



- (51) International Patent Classification:
B65D 71/36 (2006.01)
- (21) International Application Number:
PCT/US2016/018422
- (22) International Filing Date:
18 February 2016 (18.02.2016)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
62/118,747 20 February 2015 (20.02.2015) US
- (71) Applicant: **WESTROCK PACKAGING SYSTEMS, LLC** [US/US]; 504 Thrasher Street, Norcross, Georgia 30071 (US).
- (72) Inventor: **PATWARDHAN, Tanuja A.**; 2523 West Main Street, 2nd Floor, Richmond, Virginia 23220 (US).
- (74) Agents: **SUZUKI, Tsugihiko** et al.; WestRock Company, 501 South 5th Street, Richmond, Virginia 23219-0501 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: CARTON AND CARTON BLANK

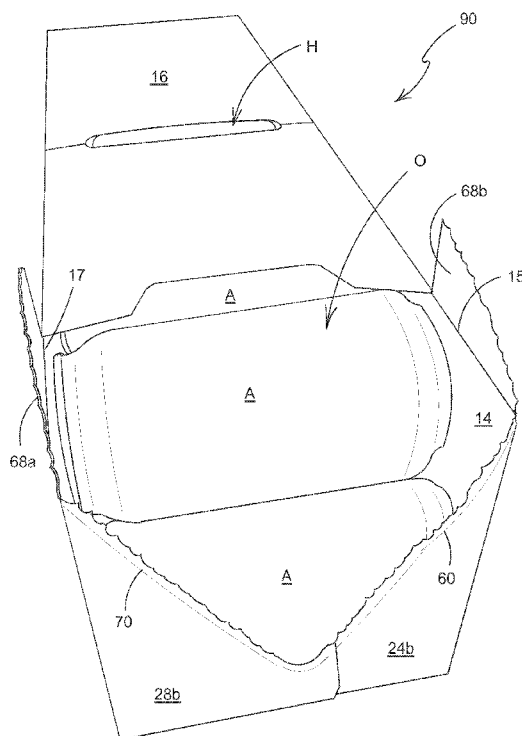


FIGURE 5

(57) Abstract: A carton includes panels for forming a tubular structure. The panels include a top panel (16), a base panel (12) and a pair of first and second opposed side panels (14, 18) hinged interconnecting the top and base panels. The carton includes at least one end closure panel (24b, 28b) forming an end wall which at least partially closes a first end of the tubular structure. The carton includes a dispenser for facilitating access to the carton contents. The dispenser includes a first severance line (76) and a second severance line (84) each defined in one (16) of the panels forming the tubular structure. A third severance line (60) and a fourth severance line (70) are each defined in the end wall. The first and second severance line are divergently arranged with respect to each other. The third and fourth severance line are divergently arranged with respect to each other.



Published:

— with international search report (Art. 21(3))

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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 comprising a dispenser for facilitating access to the contents
of the carton.

BACKGROUND

In the field of packaging it is often required to provide consumers with a package comprising
10 multiple primary product containers. Such multi-packs are desirable for shipping and
distribution purposes and for the 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 as possible in the materials from which they
are formed. Another consideration is the strength of the packaging and its suitability for
15 holding and transporting large weights of articles.

It is desirable to provide a carton comprising a dispenser for facilitating access to the
contents of the carton.

20 The present invention seeks to overcome or at least mitigate the problems of the prior art.

SUMMARY

According to a first aspect of the present invention there is provided a carton for packaging
one or more articles. The carton comprises a plurality of panels for forming a tubular
25 structure. The plurality of panels comprises a top panel, a base panel and a pair of first and
second opposed side panels hingedly connected to first and second opposite sides of the
top and base panels respectively. The carton comprises at least one end closure panel
forming an end wall which at least partially closes a first end of the tubular structure. The
carton comprises a dispenser for facilitating access to the carton contents. The dispenser
30 comprises a first severance line and a second severance line each defined in one of the
plurality of panels forming the tubular structure and a third severance line and a fourth
severance line each defined in the end wall. The first and second severance lines are
divergently arranged with respect to each other. The third and fourth severance lines are
divergently arranged with respect to each other.

35

Optionally, the first severance line and the third severance line intersect at a first corner of
the one of the plurality of panels forming the tubular structure and the second severance line

and the fourth severance line intersect at a second corner of the one of the plurality of panels forming the tubular structure.

5 Optionally, the first severance line and the third severance line converge at a first corner of the one of the plurality of panels forming the tubular structure and the second and fourth severance line converge at a second corner of the one of the plurality of panels forming the tubular structure.

10 Optionally, the first severance line extends from the first corner and is divergently arranged with respect to the hinged connection between the top panel and the first side panel, the second severance line extends from the second corner and is divergently arranged with respect to the hinged connection between the top panel and the second side panel.

15 Optionally, the carton comprises a first end closure panel hinged to the first side panel, the third severance line extends from a vertex defined by the hinged connection between the first end closure panel and the first side panel and the hinged connection between the top panel and the first side panel, and the third severance line is divergently arranged with respect to the hinged connection between the first end closure panel and the first side panel.

20 Optionally, the carton comprises a second end closure panel hinged to the second side panel, the fourth severance line extends from a vertex defined by the hinged connection between the second end closure panel and the second side panel and the hinged connection between the top panel and the second side panel, and the fourth severance line is divergently arranged with respect to the hinged connection between the second end
25 closure panel and the second side panel.

According to a second aspect of the present invention there is provided a carton for packaging one or more articles. The carton comprises a plurality of panels for forming a tubular structure. The plurality of panels comprises a top panel and a first side panel
30 hingedly connected to a first side of the top panel. The carton comprises a dispenser for facilitating access to the contents of the carton. The dispenser comprises a detachable portion defined at least in part by a first severance line defined in the top panel. The first severance line is divergently arranged with respect to the hinged connection between the top panel and the first side panel. The dispenser further comprises a second severance line
35 extending between the first severance line and the hinged connection between the top panel and the first side panel. The first and second severance lines define in part a first portion of

the top panel hingedly connected to the first side panel. The detachable portion defines an opening in the carton. The first portion is foldable with respect to the first side panel when the detachable portion is removed from the top panel such that an article can be withdrawn from the carton.

5

Optionally, the carton comprises a second side panel hingedly connected to a second side of the top panel and the dispenser comprises a third severance line defined in the top panel, the third severance line is divergently arranged with respect to the hinged connection between the top panel and the second side panel, the dispenser further comprises a fourth
10 severance line extending between the third severance line and the hinged connection between the top panel and the second side panel, the third and fourth severance lines define in part a second portion of the top panel hingedly connected to the second side panel, and the second portion is foldable with respect to the second side panel when the detachable portion is removed from the top panel thereby enabling an article to be withdrawn from the
15 carton.

Optionally, the carton comprises at least one end closure panel forming an end wall which at least partially closes a first end of the tubular structure, the dispenser comprises a fifth
20 severance line and a sixth severance line each defined in the end wall and defining in part the detachable portion, the fifth severance line and the sixth severance line are divergently arranged with respect to each other.

