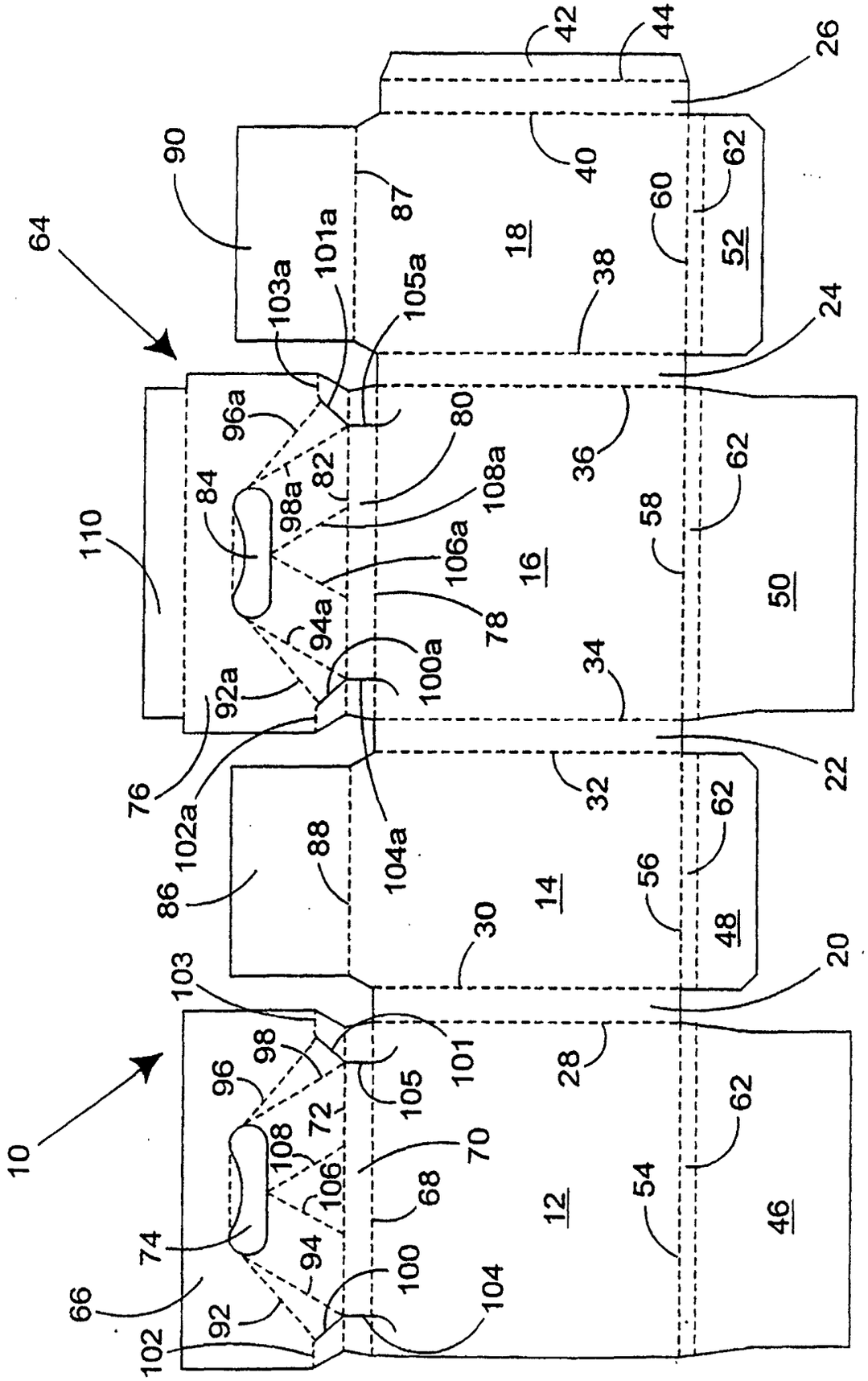

10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
86
87
88
90
92
92a
94
94a
96
96a
98
98a
100
100a
101
101a
102
102a
103
103a
104
104a
105
105a
106
106a
108
108a
110

