



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**04.04.2018 Bulletin 2018/14**

(51) Int Cl.:  
**B65D 5/02 (2006.01)**

(21) Application number: **17194616.3**

(22) Date of filing: **03.10.2017**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**  
Designated Validation States:  
**MA MD**

(72) Inventors:  
• **PIETILÄ, Kaisa**  
**14500 Iittala (FI)**  
• **SOTKA, Susanna**  
**27500 Kauttua (FI)**

(74) Representative: **Berggren Oy, Turku**  
**P.O. Box 99**  
**Tykistökatu 2-4 B**  
**20521 Turku (FI)**

(30) Priority: **03.10.2016 FI 20165736**

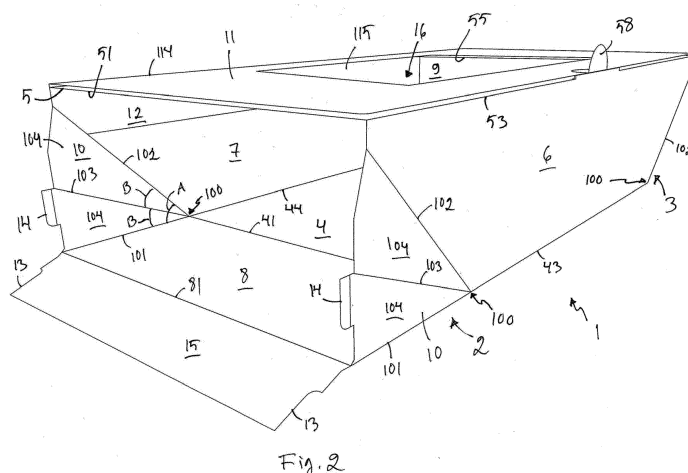
(71) Applicant: **A & R Carton Oy**  
**27500 Kauttua (FI)**

(54) **CARTON PACKAGING, BLANK AND METHOD FOR PRODUCING CARTON PACKAGING**

(57) The invention relates to a carton packaging, a blank and a method for manufacturing a carton packaging. The carton packaging (1) is manufactured from a blank (1A), which has a bottom surface (4), a cover surface (5) and a first (6) and a second side surface (7) connecting them, as well as a first (8) and a second end surface (9) connected to the bottom surface. In the blank,  
- at least one end surface (8) is connected to the first side surface (6) and to the second side surface (7) with the aid of corner surfaces (10),  
- an edge (101) of the corner surface connected to the end surface and an edge (102) of the corner surface connected to the side surface form a corner angle (A),  
- the corner surface (10) is divided into several corner parts (104) with at least one corner fold (103),

According to the invention

- a sleeve-like packaging (1) having open ends (2, 3) is formed from the blank (1A),
- the end surfaces (8, 9) of the blank are folded and the ends (2, 3) of the packaging (1) are thereby closed with them,
- a liquid tight container (16) is formed under the cover surface (5) by manually folding the end surfaces (8, 9), the side surfaces (6, 7) and the corner surfaces (10) so as to form edges of the container (16) rising from the bottom surface (4), by folding the at least two corner parts (104) connecting the end surface (8) and the side surface (6) to each other outwards from the liquid tight container (16).



**Description****TECHNICAL FIELD OF THE INVENTION**

**[0001]** The invention relates to a carton packaging, a blank and a method for manufacturing the carton packaging according to the preambles of the independent claims presented below.

**PRIOR ART**

**[0002]** A typical carton packaging is formed from a blank, which has surfaces separated from each other by folds. The blank is folded, and the surfaces are fastened to each other in a certain manner, whereby a packaging is formed.

**[0003]** For example, first, a sleeve-like packaging having open ends can be formed of the blank. The ends of the packaging can then be closed by folding the end surfaces formed in the blank in front of the open ends.

**[0004]** General problems of carton packagings are for example the difficulty and the complexity of the folding. It is difficult to make the blank easily and securely openable and closable. It is difficult to make the carton packaging foldable from the blank to be liquid-tight.

**OBJECT OF THE INVENTION**

**[0005]** The object of the present invention is to reduce or even eliminate the above-mentioned problems appearing in prior art.

**[0006]** It is an object of the present invention to obtain a reliably working carton packaging, which is easily and quickly formed from a blank.

**[0007]** It is an object of the invention to obtain a carton packaging, which can be quickly built by manually folding from a flat form to a packaging comprising a liquid tight container.

**BRIEF DESCRIPTION OF THE INVENTION**

**[0008]** In order to achieve, among others, the objects mentioned above, the carton packaging, the blank and the method and other objects of the invention are characterised by what is presented in the characterising parts of the enclosed independent claims.

**[0009]** The application examples and advantages mentioned in this text relate, where applicable, to both the carton packaging, the blank and the method according to the invention, even if this is not always specifically mentioned.

**[0010]** A typical carton packaging according to the invention is formed from a blank according to the invention. The blank and the carton packaging comprise in the longitudinal direction opposite first and second end, which are closable. The blank and the carton packaging comprise surfaces connected to each other in their edges with the aid of folds, i.e. at least the following:

- a bottom surface, which comprises in the first end a first end edge, in the second end a second end edge and a first and a second side edge connecting the end edges, which bottom surface forms a bottom of the finished packaging,
  - a cover surface, which comprises in the first end a first end edge, in the second end a second end edge and a first and a second side edge connecting the end edges, which cover surface forms a cover of the finished packaging,
  - a first side surface, which connects the first side surfaces of the bottom surface and the cover surface, which first side surface forms the first side of the finished packaging,
  - a second side surface, which is connected to the second side edge of the bottom surface, which second side surface forms the second side of the finished packaging,
  - a first end surface, which is connected to the first end edge of the bottom surface, which first end surface closes the first closable end of the finished packaging,
  - a second end surface, which is connected to the second end edge of the bottom surface, which second end surface closes the second closable end of the finished packaging.
- [0011]** The side edges are at least mainly longitudinal, and the end edges are at least mainly perpendicular to the longitudinal direction, i.e. cross-directional. In a typical blank and a carton packaging:
- at least one end surface is connected to the first side surface and to the second side surface with the aid of corner surfaces,
  - the edge of the corner surface connected to the end surface and the edge connected to the side surface form a corner angle,
  - the corner surface is divided into several corner parts with at least one corner fold.
- [0012]** Typically:
- the bottom surface, the end surface, the side surface and the at least two corner parts of the corner surface are connected in the corner, and the folds between said surfaces beginning from the corner are liquid tight, whereby a liquid tight container is formed under the cover surface by folding the end surfaces, the side surfaces and the corner surfaces so as to form the edges of the container rising from the bottom surface so, that
  - the at least two corner parts connecting the end sur-

face and the side surface to each other are folded outwards from the liquid tight container.

**[0013]** In a typical method according to the invention the carton packaging is manufactured from the blank according to the invention having a bottom surface, a cover surface and a first and a second side surface connecting them, as well as a first and a second end surface connected to the bottom surface. In the blank,

- at least one end surface is connected to the first side surface and to the second side surface with the aid of corner surfaces,
- the edge of the corner surface connected to the end surface and the edge connected to the side surface form a corner angle,
- the corner surface is divided into several corner parts with at least one corner fold.

**[0014]** The method comprises at least the following steps

- a sleeve-like packaging having open ends is formed from the blank,
- the end surfaces of the blank are folded, and the ends of the packaging are thus closed with them,
- a liquid tight container is formed under the cover surface by manually folding the end surfaces, the side surfaces and the corner surfaces so as to form the edges of the container rising from the bottom surface by folding the at least two corner parts connecting the end surface and the side surface to each other outwards from the liquid tight container.

**[0015]** Thus, it has now been found that a container having a liquid tight bottom can be practically obtained to the carton packaging with a particular corner arrangement. The corners of the container are formed of liquid tight folds. Thus, the carton packaging can be used for example like a plate. The carton packaging, and specifically the container to be formed therein, is easily manually foldable from a blank to a finished packaging. The packaging can be transported and stored flat and folded to its final shape, even only in connection with the end use.