According to a third aspect of the present invention there is provided a carton for packaging one or more articles. The carton comprises a plurality of panels for forming a tubular
25 structure. The plurality of panels comprises a top panel and a pair of first and second opposed side panels hingedly connected to first and second opposite sides of the top panel respectively. The carton comprises a dispenser for facilitating access to the carton contents. The dispenser comprises a detachable portion defined at least in part by a first severance line and a second severance line each defined in the top panel. The first severance line is
30 divergently arranged with respect to the hinged connection between the top panel and the first side panel. The second severance line is divergently arranged with respect to the hinged connection between the top panel and the second side panel. The dispenser further comprises a third severance line extending between the first severance line and the hinged connection between the top panel and the first side panel and a fourth severance line
35 extending between the second severance line and the hinged connection between the top panel and the second side panel. The first and third severance lines define in part a first

portion of the top panel hingedly connected to the first side panel. The second and fourth severance lines define in part a second portion of the top panel hingedly connected to the second side panel. The detachable portion defines an opening in the carton. The first and second portions are foldable with respect to the respective the one of the first and second side panels to which they are hinged when the detachable portion is removed from the top panel such that an article can be withdrawn from the carton.

According to a fourth aspect of the present invention there is provided a blank for forming a carton. The blank comprises a plurality of panels for forming a tubular structure. The plurality of panels comprises a top panel, a base panel and a pair of first and second opposed side panels. The blank comprises at least one end closure panel for forming an end wall which in a set-up carton at least partially closes a first end of the tubular structure. The blank comprises a dispenser for facilitating access to an interior of the set-up carton. The dispenser comprises a first severance line and a second severance line each defined in one of the plurality of panels forming the tubular structure and a third severance line and a fourth severance line each defined in the end wall. The first and second severance lines are divergently arranged with respect to each other. The third and fourth severance lines are divergently arranged with respect to each other.

Optionally, the first severance line and the third severance line intersect at a first corner of the one of the plurality of panels forming the tubular structure and the second and fourth severance lines intersect at a second corner of the one of the plurality of panels forming the tubular structure.

Optionally, the first severance line and the third severance line converge at a first corner of the one of the plurality of panels forming the tubular structure and the second and fourth severance lines converge at a second corner of the one of the plurality of panels forming the tubular structure.

According to a fifth aspect of the present invention there is provided a blank for forming a carton. The blank comprises a plurality of panels for forming a tubular structure. The plurality of panels comprises a top panel and a first side panel hingedly connected to the top panel. The blank comprises a dispenser for facilitating access to an interior of a set-up carton. The dispenser comprises a detachable portion defined at least in part by a first severance line defined in the top panel. The first severance line is divergently arranged with respect to the hinged connection between the top panel and the first side panel. The dispenser further

comprises a second severance line extending between the first severance line and the hinged connection between the top panel and the first side panel. The first and second severance lines define in part a first portion of the top panel hingedly connected to the first side panel. The detachable portion defines an opening in the set-up carton. The first portion
5 is foldable with respect to the first side panel when the detachable portion is removed from the top panel of the set-up carton such that an article can be withdrawn from the carton.

According to a sixth aspect of the present invention there is provided a blank for forming a carton. The blank comprises a plurality of panels for forming a tubular structure. The plurality
10 of panels comprises a top panel and a pair of first and second opposed side panels hingedly connected to first and second opposite sides of the top panel respectively. The blank comprises a dispenser for facilitating access to an interior of a set-up carton. The dispenser comprises a detachable portion defined at least in part by a first severance line and a second severance line each defined in the top panel. The first severance line is divergently
15 arranged with respect to the hinged connection between the top panel and the first side panel. The second severance line is divergently arranged with respect to the hinged connection between the top panel and the second side panel. The dispenser further comprises a third severance line extending between the first severance line and the hinged connection between the top panel and the first side panel and a fourth severance line
20 extending between the second severance line and the hinged connection between the top panel and the second side panel. The first and third severance lines define in part a first portion of the top panel hingedly connected to the first side panel. The second and fourth severance lines define in part a second portion of the top panel hingedly connected to the second side panel. The detachable portion defines an opening in the set-up carton. The first
25 and second portion are configured to be foldable with respect to the respective one of the first and second side panels to which they are hinged when in the set-up carton the detachable portion is removed from the top panel thereby allowing an article to be withdrawn from the carton.

30 Within the scope of this application it is envisaged that the various aspects, embodiments, examples, features and alternatives set out in the preceding paragraphs, in the claims and/or in the following description and drawings may be taken independently or in any combination thereof. For example, features described in connection with one embodiment are applicable to all embodiments unless there is incompatibility of features.

BRIEF DESCRIPTION OF THE DRAWINGS

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

Figure 1 is a plan view from above of a blank for forming a carton according to an
5 embodiment of the invention;

Figure 2 is a perspective view from above of a carton formed from the blank of Figure
1; and

Figures 3 to 5 are perspective views from above of the carton of Figure 2 in which a
dispenser is in various stages of deployment.

10

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

Detailed descriptions of specific embodiments of the package, blanks and cartons are disclosed herein. It will be understood that the disclosed embodiments are merely examples of the way in which certain aspects of the invention can be implemented and do not
15 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
20 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.

25 Referring to Figures 1 and 2 there is shown a blank 10 for forming a carton 90 capable of accepting an input of primary products such as, but not limited to, bottles or cans, hereinafter referred to as articles A.

The blank 10 comprises a plurality of main panels 12, 14, 16, 18, 20, hinged one to the next
30 in a linear series. A base panel 12 is hinged to a first side wall panel 14 by a hinged connection such as a fold line 13. A first side wall panel 14 is hinged to a top panel 16 by a hinged connection such as a fold line 15. A top panel 16 is hinged to second side wall panel 18 by a hinged connection such as a fold line 17. A second side wall panel 18 is hinged to a glue panel 20 by a hinged connection such as a fold line 19.

35

The plurality of main panels 12, 14, 16, 18, 20 of the blank 10 form walls of an open ended tubular structure in a set-up condition. The tubular structure is at least partially closed by end closure structures. The tubular structure has a tubular axis defining a longitudinal direction.

5 Each of the ends of the tubular structure is at least partially closed by end closure panels which form end walls of the tubular structure. In the illustrated embodiment the ends of the tubular structure are fully closed by end closure panels 22a, 24a, 26a, 28a, 22b, 24b 26b, 28b.

10 End closure panels 22a, 24a, 26a, 28a are configured to close a first end of the tubular structure and end closure panels 22b, 24b, 26b, 28b are configured to close a second end of the tubular structure.

The first end of the tubular structure is closed by a first end closure panel 22a, a second end
15 closure panel 24a, a third end closure panel 26a and a fourth end closure panel 28a. The first end closure panel 22a is hinged to a first end of the base panel 12 by a hinged connection such as a fold line 23a. The second end closure panel 24a is hinged to a first end of the first side wall panel 14 by a hinged connection such as a fold line 25a. The third end closure panel 26a is hinged to a first end of the top panel 16 by a hinged connection such as
20 a fold line 27a. The fourth end closure panel 28a is hinged to a first end of the second side wall panel 18 by a hinged connection such as a fold line 29a.

The second end of the tubular structure is closed by a fifth end closure panel 22b, a sixth
end closure panel 24b, seventh end closure panel 26b and an eighth end closure panel 28b.
25 The fifth end closure panel 22b is hinged to a second end of the base panel 12 by a hinged connection such as a fold line 23b. The sixth end closure panel 24b is hinged to a second end of the first side wall panel 14 by a hinged connection such as a fold line 25b. The seventh end closure panel 26b is hinged to a second end of the top panel 16 by a hinged connection such as a fold line 27b. The eighth end closure panel 28b is hinged to a second
30 end of the second side wall panel 18 by a hinged connection such as a fold line 29b.

The first end closure panel 22a and the fifth end closure panel 22b each form a minor lower end closure panel at opposing ends of the tubular structure. The third end closure panel 26a and the seventh end closure panel 26b each form a minor upper end closure panel at
35 opposing ends of the tubular structure.