FIGURE 1

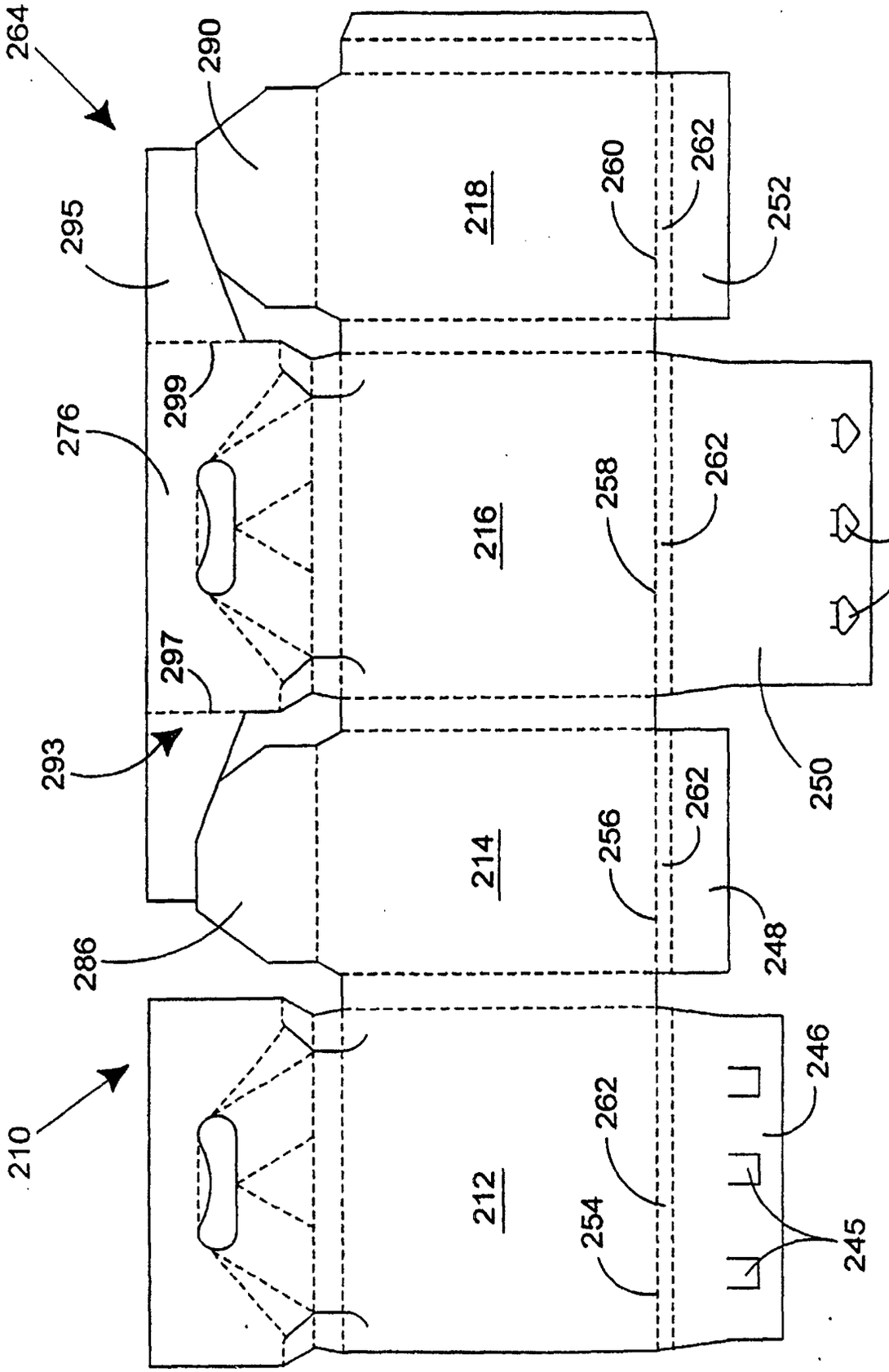

264
290
295
218
260
262
252
299
276
216
258
262
243
297
293
250
214
256
262
286
248
210
212
262
246
254
245