**[0016]** When the end of the packaging is closed, the corner parts connecting the end surface and the side surface to each other are folded outwards from the liquid tight container to be formed to the container. The outwards foldable corner parts do not disturb the use of the container. They also form a support, from which the user of the carton packaging can easily and firmly grip. Several corner parts and several folds between them make the opening and the closing of the end easier.

**[0017]** One of the major advantages of the invention is that a container having a liquid tight bottom can be

easily made to the carton packaging, for example for a food product. For example, the packaging can be used for transporting a food portion, such as a so-called take-away portion. Then, the end user himself can portion out the food product to the packaging. It is possible, that the end user also folds the packaging himself.

**[0018]** The blank and the packaging according to the invention can be manufactured for example of folding carton and solid bleach sulphate board (SBS board). The carton can be coated for example with plastic or lacquer. The carton packaging according to the invention is well suited for cold food products, but also for warm food, if oven and microwave proof types of carton are used as carton.

**[0019]** In an embodiment of the invention a sleeve-like packaging having at first open ends is formed from the blank by side gluing the longitudinal side edge of the cover surface to the second side surface. This way, a durable joint is achieved. A side glued sleeve-like packaging having open ends can be transported flat and thus only little space-consuming even to the location of the end use. Thus, the packaging becomes even more durable and its assembly becomes even easier than before. Side gluing is known technique, and is not described in more detail in this text.

**[0020]** In an embodiment of the invention, a fastening surface, such as a glue flap, is arranged to the second side edge or to the second side surface of the cover surface for fastening the cover surface to the second side surface. After the fastening, a sleeve-like packaging having open ends is formed from the blank. The fastening can be performed for example by so-called side gluing.

**[0021]** In an embodiment of the invention, the second side edge of the cover surface is glued to the second side surface, whereby the bottom surface, the cover surface and the first and the second side surface connecting them form a sleeve-like packaging having open ends. The sleeve-like packaging is, if desired, easily closable by folding the end surfaces in front of the open ends of the packaging.

**[0022]** In an embodiment of the invention the corner angle formed by the edges of the corner surface connected to the end surface and to the side surface is 30-90 or 30-60 degrees or 40-50 degrees, for example about 67 or about 45 degrees. In an embodiment of the invention the directions of at least one or at least two corner folds deviate from the longitudinal direction as well as from the cross-direction. In an embodiment of the invention the edge of the corner surface connected to the end surface is mainly longitudinal and the edge of the corner surface connected to the side surface is in the angle of 30-60 degrees, preferably in the angle of 40-50 degrees, to the longitudinal direction. According to an embodiment of the invention, a corner fold forms an angle of 45-90 degrees, preferably 60-80 degrees, to the longitudinal direction. The above-mentioned dimensions, directions and forms are helpful when folding the packaging and provide a container having edges suitable for the pack-

aging.

**[0023]** In an embodiment of the invention one or several corner folds divide the corner angle into several corner part angles, which are mainly equally sized in relation to each other. Such corner is easily foldable.

**[0024]** In an embodiment of the invention the bottom surface has a smaller area than the cover surface. This way, the container can be formed so as to expand upwards, if desired. On the other hand, at least some edges of the cover surface can thus be formed as gripping surfaces or handles, from which it is easy to grip the packaging.

**[0025]** In an embodiment of the invention an opening is formed to the cover surface, through which opening the material to be packed, such as food, can be brought into the finished packaging and out of it. Such opening is suitable for example for packagings for so-called take-away food portions.

**[0026]** In an embodiment of the invention the carton packaging comprises an outer cover surface, which is connected with the aid of a fold to the second side surface or to the second side edge of the cover surface. The outer cover surface forms in the finished packaging an outer cover foldable on the cover surface. The outer cover can for example cover the opening formed to the cover surface.

**[0027]** In an embodiment of the invention the outer cover surface comprises a window manufactured from a transparent material. For example, the material in the packaging or the information printed on the cover surface can be seen through the window.

**[0028]** In an embodiment of the invention end locking forms, which are suitable to each other, such as a recess and a projection, are arranged to at least one end surface and to its adjacent corner surface. The locking forms are arranged so as to removably lock to each other, when the end surface is folded to close the end of the carton packaging.

**[0029]** In an embodiment of the invention an end fastening flap is formed to at least one end surface with the aid of a mainly cross-directional fold, to which end fastening flap one end locking form is arranged. The end fastening flap can be arranged at least mainly in the direction of the cover surface and against the cover surface, when the end surface is folded to close the end of the carton packaging.

**[0030]** In an embodiment of the invention an end locking flap is formed to at least one end edge of the cover surface with the aid of a mainly cross-directional fold. The locking flap can have a mainly cross-directional end edge. In the finished packaging the locking flap is folded under the cover surface and against it, mainly in the direction of the cover surface. The end edge of the locking flap is thus towards the inner part, i.e. the liquid tight container, of the carton packaging. Simultaneously, the mainly cross-directional end edge of the fastening flap is mainly outwards from the inner part of the carton packaging. When the end of the carton packaging is closed,

the end edge of the fastening flap sets against the end edge of the fastening flap and closes the end to the closed position. The end edges can be against each other in the closed position, for example along the length of 10-200 mm or 30-150 mm or 50-150 mm. The end edges can be against each other in the closed position, for example along the length of 25-100 % or 50-90 % of the width of the cover surface. The end can thus be easily opened and closed by pulling and pushing the fastening flap. The end locking is firm and tight, since it can be performed along a longer way, even along the entire length of the end edges.

## BRIEF DESCRIPTION OF THE FIGURES

**[0031]** The invention is described in more detail below with reference to the enclosed schematic drawing, in which

- Figure 1 shows a blank according to the invention,
- Figures 2-6 show perspective views of a packaging according to the invention in different positions;
- Figure 7 shows a second blank according to the invention, and
- Figure 8 shows a perspective view of a third packaging according to the invention.

## DETAILED DESCRIPTION OF THE EXAMPLES OF THE FIGURES

**[0032]** For the sake of clarity, for parts corresponding to each other, same reference numerals are used in different figures and embodiments.

**[0033]** Figure 1 shows a blank 1A according to the invention. Figures 2-6 show a packaging 1 formed from the blank 1A.

**[0034]** The blank 1A and the carton packaging 1 have in the longitudinal direction LD opposite closable first end 2 and second end 3. The carton packaging 1 comprises surfaces connected to each other in their edges with the aid of folds. The bottom surface 4 comprises a first end edge 41 in the first end, a second end edge 42 in the second end and a first 43 and a second side edge 44 connecting the end edges. The bottom surface forms the bottom of the finished packaging. The cover surface 5 comprises a first end edge 51 in the first end, a second end edge 52 in the second end and a first 53 and a second side edge 54 connecting the end edges. The cover surface forms the cover of the finished packaging. The first side surface 6 connects the first side edges 43, 53 of the bottom surface and the cover surface. The first side surface forms the first side of the finished packaging. The second side surface 7 connects the bottom surface to the second side edge 44. The second side surface forms

the second side of the finished packaging. The first end surface 8 is connected to the first end edge 41 of the bottom surface. The first end surface closes the first closable end 2 of the finished packaging 1. The second end surface 9 is connected to the second end edge 42 of the bottom surface. The second end surface closes the second closable end 3 of the finished packaging 1. The side edges 43, 44, 53, 54 are at least mainly longitudinal LD and the end edges 41, 42, 51, 52 are at least mainly perpendicular to the longitudinal direction, i.e. cross-directional CD.

**[0035]** In Figure 2 the packaging 1 is shown with its first end 2 entirely open. In Figures 4-6 the first end is entirely closed. In Figure 3 the first end 2 is partly open, i.e. in the situation between the Figures 2 and 4.