The second end closure panel 24a and the fourth end closure panel 28a each form a major side end closure panel at the first end of the tubular structure. The sixth end closure panel 24b and the eighth end closure panel 28b each form a major side end closure panel at the second end of the tubular structure.

5

Optionally, the top panel 16 comprises a carrying handle H which comprises a pair of elongate tabs 40, 42 which are defined in part by a severance line 45. The severance line 45 extends transversely across the top wall panel 16 and into each of the first and second side wall panels 14, 18. A first elongate tab 40 is defined in part by a first fold line 41, which is disposed in a spaced apart parallel relationship to the severance line 45. A second elongate tab 42 is defined in part by a second fold line 43 which is disposed in a spaced apart parallel relationship to the severance line 45. The first and second fold lines 41, 43 are disposed on opposing sides of the severance line 45. A first arcuate cutline defines the first ends of each of the first and second elongate tabs 40, 42. The first arcuate cutline extends between a first end of the first fold line 41 and a first end of the second fold line 43, across the severance line 45. A second arcuate cutline defines second ends of each of the first and second elongate tabs 40, 42. The second arcuate cutline extends between a second end of the first fold line 41 and a second end of the second fold line 43, across the severance line 45.

10

15

The handle structure H comprises a pair of fold or crease lines 51a, 51b at a first end of the severance line 45. The first end of the severance line 45 is disposed in the first side wall panel 14 and terminates in a "V" shaped cutline 47, wherein each of the arms of the "V" shaped cutline 47 form a vertex, the vertex being disposed at the first end of the severance line 45. The pair of fold or crease lines 51a, 51b comprise a first crease line 51a and a second crease line 51b; the first and second crease lines 51a, 51b are formed continuously with the "V" shaped cutline 47 from opposing ends thereof.

20

25

The handle structure H comprises a second pair of fold or crease lines 53a, 53b at a second end of severance line 45. The second end of the severance line 45 is disposed in the second side wall panel 18 and terminates in a "V" shaped cutline 49 wherein each of the arms of the "V" shaped cutline 49 form a vertex, the vertex being disposed at the second end of the severance line 45. The second pair of fold or crease lines 53a, 53b comprise a third crease line 53a and a fourth crease line 53b; the third and fourth crease lines 53a, 53b are formed continuously with the "V" shaped cutline 49 from opposing ends thereof.

30

35

In alternative embodiments the handle structure may be omitted or alternative handle structures may be employed.

The blank 10 comprises a dispenser D for facilitating access to the contents of the carton 90.

5 The dispenser D comprises a removable corner portion of the carton 90. The dispenser D comprises a plurality of severance lines 60, 70, 74, 76, 78, 80, 82, 84, 86.

The sixth end closure panel 24b comprises a first severance line 74 extending from a free end edge of sixth end closure panel 24b to the vertex between fold line 15 and fold line 23b.

10 The first severance line 74 comprises an arcuate portion 72 proximate the free end edge of sixth end closure panel 24b. The arcuate portion 72 is optionally substantially "U" shaped or "V" shaped. A second severance line 76 is defined in the top panel 16 and extends from the vertex between fold line 15 and fold line 23b into the top panel 16. The second severance line 76 is arranged divergently with respect to the fold line 15. A third severance line 78 is defined in the top panel 16 and extends from the second severance line 76. The third severance line 78 is divergently arranged with respect to the second severance line 76. A fourth severance line 80 extends transversely substantially across the top panel 16. A fifth severance line 82 is defined in the top panel 16 and extends from the fourth severance line 80. The fifth severance line 82 is divergently arranged with respect to the fourth severance line 80. A sixth severance line 84 extends from the fifth severance line 82 to the vertex between the fold line 17 and the fold line 27b. The sixth severance line 84 is arranged divergently with respect to the fold line 17. The eighth end closure panel 28b comprises a seventh severance line 86 which extends from the vertex between fold line 17 and fold line 29b to a free end edge of eighth end closure panel 28b. The seventh severance line 86 comprises an arcuate portion 88 proximate the free end edge of eighth end closure panel 28b. The arcuate portion 88 is optionally substantially "U" shaped or "V" shaped. In this way the plurality of severance lines 60, 70, 74, 76, 78, 80, 82, 84, 86 are continuous and are arranged to form a continuous loop in a set-up carton 90.

30 The first, second, sixth and seventh severance lines 74, 76, 84, 86 are arranged so as to be divergent with respect to a longitudinal direction (defined by fold lines 13, 15, 17, 19) of the blank 10. The first, second, sixth and seventh severance lines 74, 76, 84, 86 are arranged so as to be divergent with respect to a transverse direction (defined by fold lines 23b, 25 b, 27 b, 29 b) of the blank 10. In this way when the blank is formed from a material having a grain direction in either the longitudinal direction or the transverse direction the first, second, sixth

35

and seventh severance lines 74, 76, 84, 86 allows traverse at least in part across the grain direction.

It will also be appreciated that none of the plurality of severance lines 60, 70, 74, 76, 78, 80,
5 82, 84, 86 extend along any of the hinged connections between the panels of the blank 10. That is to say the plurality of severance lines 60, 70, 74, 76, 78, 80, 82, 84, 86 are not coincident with any of the hinged connections between the panels of the blank 10.

The dispenser D may comprise a tear initiation device in the form of a first tab 96 defined in
10 part by the fourth severance line 80 and by a first fold line 92. First fold line 92 extends between the third severance line 78 and the fifth severance line 82. First fold line 92 is substantially parallel to the fourth severance line 80. The tear initiation device may comprise a second tab 98 hingedly coupled to the first tab 96 by the first fold line 92 and to a detachable portion 62 of the top panel 16 by a second fold line 94.

15 First severance line 74 defines a detachable portion 66 of the sixth end closure panel 24b. Seventh severance line 86 defines a detachable portion 64 of the eighth end closure panel 28b.

20 The dispenser D comprises an eighth severance line 60 defined in the sixth end closure panel 24b. The eighth severance line 60 is shaped similarly to the first severance line 74. The eighth severance line 60 is spaced apart or offset from the first severance line 74. The eighth severance line 60 is a partial depth severance line.

25 The dispenser D comprises a ninth severance line 70 defined in the eighth end closure panel 28b. The ninth severance line 70 is shaped similarly to the seventh severance line 86. The ninth severance line 70 is spaced apart or offset from the seventh severance line 86. The ninth severance line 70 is a partial depth severance line.

30 The top panel 16 comprises a tenth severance line 91a and an eleventh severance line 91b. The tenth severance line 91a extends between the fold line 17 and the sixth severance line 84. The eleventh severance line 91b extends between the fold line 15 and the second severance line 76.

35 The tenth severance line 91a defines in part a first portion 68a of the top panel 16 which is foldable about the fold line 17 when the detachable portion 62 has been removed. The

eleventh severance line 91b defines in part a second portion 68b of the top panel 16 which is foldable about the fold line 15 when the detachable portion 62 has been removed.

The carton 90 can be formed by a series of sequential folding operations in a straight line machine so that the carton 90 may not be 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. During loading and assembly of the carton 90, the carton 90 may be orientated such that one of the first and second side panels 14, 18 forms a loading surface. The bases of one or more articles A may be in sliding contact with the loading surface when being inserted into the carton 90. The articles A may be substantially cylindrical in shape and have a cylindrical axis. The cylindrical axis is orientated perpendicularly to the first side panel 14 and may also be orientated substantially vertically.

The main panel 16 forms the top panel (top wall) 16 when the handle structure H is in use as a carrying handle by a user and this top wall 16 is optionally, disposed adjacent to the sides of the articles A. In this orientation the top wall 16 is not disposed substantially planar to the tops or bottoms of the articles A held within the carton 90. In other words the cylindrical axis of the articles A is substantially parallel with the plane of the top wall 16 of the carton 90.