FIGURE 2

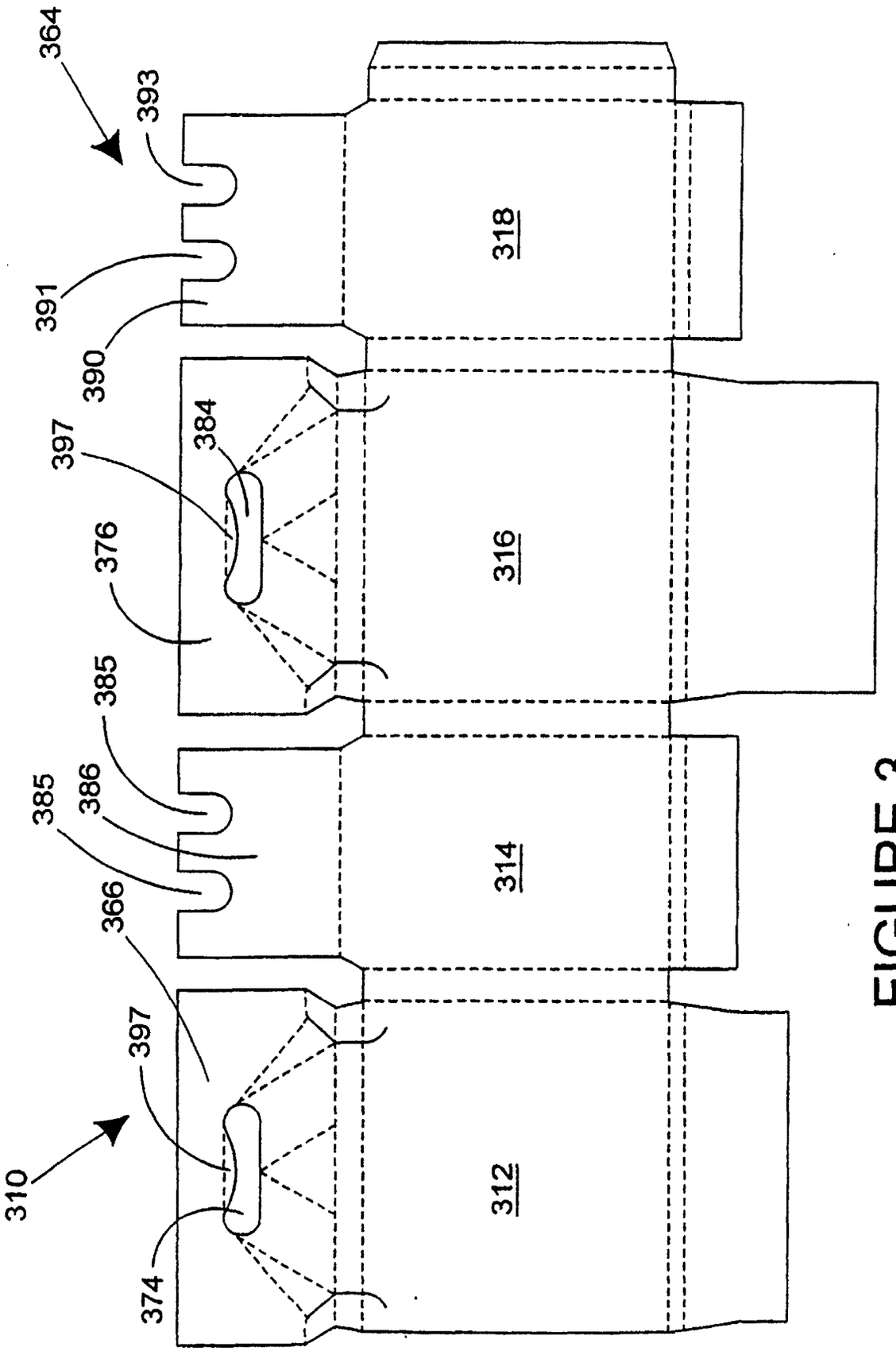

364
393
391
390
318
384
397
376
316
385
386
385
366
314
397
310
374
312