**[0036]** The end surfaces 8 and 9 are connected to the first side surface 6 and to the second side surface 7 with the aid of corner surfaces 10. An edge 101 of the corner surface connected to the end surface and an edge 102 connected to the side surface form a corner angle A. The corner angle A is in the example of Figures 1-6 about 45 degrees. The corner surface 10 is divided with the aid of a corner fold 103 into several corner parts 104. The direction of the corner fold 103 deviates from the longitudinal direction LD and from the cross-direction CD. In the example of the Figures the corner fold 103 forms an angle of about 22-23 degrees in relation to the longitudinal direction LD.

**[0037]** The edge 101 of the corner surface 10 connected to the end surfaces 8 and 9 is mainly longitudinal. The edge 102 of the corner surface 10 connected to the side surface 6 or 7 is in an angle of about 45 degrees in relation to the longitudinal direction LD.

**[0038]** A fastening surface 12, i.e. a glue flap, is arranged to the second side edge 54 of the cover surface for fastening the cover surface 5 to the second side surface 7. The packaging 1 shown for example in Figure 2 is formed from the blank 1A by side gluing, i.e. by spreading glue to the fastening surface 12 and by folding it against to the second side surface 7. Thus, the bottom surface 4, the cover surface 5 and the first 6 and the second side surface 7 connecting them form a sleeve-like packaging 1 having open ends 2, 3, which packaging is closable with the end surfaces 8, 9, if desired.

**[0039]** The bottom surface 4, the end surface 8, the side surface 6 or 7 and the two corner parts 104 of the corner surface are connected in the corner 100. The folds between said surfaces beginning from the corner are liquid tight. The end surfaces 8 and 9, the side surfaces 6 and 7 and the corner surfaces 10 are folded so as to form the edges of a container 16 rising from the bottom surface 4. Thus, a liquid tight container 16 is formed under the cover surface 5. The at least two corner parts 104 connecting the end surface 8 and the side surface 6 to each other are folded outwards from the liquid tight container 16.

**[0040]** In the example of the Figures, the bottom surface 4 has a smaller area than the cover surface 5. For

example, in Figures 4 and 5 it can be seen, how it has thus been possible to form the edges on the side of the ends 2 and 3 of the cover surface as gripping surfaces, from which the packaging 1 is easily gripped.

**[0041]** An opening 55 is formed to the cover surface, through which opening the material to be packed in the packaging, such as food, can be brought into the finished packaging 1 or out of it. The packaging 1 has an outer cover surface 11, which is connected with the aid of a fold 114 to the second side surface 7. The outer cover surface 11 forms in the finished packaging 1 an outer cover foldable on the cover surface 5 and its opening 55. A locking flap 56 is formed to the outer cover surface and a locking slot 57 suitable for the locking flap 56 is formed to the second side edge 54 of the cover surface, with which locking flap and locking slot the outer cover can be openably locked. In connection with the locking flap there is a gripping spot 58 for the fingers of the user. The outer cover surface 11 has a window 115 manufactured from plastic or from another at least partly transparent material. When the outer cover is against the cover surface 5, the window 115 is aligned with the opening 55, whereby the material in the container 16 is visible through the window 115.

**[0042]** A recess 13 is formed to the edge of the end surface 8 and a projection 14 is arranged to the adjacent edge of the corner surface 10. Figure 4 shows, how the recess 13 and the projection 14 removably lock to each other, when the end surface 8 is folded to close the end 2 of the carton packaging 1.

**[0043]** An end fastening flap 15 is formed to the end surface 8 with the aid of a mainly cross-directional fold 81, to which end fastening flap the end locking form 13 is arranged. The end fastening flap 15 can be arranged at least mainly in the direction of the cover surface 5 and against the cover surface 5, when the end surface 8 is folded to close the end 2 of the carton packaging. The end 2 can thus be easily opened and closed by pulling and pushing the fastening flap 15.

**[0044]** Figure 7 shows another blank 1B according to the invention.

**[0045]** Figure 8 shows a carton packaging 1 formed from a blank according to the invention with its first end 2 entirely closed, in a situation corresponding to Figure 4.

**[0046]** The embodiments of Figure 7 and 8 differ from the embodiment of Figures 1-6 in respect of the end locking. In the examples of Figures 7 and 8, an end locking flap 214 is formed to both end edges 51 and 52 of the cover surface 5 with the aid of a mainly cross-directional fold 281. The locking flap 214 has a mainly cross-sectional end edge 216. In the finished packaging the locking flaps 214 are folded under the cover surface 5 and against it, mainly in the direction of the cover surface 5. The end edge 216 is towards the inner part of the carton packaging 1, i.e. towards the liquid tight container 16. Like in the embodiment of Figures 1-6, the fastening flap 15 can be arranged at least mainly in the direction of the cover surface 5 and against the cover surface 5, when

the end surface 8 is folded to close the end 2 of the carton packaging. Thus, the mainly cross-directional end edge 215 of the fastening flap 15 is away from the inner part of the carton packaging 1, i.e. from the liquid tight container 16. When the end 2 of the carton packaging is closed in the manner shown in Figure 8, the end edge 215 of the fastening flap 15 sets against the end edge 216 of the locking flap 214 thereby locking the end to a closed position. The end 2 can be thus easily opened and closed by pulling and pushing the fastening flap 15. The locking of the end is firm and tight, since it is performed along almost the entire length of the end edges 215 and 216.

**[0047]** In the example of Figure 7, corner surfaces 10 connecting the end surfaces 8 and 9 to a first side surface 6 and to a second side surface 7 are each divided into three approximately equally sized corner parts 104. A corner angle A between an edge 101 connecting the corner surface to the end surface and an edge 102 connecting the corner surface to the side surface is about 65-70 degrees. The corner surface 10 is divided into several corner parts 104 with the aid of corner folds 103 and 203. The direction of the corner fold 103 deviates from the longitudinal direction LD and from the cross-direction CD. The corner fold 203 is mainly longitudinal. In the example of the Figures, mainly equally sized corner part angles B are formed between the edges 101 and 102 of the corner surface and the corner folds 103 and 203.

**[0048]** In the examples of the Figures, the sizes of the corner part angles B are about 22-23 degrees. When the end is closed, the corner parts 104 connecting the end surface 8 and the side surface 6 to each other are folded outwards from the liquid tight container 16. The outwards foldable corner parts 104 do not disturb the use of the container 16. They also form a support, from which the user of the carton packaging 1 can easily and firmly grip. Several corner parts make the opening and closing of the end easier.

**[0049]** It is not intended to limit the scope of the invention to the examples mentioned in the application, but the scope is defined by the independent claims. The dependent claims present some preferred embodiments of the invention.

## Claims

1. A carton packaging (1), in the longitudinal direction (LD) of which opposite first end (2) and second end (3) are closable, which carton packaging (1) comprises surfaces connected to each other in their edges with the aid of folds, i.e. at least

- a bottom surface (4), which comprises a first end edge (41) in the first end, a second end edge (42) in the second end and a first (43) and a second side edge (44) connecting the end edges, which bottom surface forms a bottom of the

finished packaging,

- a cover surface (5), which comprises a first end edge (51) in the first end, a second end edge (52) in the second end and a first (53) and a second side edge (54) connecting the end edges, which cover surface forms a cover of the finished packaging,

- a first side surface (6), which connects the first side edges (43, 53) of the bottom surface and the cover surface, which first side surface forms the first side of the finished packaging,

- a second side surface (7), which is connected to the second side edge (44) of the bottom surface, which second side surface forms the second side of the finished packaging,

- a first end surface (8), which is connected to the first end edge (41) of the bottom surface, which first end surface closes the first closable end (2) of the finished packaging (1),

- a second end surface (9), which is connected to the second end edge (42) of the bottom surface, which second end surface closes the second closable end (3) of the finished packaging (1),

whereby the side edges (43, 44, 53, 54) are at least mainly longitudinal (LD) and the end edges (41, 42, 51, 52) are at least mainly perpendicular to the longitudinal direction, i.e. cross-directional (CD), whereby

- at least one end surface (8) is connected to the first side surface (6) and to the second side surface (7) with the aid of corner surfaces (10),

- an edge (101) of the corner surface connected to the end surface and an edge (102) connected to the side surface form a corner angle (A),

- the corner surface (10) is divided into several corner parts with at least one corner fold (103),

characterised in that,

- the bottom surface (4), the end surface (8), the side surface (6), and the at least two corner parts (104) of the corner surface are connected in a corner (100), and the folds between said surfaces beginning from the corner are liquid tight, wherein a liquid tight container (16) is formed under the cover surface (5) by folding the end surfaces (8, 9), the side surfaces (6, 7) and the corner surfaces (10) so as to form edges of the container (16) rising from the bottom surface (4) so that

- the at least two corner parts (104) connecting the end surface (8) and the side surface (6) to each other are folded outwards from the liquid tight container (16).