The main panel 12 forms the base panel 12 when the handle structure H is in use as a carrying handle by a user. The main panel 12 may also form the base panel 12 when the articles A are being dispensed from the carton 90 or when the carton 90 is at rest upon a surface such as a shelf. As such, it will be understood that descriptive terms "top", "base", and "side" do not necessarily limit the carton 90 to adopting a particular orientation but serve to distinguish those panels from one another. In other embodiments the cylindrical axis of the articles A may be orientated differently with respect to the top wall 16 of the carton 90. For example, but not limited to, the cylindrical axis of the articles A may be orientated substantially perpendicularly to the plane of the top wall 16 of the carton 90.

Turning to the construction of the carton 90 as illustrated in Figures 2 to 5, the blank 10 is folded about the fold line 17 such that the second side panel 18 is disposed in overlying relationship with the top panel 16 and such that the securing panel 20 is disposed in face contacting relationship with the first side panel 14.

Glue G or other adhesive treatment is applied to an outer surface of the securing panel 20. Alternatively, glue G or other adhesive treatment may be applied to a corresponding edge portion of an inner surface of the base panel 12.

- 5 The blank 10 is folded about the fold line 13 such that the base panel 12 is disposed in overlying relationship with the securing panel 20 and part of the first side panel 14. The base panel 12 is thereby secured to the securing panel 20.

- 10 The blank 10 is thus formed into a flat collapsed tubular structure which can be readily shipped or distributed to a convertor plant, at which the flat collapsed tubular structure may be erected into an open ended tubular structure and loaded with articles A.

- 15 The flat collapsed tubular structure may be erected to form an open ended tubular structure by unfolding the first side panel 14 with respect to the base panel 12 such that the first side panel 14 is disposed substantially perpendicularly with respect to the base panel 12.

- 20 The carton 90, in its open ended tubular form, may be loaded with articles A through one or both open ends thereof. It will be appreciated that in some embodiments one of the open ends of the carton 90 may be closed before loading the interior with articles A through the remaining open end.

Once the carton 90 has been loaded with articles A the open ends of the carton 90 are closed.

- 25 The method for closing each of the open ends of the carton 90 is substantially the same and will be described by reference to closing the first open end.

A first end of the tubular structure is closed by folding the first end closure panel 22a about fold line 23a and by folding the third end closure panel 26a about fold line 27a.

30

Glue or other adhesive treatment may be applied to a first portion of an inner surface of the second end closure panel 24a. In alternative embodiments glue or other adhesive treatment may be applied to a corresponding portion of an outer surface of first end closure panel 22a.

- 35 Glue or other adhesive treatment may be applied to a second portion of an inner surface of the second end closure panel 24a. In alternative embodiments glue or other adhesive

treatment may be applied to a corresponding portion of an outer surface of third end closure panel 26a.

5 The second end closure panel 24a is then folded about the fold line 25a to be brought into contact with the first and third end closure panels 22a, 26a. The second end closure panel 24a may be secured to each of the first and third end closure panels 22a, 26a.

10 Glue or other adhesive treatment is applied to a portion of an inner surface of the fourth end closure panel 28a. In alternative embodiments glue or other adhesive treatment may be applied to a portion of an outer surface of the second end closure panel 24a.

15 The fourth end closure panel 28a is then folded about the fold line 29a to be brought into contact with the second end closure panel 24a and optionally into contact with the first and third end closure panels 22a, 26a.

The fourth end closure panel 28a is secured to the second end closure panel 24a. The fourth end closure panel 28a may be secured to the first and third end closure panels 22a, 26a, for example by glue or other adhesive treatment.

20 In alternative embodiments the second end closure panel 24a may be folded about fold line 25a after folding the fourth end closure panel 28a about fold line 29a. It will be appreciated that in such embodiments the second end closure panel 24a is disposed outermost.

25 In other embodiments alternative securing means may be employed to secure the end closure panels 22a, 24a, 26a, 28a, 22b, 24b, 26b, 28b for example, but not limited to, mechanical locking devices such as staples or punch locks integrally formed within the end closure panels 22a, 24a, 26a, 28a; 22b, 24b, 26b, 28b.

30 The process described above in relation to the first end is replicated to close the second end of the carton 90 and is not further described.

Figures 2 and 3 illustrate the assembled carton 90 forming a package with a plurality of articles A.

Referring to Figures 2 to 5 the carton 90 comprises dispenser D disposed in part in the top panel 16, in part in the end wall formed by the sixth and eighth end closure panels 24b, 28b and in part in the first and second side wall panels 14, 18.

5 As shown in Figure 3, when the detachable portion 62/64/66 is removed an opening O is created. The opening O is substantially diamond shaped. A first substantially triangular portion is removed from the top panel 16 and a second substantially triangular portion is removed from the end wall formed from the end closure panels 22b, 24b, 26b, 28b. The second substantially triangular portion comprises a portion of the sixth and eighth end
10 closure panels 24b, 28b and the seventh end closure panel 26b. In order that the opening O is dimensioned large enough such that an article A can be withdrawn from the carton 90, the first portion 68a of the top panel 16 and the second portion 68b of the top panel 16 are folded about fold lines 17, 15 respectively. The first and second portions 68a, 68b of the top panel 16 may be folded prior to removing an article A from the carton 90. Alternatively, the
15 first and second portions 68a, 68b of the top panel 16 are folded in response to, or simultaneously with, removal of an article A from the carton 90.

The first and second portions 68a, 68b of the top panel 16 may be at least partially folded outwardly of the carton 90 when the detachable portion 62/64/66 is removed; the shearing
20 force needed to sever the severance lines 76, 84 may have the effect of displacing the first and second portions 68a, 68b outwardly of the plane of the top panel 16.

When the first and second portions 68a, 68b of the top panel 16 are folded outwardly of the carton 90 the portion of the opening defined in the top panel 16 extends across the full width
25 of the top panel 16. The articles A which extend substantially between the first and second side panels 14, 18 can be easily withdrawn as a consequence, as shown in Figure 4 and 5.

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
30 accommodate articles of differing size or shape. The carton 90 may be provided with only one foldable portion 68a, 68b; an article A may be removed through the opening created in the carton by partially rotating or pivotally moving the article through the opening, the one foldable portion 68a, 68b may be folded outwardly of the carton 90 in response as the article A is withdrawn.

Whilst the foregoing embodiments have been described with reference to a wraparound style carton it is envisaged that the dispenser may be employed in cartons of alternative design such as, but not limited to, fully enclosed cartons, basket carries and top gripping clips.

5

It will be recognised that as used herein, directional references such as "top", "base", "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 a 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. 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.

10

As used herein, the terms "hinged connection" and "fold line" each refers to all manner of lines that define hinge features of the blank or substrate of sheet material, facilitate folding portions of the blank or substrate of sheet material with respect to one another, or otherwise indicate optimal panel folding locations for the blank or substrate of sheet material. Any reference to "hinged connection" should not be construed as necessarily referring to a single fold line only; indeed a hinged connection can be formed from one or more fold lines.

15

As used herein, the term "fold line" may refer to one of the following: a scored line, an embossed line, a debossed line, a line of perforations, a line of short slits, a line of half-cuts, a single half-cut, an interrupted cut line, aligned slits, a line of short scores and any combination of the aforementioned options, without departing from the scope of the invention.