FIGURE 3

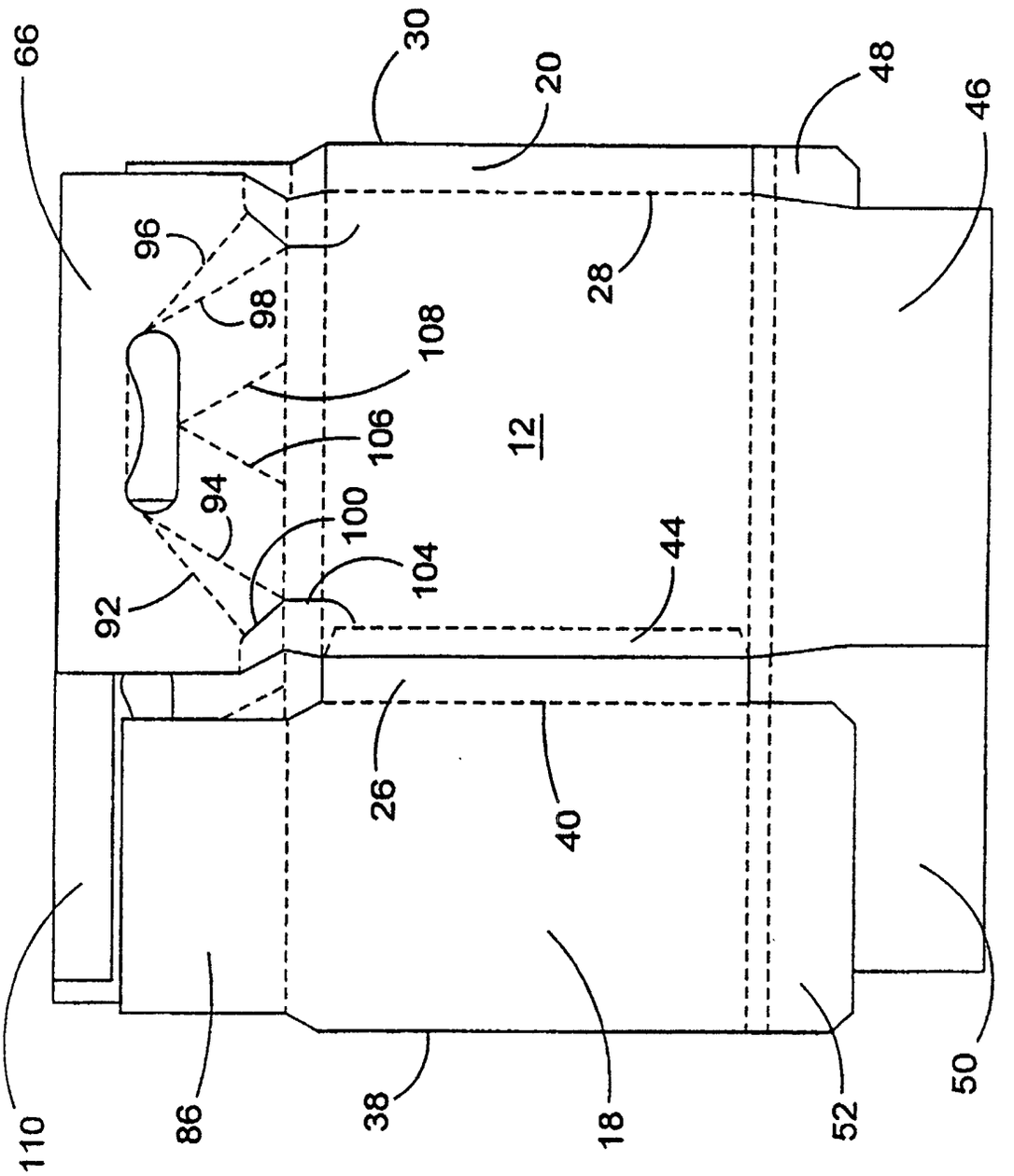

66
30
20
48
46
96
98
28
108
106
12
94
100
104
44
92
26
40
110
86
38