2. Carton packaging (1) according to claim 1, **characterised in that** a fastening surface (12), such as a glue flap, is arranged to the second side edge (54) of the cover surface or to the second side surface (7) for fastening the cover surface (5) to the second side surface (7). 5
3. Carton packaging (1) according to claim 1 or 2, **characterised in that** the second side edge (54) of the cover surface is glued to the second side surface (7), whereby the bottom surface (4), the cover surface (5) and the first (6) and the second side surface (7) connecting them form a sleeve-like packaging (1) having open ends (2, 3), but being closable with the end surfaces (8, 9), if desired. 10
4. Carton packaging (1) according to any of the preceding claims, **characterised in that** the corner angle (A) is 30-90 degrees or 30-60 degrees or 40-50 degrees, for example ca. 67 degrees or ca. 45 degrees. 20
5. Carton packaging (1) according to any of the preceding claims, **characterised in that** the direction of at least one corner fold (103) deviates from the longitudinal direction (LD) as well as from the cross-direction (CD). 25
6. Carton packaging (1) according to any of the preceding claims, **characterised in that** the edge (101) of the corner surface (10) connected to the end surface (8) is mainly longitudinal (LD) and the edge (102) of the corner surface (10) connected to the side surface (6, 7) is in the angle of 30-60 degrees, preferably 40-50 degrees in relation to the longitudinal direction (LD). 30
7. Carton packaging (1) according to any of the preceding claims, **characterised in that** the corner fold (103) forms an angle of 0-45 degrees, preferably 15-30 degrees in relation to the longitudinal direction (LD). 35
8. Carton packaging (1) according to any of the preceding claims, **characterised in that** one or several corner folds (103) divide the corner angle (A) into several, in relation to each other mainly equally sized corner part angles (B). 40
9. Carton packaging (1) according to any of the preceding claims, **characterised in that** the bottom surface (4) has a smaller area than the cover surface (5). 45
10. Carton packaging (1) according to any of the preceding claims, **characterised in that** an opening (55) is formed to the cover surface, through which opening the material to be packed, such as food, can be brought into the finished packaging (1) or out of it. 50
11. Carton packaging (1) according to any of the preceding claims, **characterised in that** it comprises an outer cover surface (11), which is connected to the second side surface (7) or to the second side edge (54) of the cover surface with the aid of a fold (114), which outer cover surface (11) forms in a finished packaging (1) an outer cover foldable on the cover surface (5), which outer cover surface (11) can comprise a window (115) manufactured from a transparent material. 55
12. Carton packaging (1) according to any of the preceding claims, **characterised in that** end locking forms (13, 14, 215, 216) fitted to each other, such as a recess (13) and a projection (14), are arranged to at least one end surface (8, 9) and to at least one other part of the packaging, which end locking forms are arranged so as to removably lock to each other, when the end surface (8, 9) is folded to close the end (2, 3) of the carton packaging (1).
13. Carton packaging (1) according to claim 12, **characterised in that** an end fastening flap (15) is formed to at least one end surface (8, 9) with the aid of a mainly cross-directional fold (81, 91), to which end fastening flap one end locking form (13, 215) is arranged and which end fastening flap (15) can be arranged at least mainly in the direction of the cover surface (5) and against the cover surface (5), when the end surface (8, 9) is folded to close the end (2, 3) of the carton packaging.
14. A blank (1A, 1 B) for a carton packaging, in the longitudinal direction (LD) of which blank opposite first end (2) and second end (3) are closable, and which blank comprises surfaces connected to each other in their edges with the aid of folds, i.e. at least
  - a bottom surface (4), which comprises a first end edge (41) in the first end, a second end edge (42) in the second end and a first (43) and a second side edge (44) connecting the end edges, which bottom surface forms a bottom of the finished packaging,
  - a cover surface (5), which comprises a first end edge (51) in the first end, a second end edge (52) in the second end and a first (53) and a second side edge (54) connecting the end edges, which cover surface forms a cover of the finished packaging,
  - a first side surface (6), which connects the bottom surface of the cover surface and the first side edges (43, 53), which first side surface forms the first side of the finished packaging,
  - a second side surface (7), which is connected to the second side edge (44) of the bottom surface, which second side surface forms the second side of the finished packaging,

- a first end surface (8), which is connected to the first end edge (41) of the bottom surface, which first end surface closes the first closable end (2) of the finished packaging,
- a second end surface (9), which is connected to the second end edge (42) of the bottom surface, which second end surface closes the second closable end (3) of the finished packaging (1),

5

10

whereby the side edges (43, 44, 53, 54) are at least mainly longitudinal (LD) and the end edges (41, 42, 51, 52) are at least mainly perpendicular to the longitudinal direction, i.e. cross-directional (CD),

**characterised in that**

15

- at least one end surface (8) is connected to the first side surface (6) and to the second side surface (7) with the aid of corner surfaces (10),
- an edge (101) of the corner surface connected to the end surface and an edge (102) of the corner surface connected to the side surface form a corner angle (A),
- the corner surface (10) is divided into several corner parts (104) with at least one corner fold (103).

20

25

15. A method for manufacturing a carton packaging (1) from a blank (1A), which has a bottom surface (4), a cover surface (5) and a first (6) and a second side surface (7) connecting them, as well as a first (8) and a second end surface (9) connected to the bottom surface, wherein the method comprises at least the following steps

30

35

- a sleeve-like packaging (1) having open ends (2, 3) is formed from the blank (1A),
- the end surfaces (8, 9) of the blank are folded and the ends (2, 3) of the packaging (1) are thereby closed with them,

40

**characterised in that**

- at least one end surface (8) is connected to the first side surface (6) and to the second side surface (7) with the aid of corner surfaces (10),
- the corner surface (10) is divided into several corner parts (104) with at least one corner fold (103),

45

50

wherein the method comprises at least the following step

- a liquid tight container (16) is formed under the cover surface (5) by manually folding the end surfaces (8, 9), the side surfaces (6, 7) and the corner surfaces (10) so as to form edges of the container (16) rising from the bottom surface (4),

55

by folding the at least two corner parts (104) connecting the end surface (8) and the side surface (6) to each other outwards from the liquid tight container (16).