20

As used herein, the term "severance line" may refer to all manner of lines formed in the blank or substrate of sheet material that facilitate separating portions of the blank or substrate of sheet material from one another, or otherwise that indicate optimal separation locations on the blank or substrate. As used herein, the term "severance line" may refer to one of the following: a single cut line, a single partial-depth cut line (e.g., a single half-cut line), an interrupted cut line, a score line, an interrupted score line, a line of perforations, a line of short cuts, a line of short slits, a line of short partial-depth cuts (e.g., a line of short half cuts), and any combination of the aforementioned options.

25

30

35

It should be understood that hinged connections, fold lines and severance lines can each include elements that are formed in the blank or substrate of sheet material, including perforations, a line of perforations, a line of short slits, a line of half-cuts, a single half-cut, a
5 cut line, an interrupted cut line, slits, scores, any combination thereof, and the like. The elements can be dimensioned and arranged to provide the desired functionality. For example, a line of perforations can be dimensioned or designed with degrees of weakness to define a fold line and/or a severance line. The line of perforations can be designed to facilitate folding and resist breaking to provide a fold line, to facilitate folding and facilitate
10 breaking with more effort to provide a frangible fold line, or to facilitate breaking with little effort to provide a severance line.

CLAIMS

1. A carton for packaging one or more articles, the carton comprising a plurality of panels for forming a tubular structure, the plurality of panels comprising a top panel, a base panel and a pair of first and second opposed side panels hingedly connected to first and second opposite sides of the top and base panels respectively, the carton comprising at least one end closure panel forming an end wall which at least partially closes a first end of the tubular structure, wherein the carton comprises a dispenser for facilitating access to the carton contents, the dispenser comprising a first severance line and a second severance line each defined in one of the plurality of panels forming the tubular structure, and a third severance line and a fourth severance line each defined in the end wall, the first and second severance lines being divergently arranged with respect to each other, and the third and fourth severance lines being divergently arranged with respect to each other.
2. A carton according to claim 1, wherein the first severance line and the third severance line intersect at a first corner of the one of the plurality of panels forming the tubular structure and the second severance line and the fourth severance line intersect at a second corner of the one of the plurality of panels forming the tubular structure.
3. A carton according to claim 1, wherein the first severance line and the third severance line converge at a first corner of the one of the plurality of panels forming the tubular structure and the second and fourth severance lines converge at a second corner of the one of the plurality of panels forming the tubular structure.
4. A carton according to claim 2, wherein the first severance line extends from the first corner of the one of the plurality of panels forming the tubular structure and is divergently arranged with respect to the hinged connection between the top panel and the first side panel, the second severance line extends from the second corner of the one of the plurality of panels forming the tubular structure and is divergently arranged with respect to the hinged connection between the top panel and the second side panel.
5. A carton according to claim 4, wherein the carton comprises a first end closure panel hinged to the first side panel, the third severance line extends from a vertex defined by the hinged connection between the first end closure panel and the first side panel and the hinged connection between the top panel and the first side panel, and

wherein the third severance line is divergently arranged with respect to the hinged connection between the first end closure panel and the first side panel.

6. A carton according to claim 5, wherein the carton comprises a second end closure panel hinged to the second side panel, the fourth severance line extends from a vertex defined by the hinged connection between the second end closure panel and the second side panel and the hinged connection between the top panel and the second side panel, and wherein the fourth severance line is divergently arranged with respect to the hinged connection between the second end closure panel and the second side panel.
7. A carton for packaging one or more articles, the carton comprising a plurality of panels for forming a tubular structure, the plurality of panels comprising a top panel and a first side panel hingedly connected to a first side of the top panel, wherein the carton comprises a dispenser for facilitating access to the contents of the carton, the dispenser comprising a detachable portion defined at least in part by a first severance line defined in the top panel, the first severance line being divergently arranged with respect to the hinged connection between the top panel and the first side panel, the dispenser further comprising a second severance line extending between the first severance line and the hinged connection between the top panel and the first side panel, the first and second severance lines defining in part a first portion of the top panel hingedly connected to the first side panel, wherein the detachable portion defines an opening in the carton, the first portion being foldable with respect to the first side panel when the detachable portion is removed from the top panel such that an article can be withdrawn from the carton.
8. A carton according to claim 7, wherein the carton comprises a second side panel hingedly connected to a second side of the top panel and the dispenser comprises a third severance line defined in the top panel, the third severance line being divergently arranged with respect to the hinged connection between the top panel and the second side panel, the dispenser further comprising a fourth severance line extending between the third severance line and the hinged connection between the top panel and the second side panel, the third and fourth severance lines defining in part a second portion of the top panel hingedly connected to the second side panel, and wherein the second portion is foldable with respect to the second side panel

when the detachable portion is removed from the top panel thereby enabling an article to be withdrawn from the carton.

9. A carton according to claim 7, wherein the carton comprising at least one end closure panel forming an end wall which at least partially closes a first end of the tubular structure, the dispenser comprising a fifth severance line and a sixth severance line each defined in the end wall and defining in part the detachable portion, the fifth severance line and the sixth severance line being divergently arranged with respect to each other.
10. A carton for packaging one or more articles, the carton comprising a plurality of panels for forming a tubular structure, the plurality of panels comprising a top panel and a pair of first and second opposed side panels hingedly connected to first and second opposite sides of the top panel respectively, wherein the carton comprises a dispenser for facilitating access to the carton contents, the dispenser comprising a detachable portion defined at least in part by a first severance line and a second severance line each defined in the top panel, the first severance line being divergently arranged with respect to the hinged connection between the top panel and the first side panel, the second severance line being divergently arranged with respect to the hinged connection between the top panel and the second side panel, the dispenser further comprising a third severance line extending between the first severance line and the hinged connection between the top panel and the first side panel and a fourth severance line extending between the second severance line and the hinged connection between the top panel and the second side panel, the first and third severance lines defining in part a first portion of the top panel hingedly connected to the first side panel, the second and fourth severance lines defining in part a second portion of the top panel hingedly connected to the second side panel, the detachable portion defining an opening in the carton, the first and second portions being foldable with respect to the first and second side panels respectively when the detachable portion is removed from the top panel such that an article can be withdrawn from the carton.
11. A blank for forming a carton, the blank comprising a plurality of panels for forming a tubular structure, the plurality of panels comprising a top panel, a base panel and a pair of first and second opposed side panels, the blank comprising at least one end closure panel for forming an end wall which in a set-up carton at least partially closes

a first end of the tubular structure, wherein the blank comprises a dispenser for facilitating access to an interior of the set-up carton, the dispenser comprising a first severance line and a second severance line each defined in one of the plurality of panels forming the tubular structure and a third severance line and a fourth severance line each defined in the end wall, the first and second severance lines being divergently arranged with respect to each other, the third and fourth severance lines being divergently arranged with respect to each other.