18
52
50

FIGURE 4

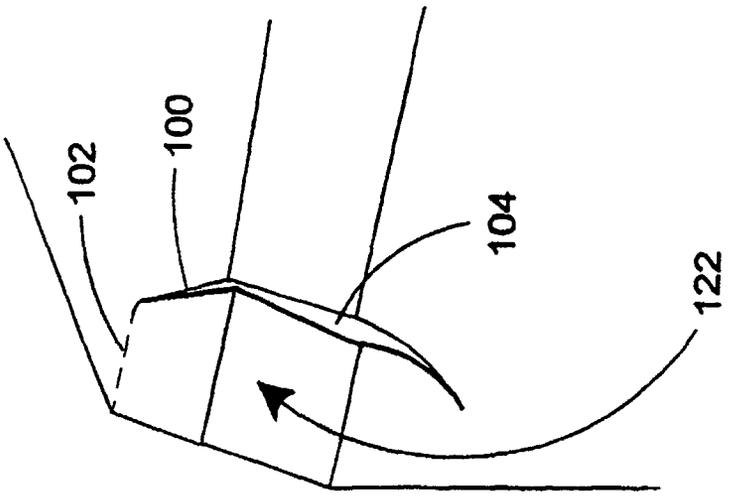


FIGURE 6

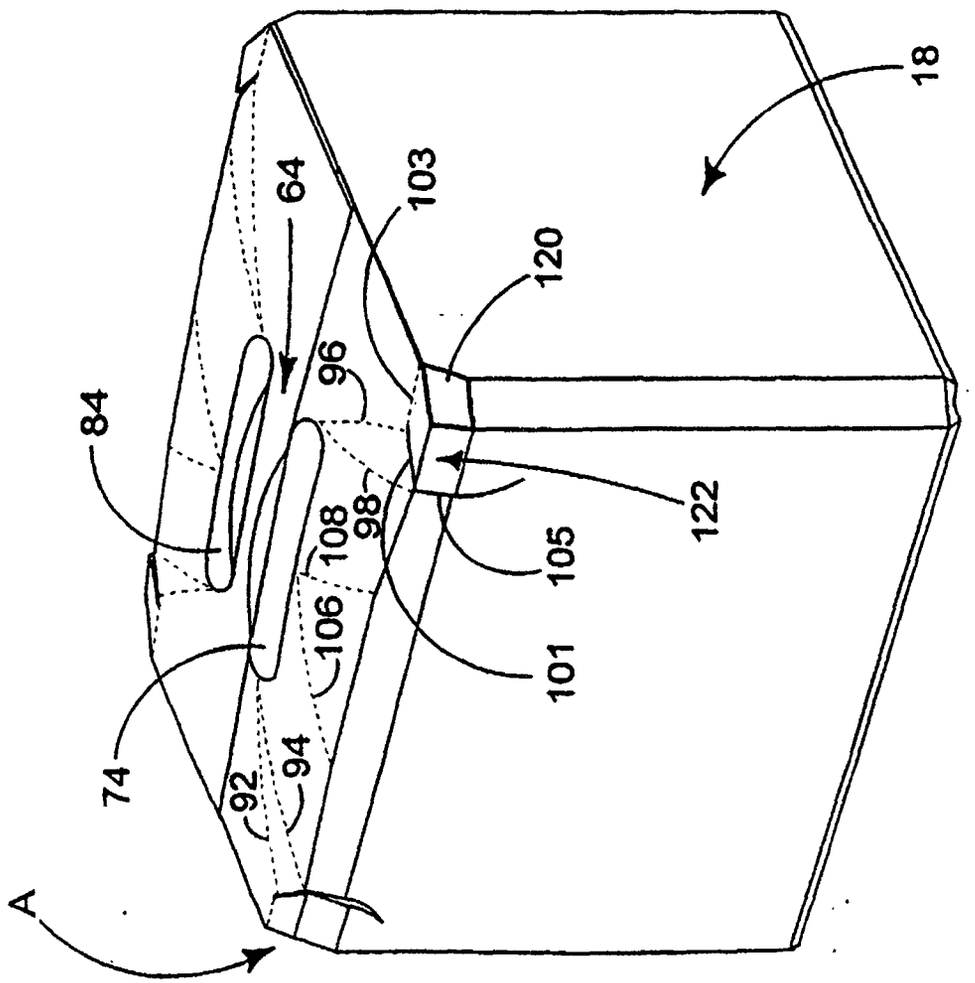


FIGURE 5