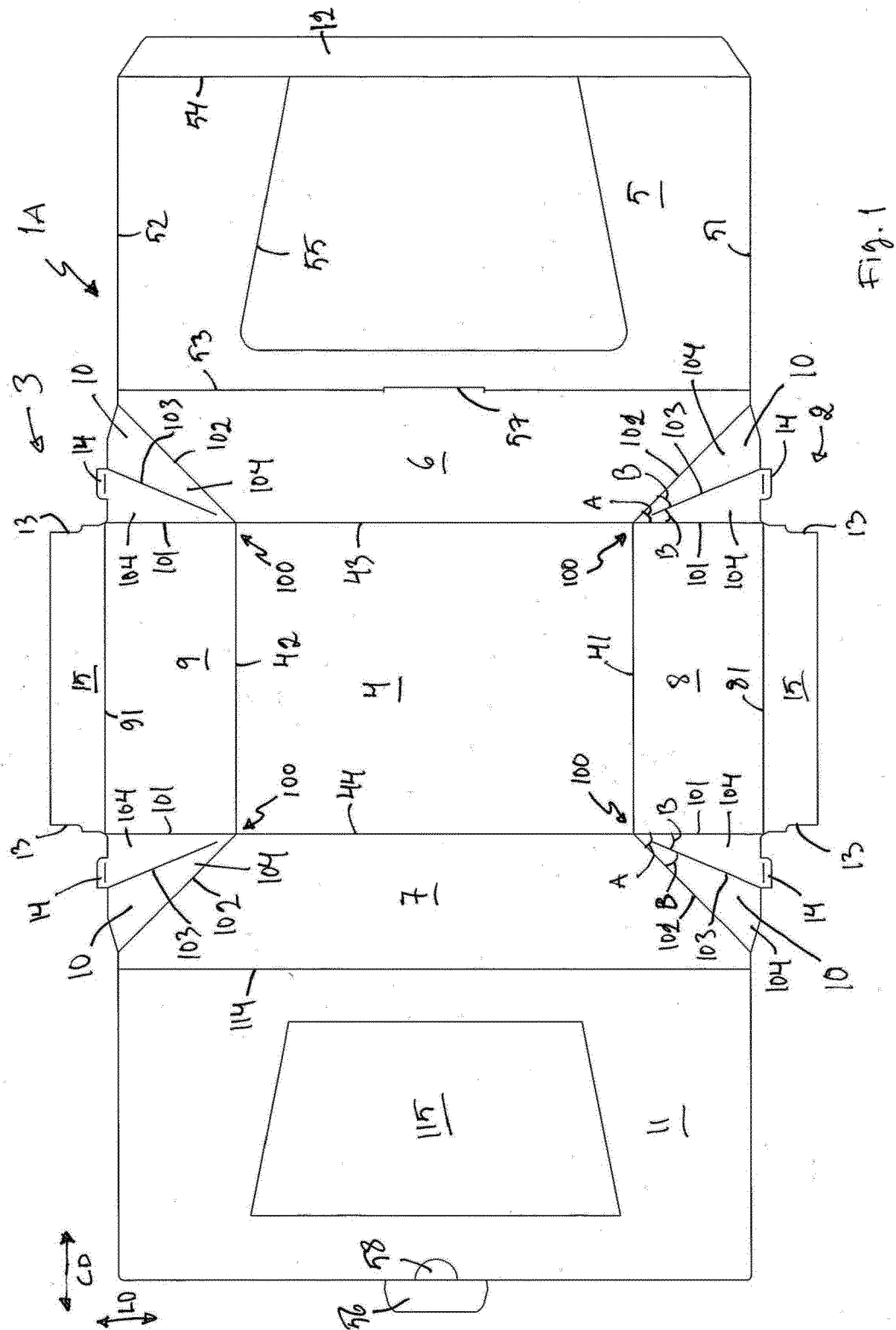


Fig. 1

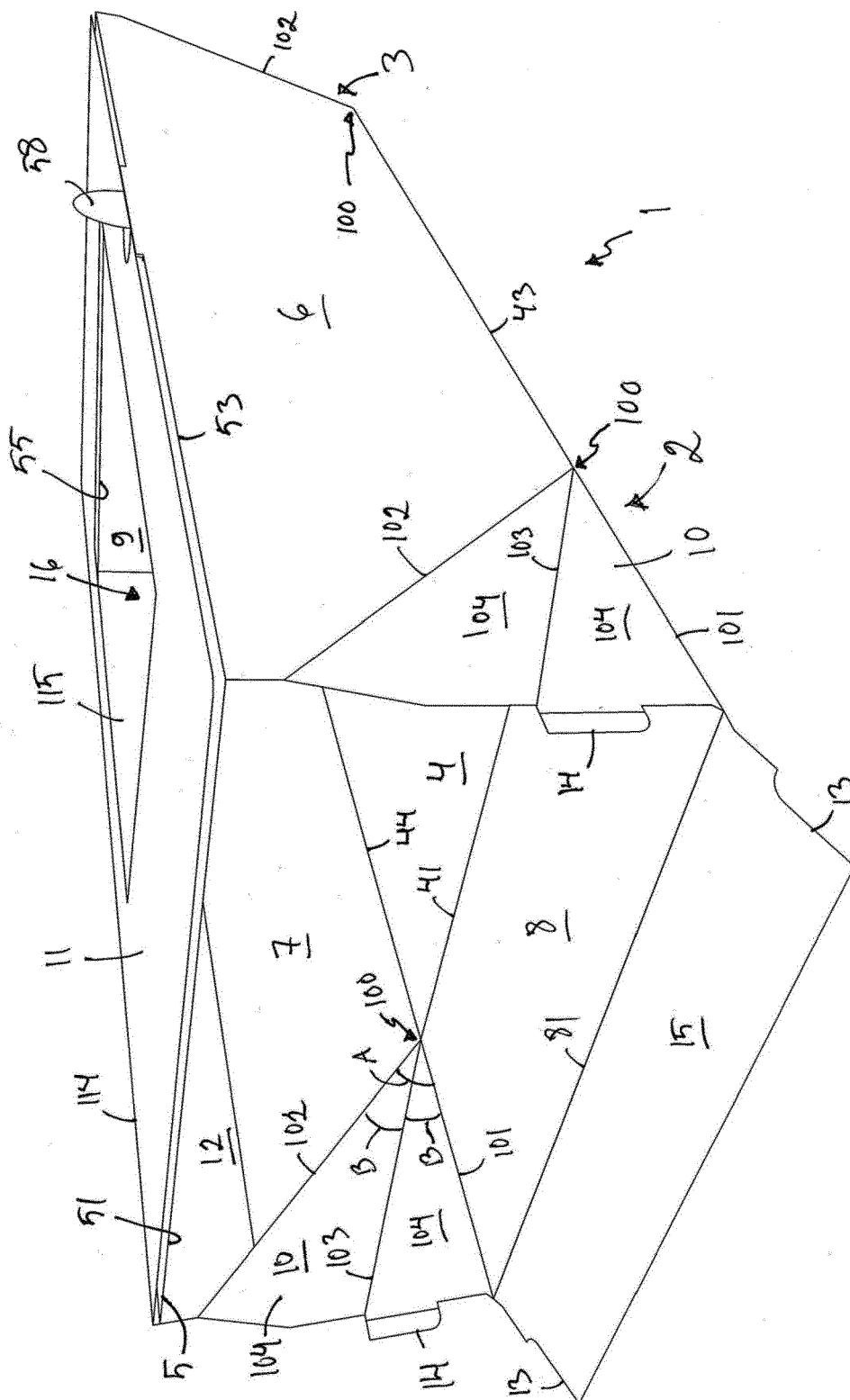


Fig. 2