12. A blank according to claim 11, wherein the first severance line and the third severance line intersect at a first corner of the one of the plurality of panels forming the tubular structure and the second and fourth severance line intersect at a second corner of the one of the plurality of panels forming the tubular structure.
13. A blank according to claim 11, wherein the first severance line and the third severance line converge at a first corner of the one of the plurality of panels forming the tubular structure and the second and fourth severance line converge at a second corner of the one of the plurality of panels forming the tubular structure.
14. A blank for forming a carton, the blank comprising a plurality of panels for forming a tubular structure, the plurality of panels comprising a top panel and a first side panel hingedly connected to the top panel, wherein the blank comprises a dispenser for facilitating access to an interior of a set-up carton, the dispenser comprising a detachable portion defined at least in part by a first severance line defined in the top panel, the first severance line being divergently arranged with respect to the hinged connection between the top panel and the first side panel, the dispenser further comprising a second severance line extending between the first severance line and the hinged connection between the top panel and the first side panel, the first and second severance lines defining in part a first portion of the top panel hingedly connected to the first side panel, wherein the detachable portion defines an opening in the setup carton, the first portion being foldable with respect to the first side panel when the detachable portion is removed from the top panel of the set-up carton such that an article can be withdrawn from the carton.
15. A blank for forming a carton, the blank comprising a plurality of panels for forming a tubular structure, the plurality of panels comprising a top panel and a pair of first and second opposed side panels hingedly connected to first and second opposite sides of

the top panel respectively, wherein the blank comprises a dispenser for facilitating access to an interior of a set-up carton, the dispenser comprising a detachable portion defined at least in part by a first severance line and a second severance line each defined in the top panel, the first severance line being divergently arranged with respect to the hinged connection between the top panel and the first side panel, the second severance line being divergently arranged with respect to the hinged connection between the top panel and the second side panel, the dispenser further comprising a third severance line extending between the first severance line and the hinged connection between the top panel and the first side panel and a fourth severance line extending between the second severance line and the hinged connection between the top panel and the second side panel, the first and third severance lines defining in part a first portion of the top panel hingedly connected to the first side panel, the second and fourth severance lines defining in part a second portion of the top panel hingedly connected to the second side panel, the detachable portion defining an opening in the set-up carton, the first and second portion are configured to be foldable with respect to the first and second side panels respectively when in the set-up carton the detachable portion is removed from the top panel thereby allowing an article to be withdrawn from the carton.