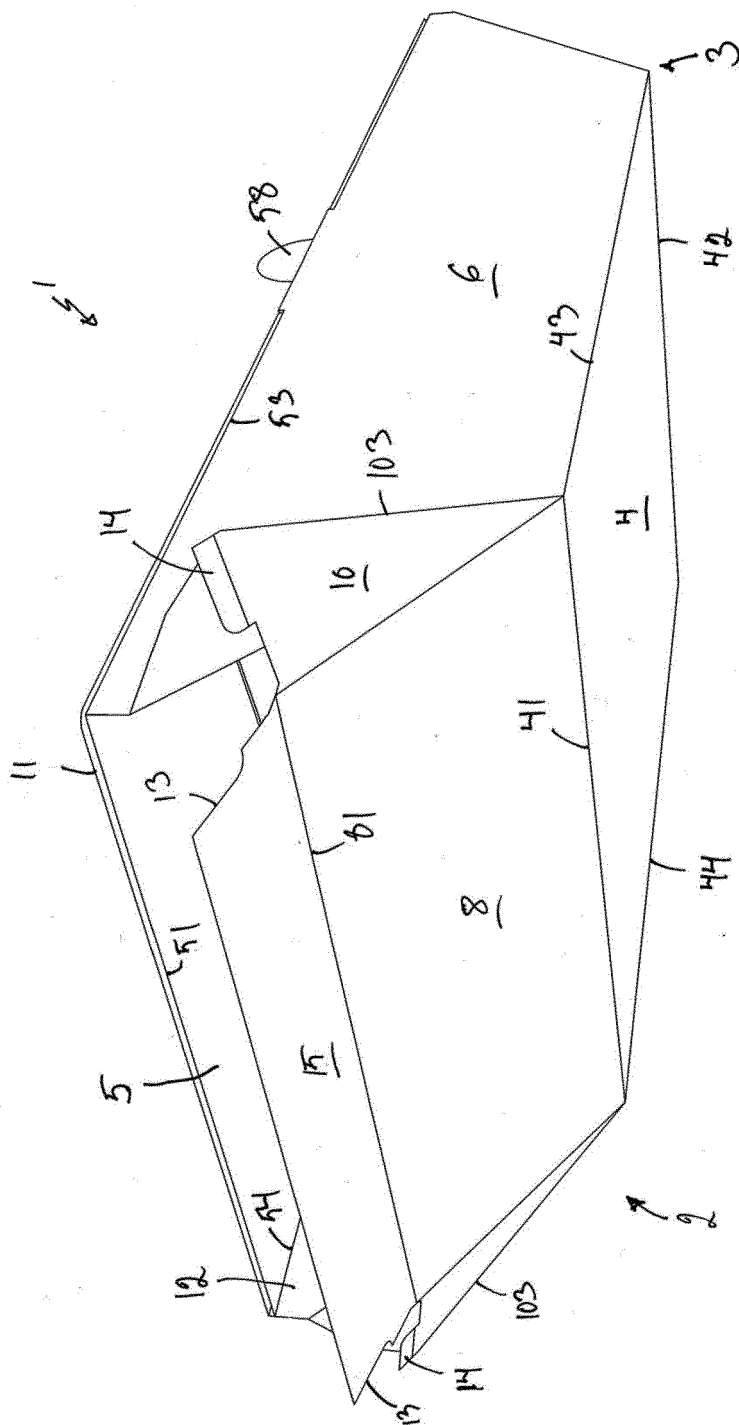


Fig. 3

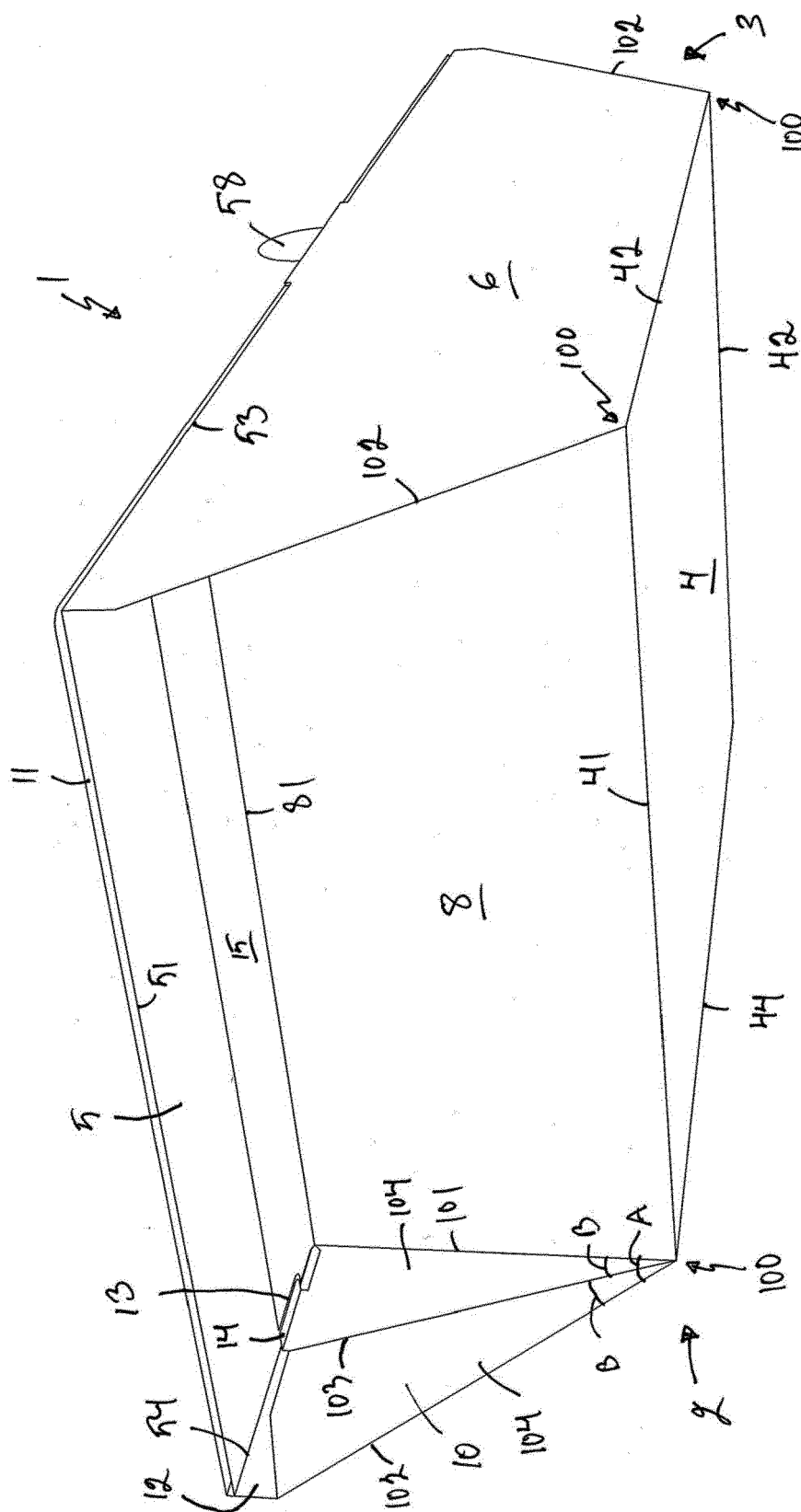


Fig. 4

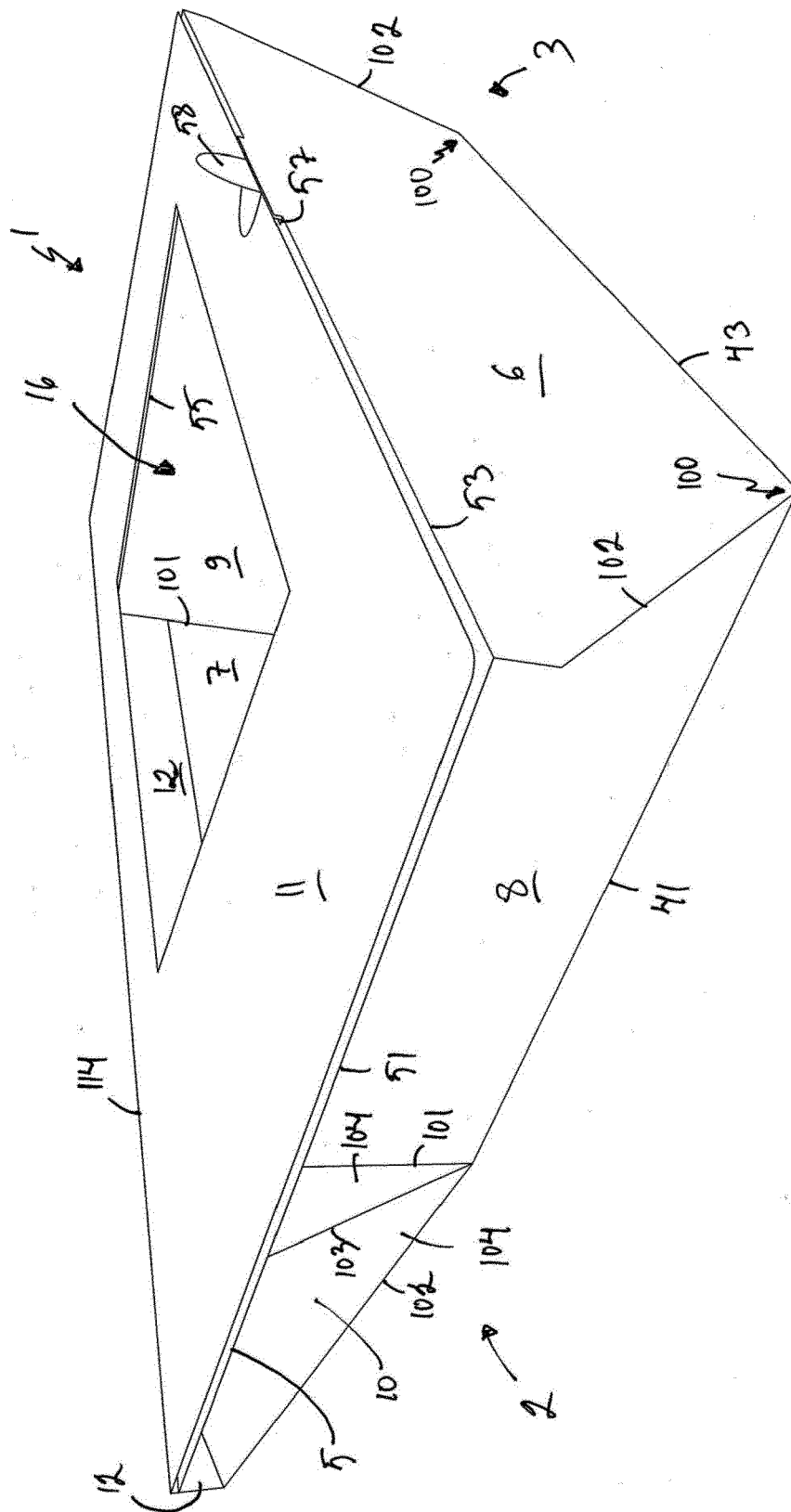


Fig. 5

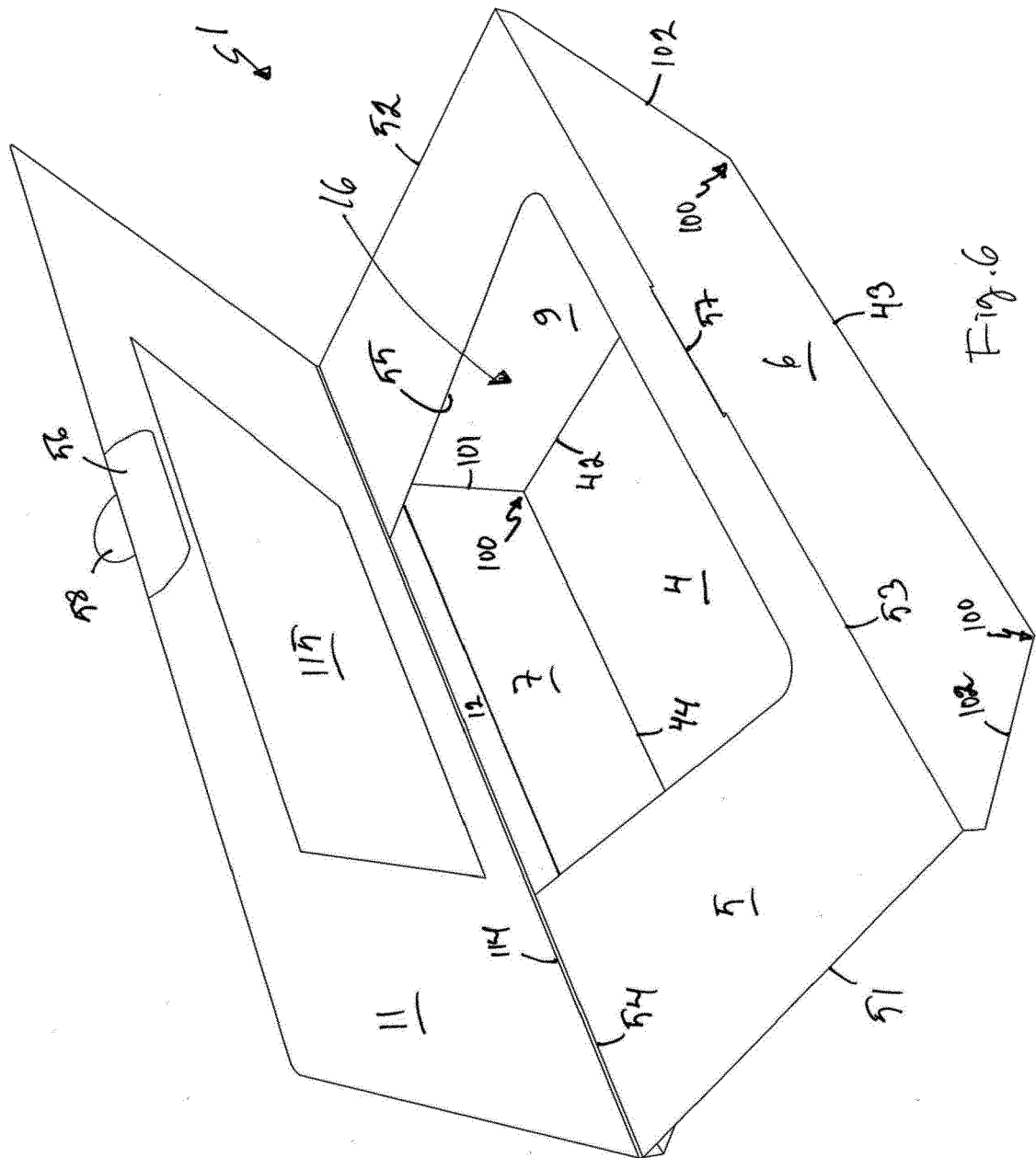
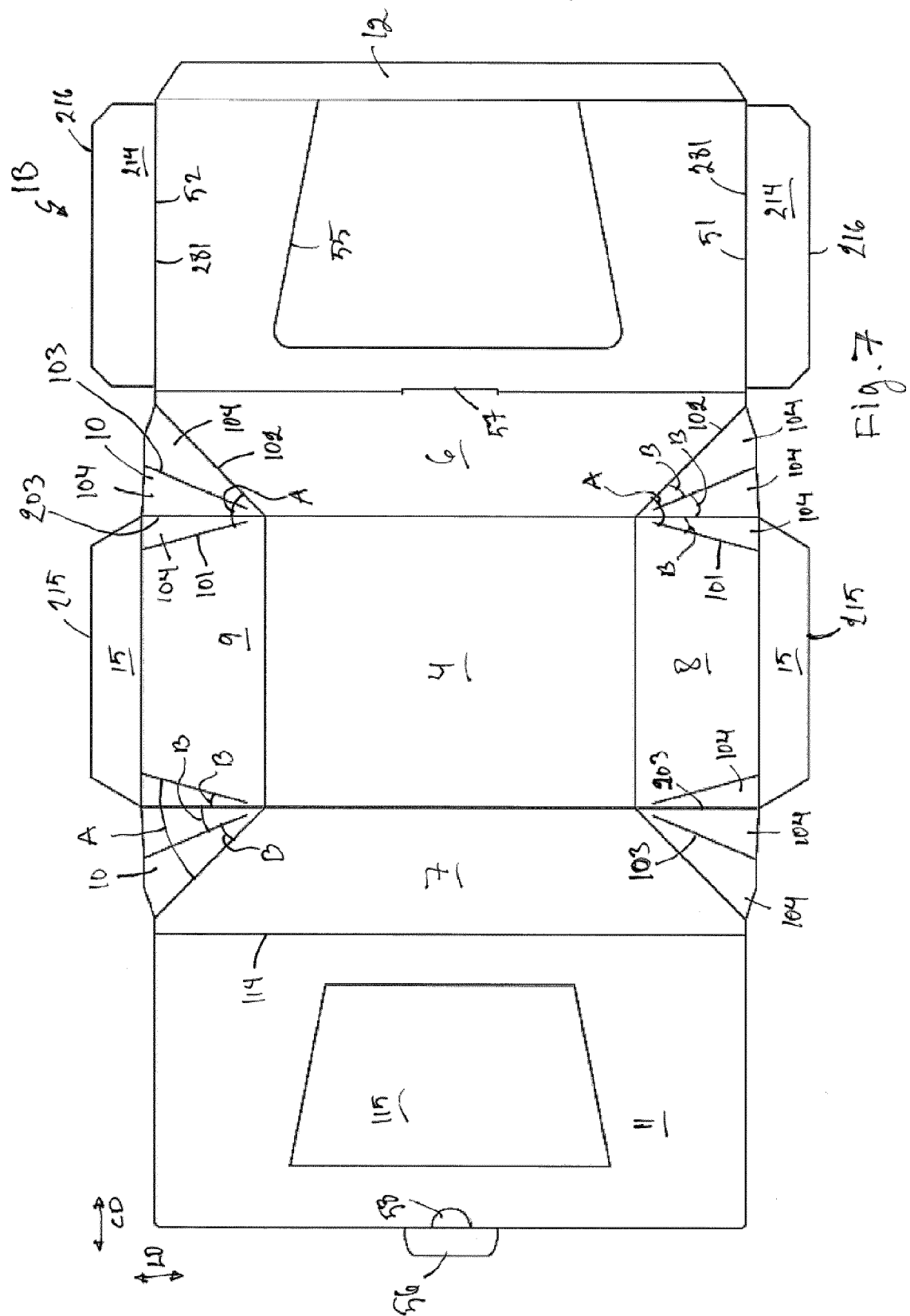