1/5

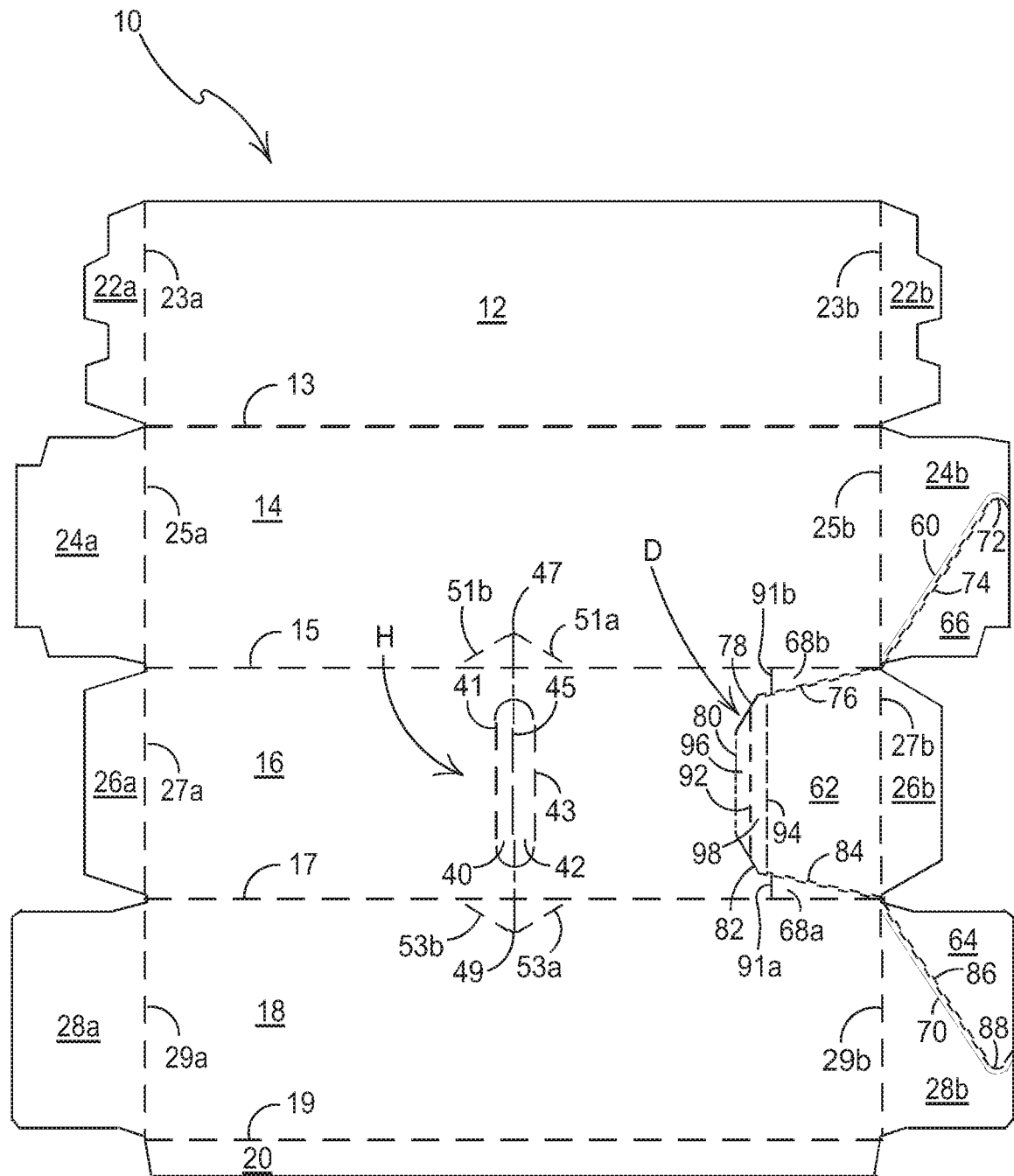


FIGURE 1

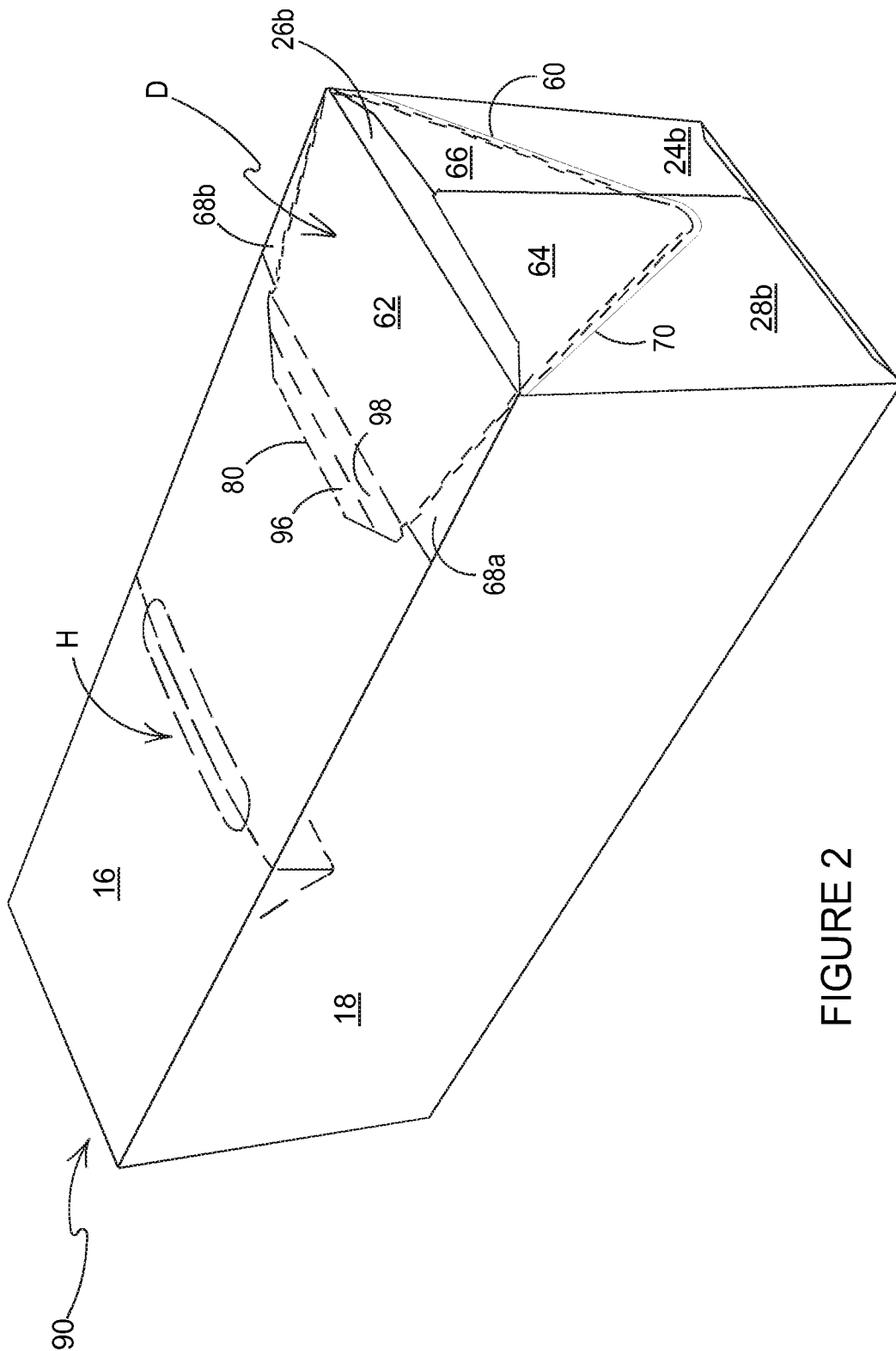


FIGURE 2

3/5

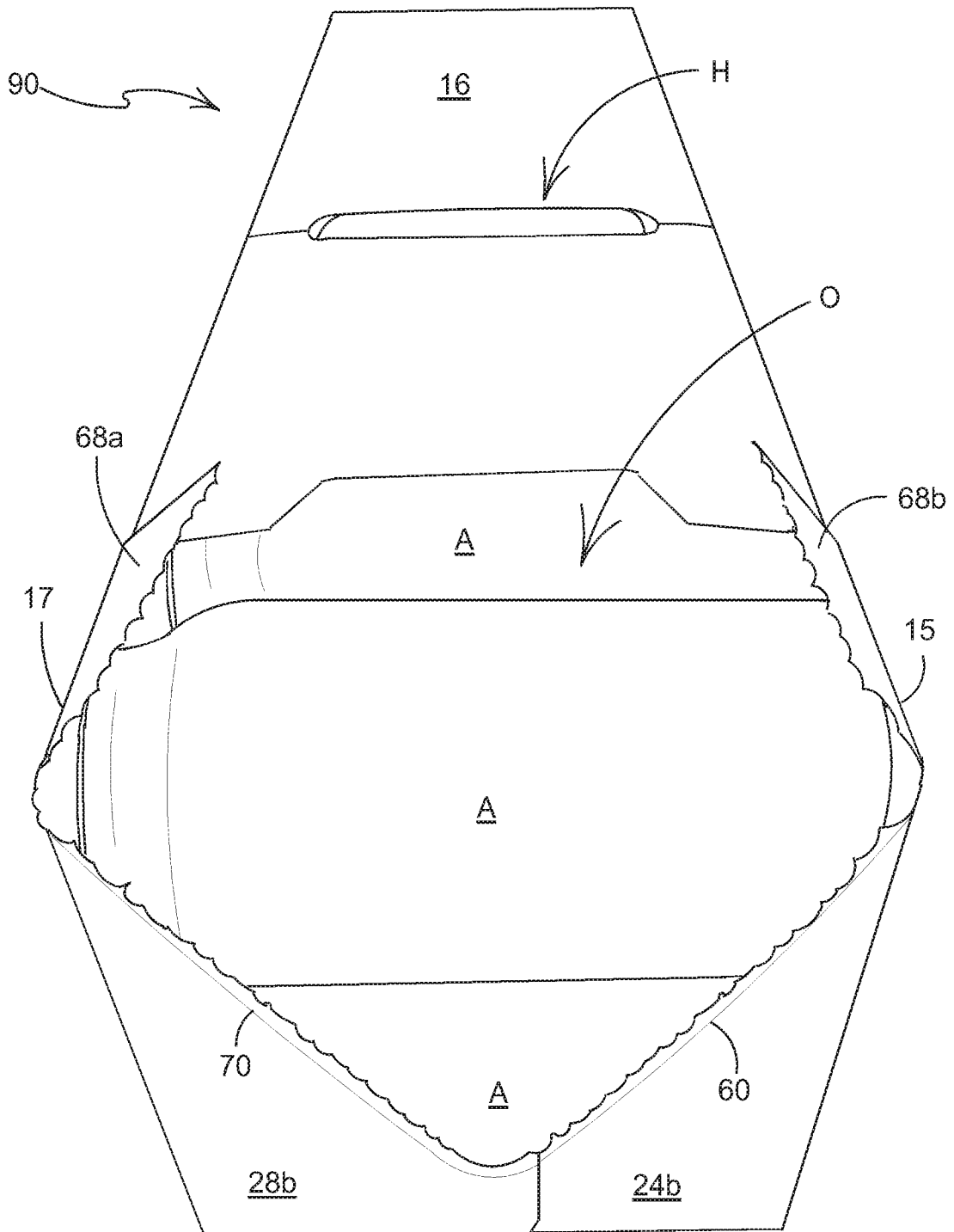


FIGURE 3

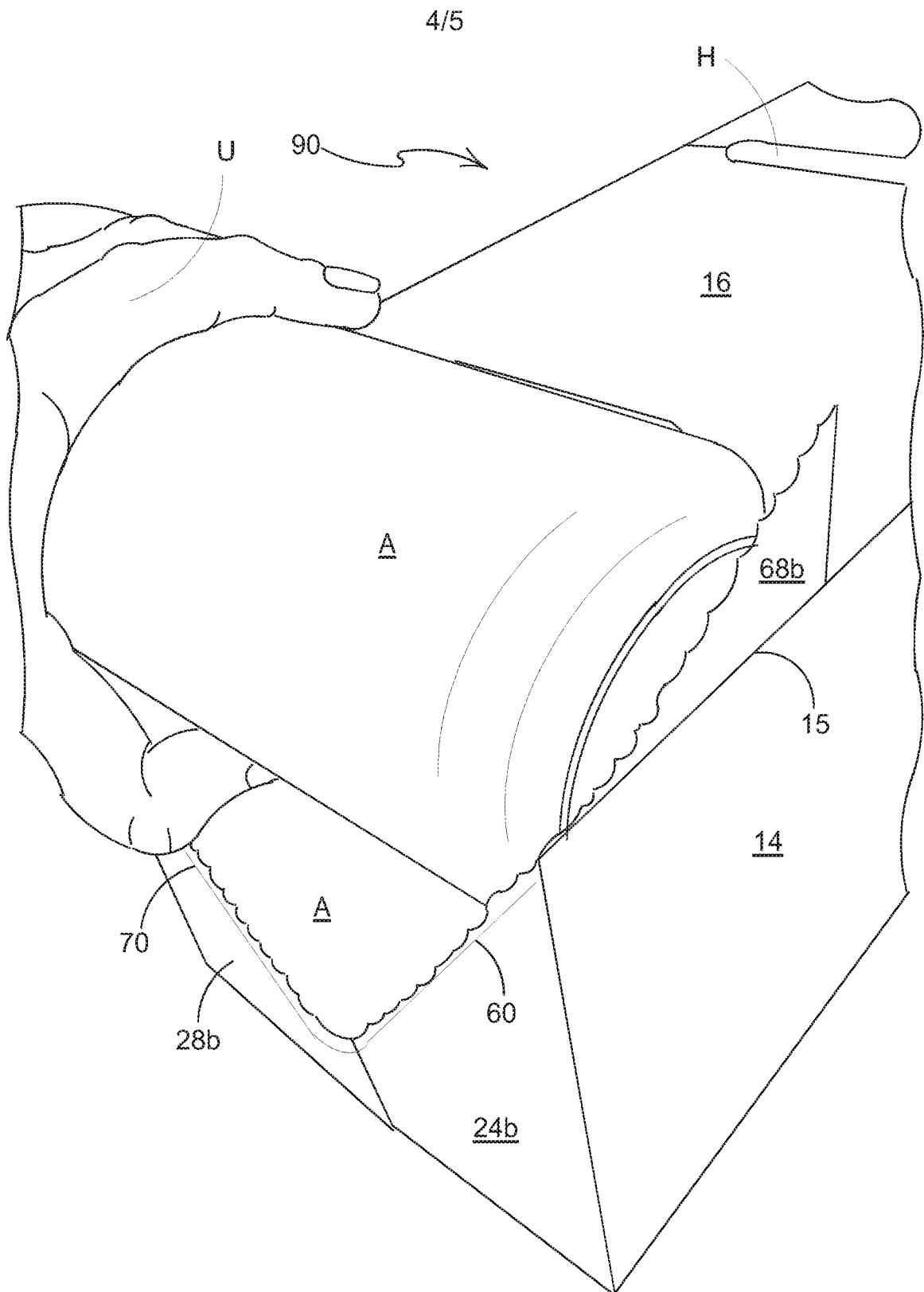


FIGURE 4

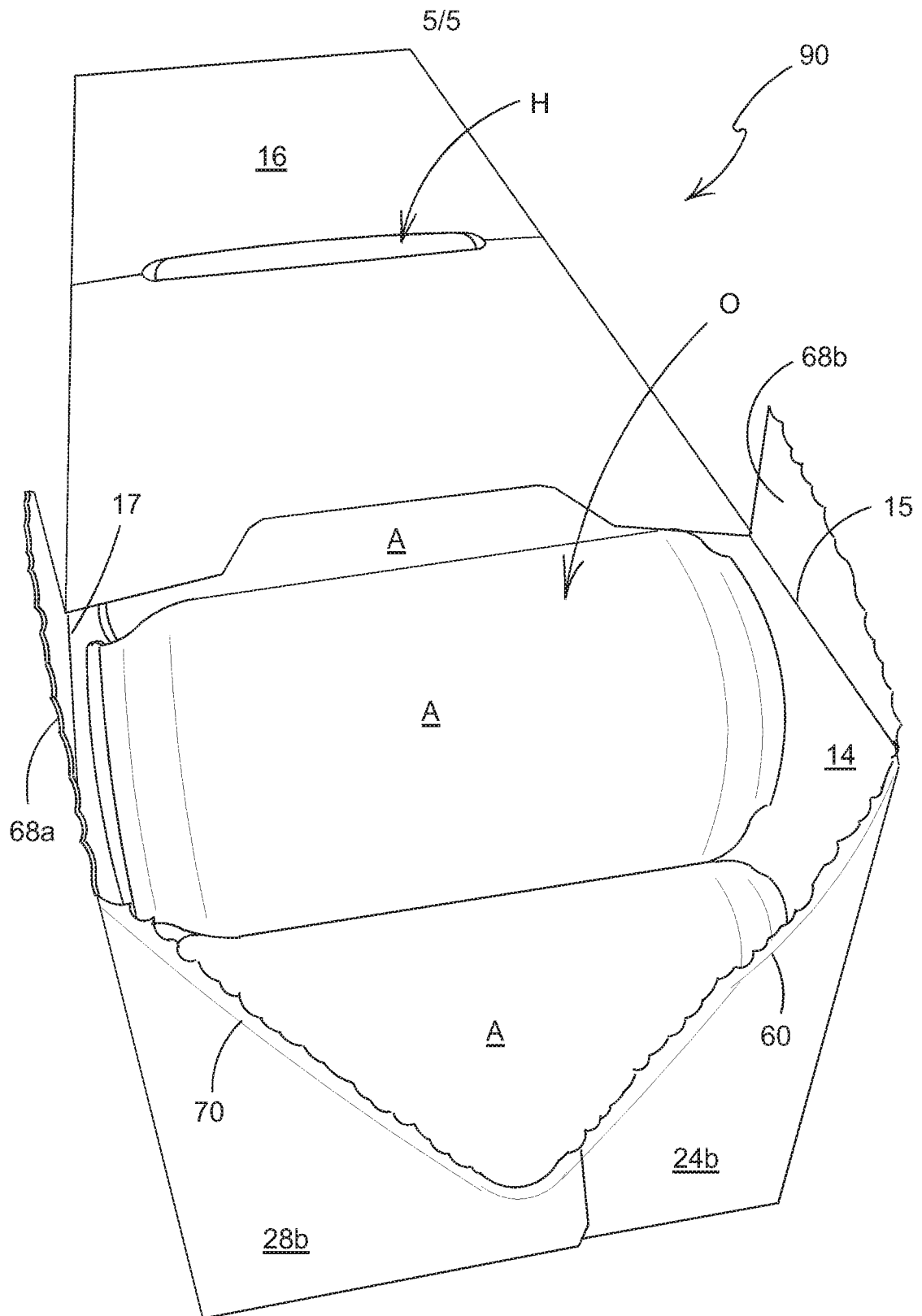


FIGURE 5

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2016/018422

A. CLASSIFICATION OF SUBJECT MATTER
 INV. 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	US 7 614 543 B1 (MILLER CHARLES A [US]) 10 November 2009 (2009-11-10) column 1, lines 11-13; figures 1, 2A column 4, line 66 - column 5, line 55 -----	1-6, 11-13
X	US 2006/081492 A1 (HOLLEY JOHN M JR [US] ET AL) 20 April 2006 (2006-04-20) paragraph [0002]; figures 1, 2, 4 paragraph [0039] -----	1,11
A		2-6,12, 13
X	US 4 378 877 A (BOTTERMAN DAVID L ET AL) 5 April 1983 (1983-04-05) column 1, lines 6, 10; figures 4, 6 -----	1-6, 11-13
A	US 2004/089671 A1 (MILLER CHARLES A [US]) 13 May 2004 (2004-05-13) the whole document -----	1-6, 11-13



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

14 April 2016

Date of mailing of the international search report

27/06/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040,
 Fax: (+31-70) 340-3016

Authorized officer

Czerny, M

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/018422

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-6, 11-13

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 11-13

A carton having a tubular structure and an opening for access to the carton contents, and a blank for making the carton.

2. claims: 7-10, 14, 15

A carton having a tubular structure and a detachable portion for building an opening for access to the carton contents, and a blank for making the carton

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2016/018422

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7614543	B1	10-11-2009	NONE
US 2006081492	A1	20-04-2006	US 2006081492 A1 20-04-2006 WO 2006044817 A1 27-04-2006
US 4378877	A	05-04-1983	NONE
US 2004089671	A1	13-05-2004	AU 2003280011 A1 03-06-2004 BR 0315986 A 20-09-2005 CA 2502327 A1 27-05-2004 EP 1558496 A2 03-08-2005 MX PA05004893 A 27-01-2006 US 2004089671 A1 13-05-2004 US 2010200646 A1 12-08-2010 US 2012145775 A1 14-06-2012 WO 2004043790 A2 27-05-2004