Fig. 6



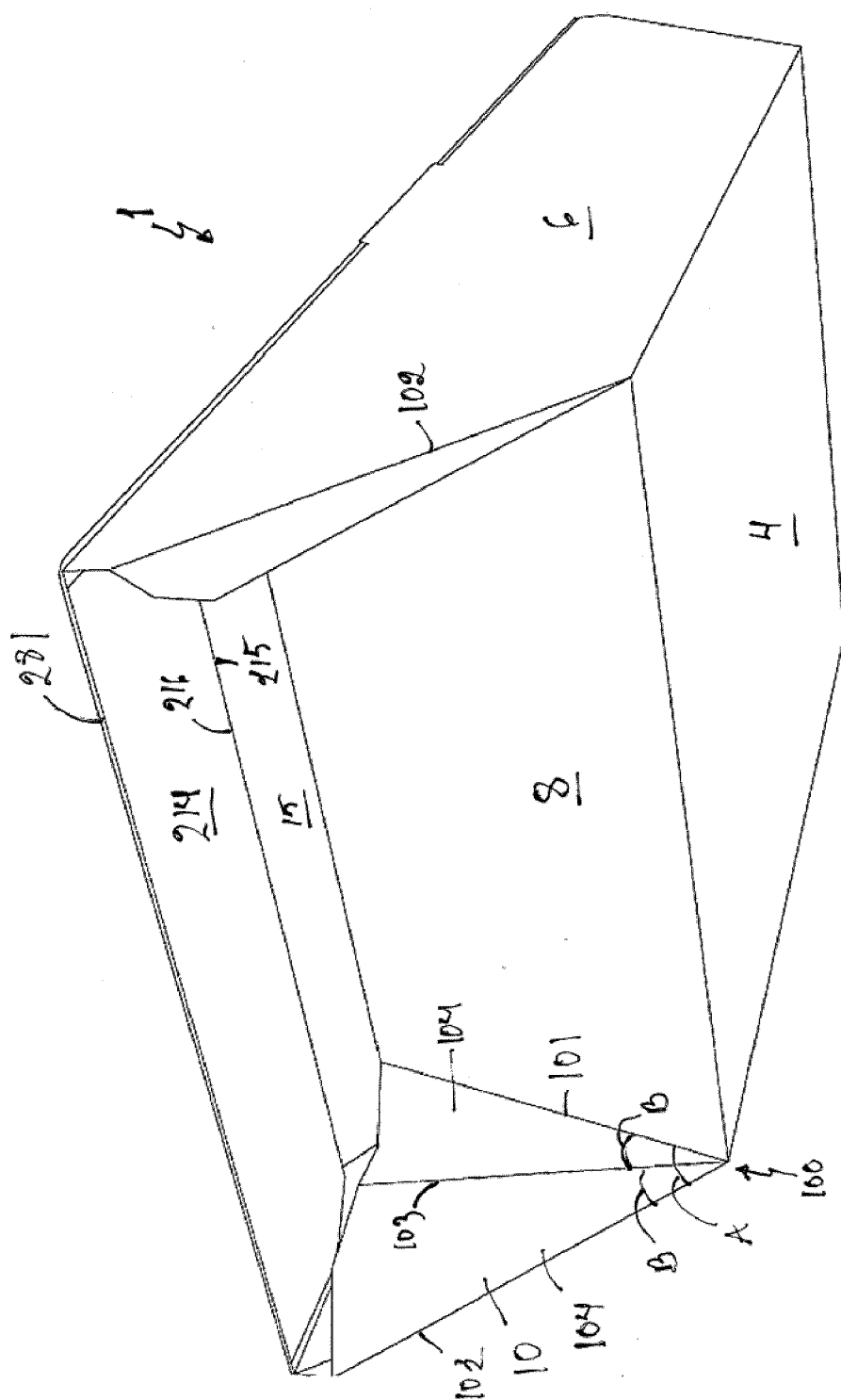


Fig. 8



## EUROPEAN SEARCH REPORT

Application Number  
EP 17 19 4616

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                       |                                                            |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                         | Relevant to claim                                          | CLASSIFICATION OF THE APPLICATION (IPC) |
| X<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | WO 2015/151100 A1 (DUCART PACKAGING IND LTD [IL]) 8 October 2015 (2015-10-08)<br>* figures 1-5 *<br>* paragraphs [0053], [0126] *<br>-----                            | 1-12,14,15<br>13                                           | INV.<br>B65D5/02                        |
| X<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 2008/290149 A1 (SWEET MICHAEL D [US]) 27 November 2008 (2008-11-27)<br>* figures 1-6 *<br>* paragraph [0020] - paragraph [0027] *<br>* paragraph [0034] *<br>----- | 1-4,7-9,12,14,15<br>5,6,10,11,13                           |                                         |
| X<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE 10 97 247 B (BAHLEN WERNER) 12 January 1961 (1961-01-12)<br>* figures 1-36 *<br>* paragraph [0016] - paragraph [0053] *<br>-----                                   | 1-9,13-15<br>10-12                                         |                                         |
| X<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 4 058 207 A (KOLTZ IRVING MORTON) 15 November 1977 (1977-11-15)<br>* column 4, line 52 - column 6, line 44; figures 1-7 *<br>-----                                 | 1-9,12-15<br>10,11                                         |                                         |
| X<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 2 407 781 A (REYNOLDS GUYER) 17 September 1946 (1946-09-17)<br>* figures 1-6 *<br>-----                                                                            | 1-11,14,15<br>12,13                                        | TECHNICAL FIELDS SEARCHED (IPC)<br>B65D |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                       |                                                            |                                         |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                       | Date of completion of the search<br><b>24 January 2018</b> | Examiner<br><b>Weyand, Tim</b>          |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                                       |                                                            |                                         |

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 19 4616

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-01-2018

10

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| WO 2015151100 A1                          | 08-10-2015          | NONE                       |                     |
| US 2008290149 A1                          | 27-11-2008          | NONE                       |                     |
| DE 1097247 B                              | 12-01-1961          | NONE                       |                     |
| US 4058207 A                              | 15-11-1977          | NONE                       |                     |
| US 2407781 A                              | 17-09-1946          | NONE                       |                     |

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82