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**(54) A BLANK FOR FORMING A PACKAGE AND A PACKAGE**

ZUSCHNITT ZUR HERSTELLUNG EINER VERPACKUNG UND VERPACKUNG

ÉBAUCHE POUR LA FORMATION D'UN EMBALLAGE ET EMBALLAGE

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## Description

### Field of invention

**[0001]** The invention relates to a blank for forming a package. The blank is intended to form a package being especially, but not exclusively, suitable for carrying heavy loads. The invention also relates to such a package.

### Technical Background

**[0002]** When designing a package, it is often desirable to take into account a number of different design criteria. The package should e.g. often be designed such that it makes efficient use of the material, is easy to transport to the point of use, is easy to prepare for use, and provide a strong structure.

**[0003]** It is often desirable that the packages are designed in such a way that several packages can be stacked upon each other in a stable way. It is further also often desirable that the packages are designed such that they can be erected without the use of glue. Packages made from cardboard are often beneficial since they do not take up much space before they are erected, such as during transport to the site of use. There exist numerous attempts to address the above design criteria in connection to designing a package of cardboard material.

**[0004]** US3989181A discloses a partitioned container being made of paperboard and having self-locking top and bottom forming flaps. There is also disclosed a blank and a method of erecting the blank into a container. After being erected, the container is partitioned by internal panels and provides a stable container for stacking. The blank forming the container comprises several wall panels, hingedly secured along hinge lines to each other. The wall panels have bottom forming flaps, hingedly secured along hinge lines to the wall panels. Said bottom forming flaps are further connected to each other by fold lines and intermediate triangular panels, so as to form bellows when the blank is erected to a container.

**[0005]** US9731859 discloses a container with overlapping flap system and a container blank for making the same. The blank is made of paperboard. The blank consists of four side wall panels, attached by fold lines and to which bottom flaps are attached along fold lines. A first bottom flap is attached to a first side wall, wherein the first bottom flap has a middle fold line. A first pair of minor bottom flaps are connected to the bottom side of a second end wall panel wherein the first pair of minor bottom flaps are separated by a first minor bottom flap vertical slot, and wherein each minor bottom flap has a minor bottom flap fold line. A second bottom flap is attached to a third side wall, wherein the second bottom flap has a middle fold line. A second pair of minor bottom flaps are connected to the bottom side of a fourth side wall panel, wherein the second pair of minor bottom flaps are separated by a second minor bottom flap vertical slot, and wherein each second minor bottom flap has a minor bottom flap fold

line. When erecting the blank into a container, the first minor bottom flap vertical slot and the second minor bottom flap vertical slot are capable of receiving each bottom half of the first bottom flap and the second bottom flap, wherein the first bottom flap and the second bottom flap are folded toward the inner container portion along each bottom fold line and along each middle fold line.

**[0006]** US2006180643A discloses a container for a bag-in-box system where it is disclosed that, in order to facilitate folding of the blank into a container, the various panels are provided with handle-forming cut-outs. Another container is known from US6135347.

**[0007]** It may be noted that none of the prior art documents discloses a box which adequately addresses the combined set of design criteria that the box should make efficient use of the material, be easy to transport, be easy to erect, and provide a strong structure.

### Summary of invention

**[0008]** It is an object of the present invention to provide a blank which makes efficient use of the material, which is easy to transport, and which is easy to erect into a package, and which provides a package which is mechanically stable and has a strong structure.

**[0009]** To achieve at least this object and also other objects that will be obvious from the description, there is according to the present invention provided a blank for forming a package, the blank comprising

a set of side wall panels comprising a first, second, third and fourth side wall panel arranged consecutively one after another along a longitudinal direction and foldably connected to each other along fold lines extending in a transverse direction,  
 a first bottom panel foldably connected to the first side wall panel along a fold line extending in the longitudinal direction,  
 a second bottom panel foldably connected to the third side wall panel along a fold line extending in the longitudinal direction, wherein the second bottom panel is configured to be positioned beneath the first bottom panel when the blank has been erected into a package, and  
 two opposing side wall portions, each being foldably connected to a respective transversally extending side of the second bottom panel,  
 wherein the first bottom panel comprises two internal, inclined fold lines, wherein each internal, inclined fold line extends along a direction having a major component in the transverse direction, and wherein each internal, inclined fold line extends from a transversally extending side of the first bottom panel to a free, longitudinally extending side of the first bottom panel,  
 wherein each side wall portion comprises an internal, inclined fold line extending in a direction having a major component in the longitudinal direction, each

internal, inclined fold line extending from a longitudinally extending side of the side wall portion opposing the set of side wall panels to a respective free, transversally extending side of the side wall portion, and

wherein the second bottom panel is configured such that, when the blank is erected into a package, the side wall portions are folded relative to the second bottom panel and form together with the respective second and forth side wall panel two opposing double-walled side walls.

**[0010]** With such a design, it is possible to provide a strong package which is easy to erect, and which is suitable for carrying heavy loads. When erecting the package, the internal, inclined fold lines of the first bottom panel and of the two side wall portions allows for easy handling and reduces the risk that the bottom part being incorrectly folded or damaged. The internal, inclined fold lines create during the folding operation a space between the transversally extending side of the first bottom panel and the longitudinally extending side of each side wall portion, allowing them to fit close to each other in the erected state but with a reduced risk of them being damaged during folding. This configuration makes it easier for the user to erect the package. Erection of the package is facilitated since the edges and the triangular flaps formed by the fold lines of the first bottom panel will interact with the edges and triangular flaps formed by the associated fold lines of the side wall portions. This is accomplished by the provision of fold lines in both the first bottom panel and in the side wall portions in combination with the fact that the fold lines have a major component in the transverse direction respectively the longitudinal direction such that they will interact in the intended manner. Additionally, the bottom parts each originating at a respective one of two opposing side wall panels of the package and being folded one beneath the other allows for the bottom part to curve slightly when force is applied by the package being lifted with heavy load inside the package. This transfers some of the force from being applied to only the bottom part and its connection towards the sides solely as tearing forces, by transferring some of the force to the end walls of the package and by allowing the forces to be transmitted partly as pulling forces over the connection between the bottom parts and the side walls. This further increases the strength and decreases the risk of tearing of the bottom when force is being applied from heavy loads, which may happen if the bottom is designed such that the bottom is in one piece and no curvature of the bottom is possible, since the entire load then will be applied as tear forces at the connection between the bottom and the side walls. With the provided design, it is possible to provide a blank which is easy to transport between the time of use, and which is easy to erect into a package with a reduced risk of damaging the blank. Thereby, the blank and the package formed from the blank may be used a greater number

of times compared to prior art designs. This is especially useful if the blank and package is used as a moving box.

**[0011]** At least one, and preferably each, of the internal, inclined fold lines of the first bottom panel may originate at a respective one of corners created by the fold line extending in the longitudinal direction connecting the first side wall panel to the first bottom panel and the respective one of the free transversally extending sides. This configuration allows each flap created between each internal, inclined fold line and each transversally extending side of the first bottom panel to extend over the entire transversally extending side, thereby providing the advantage of reduced risk of damage for the entire transversally extending side.

**[0012]** At least one, and preferably each, of the internal, inclined fold lines of each of the side wall portions may originate at a free, outer end of each of a respective one of fold lines between the second bottom panel and a respective one of the side wall portions. This configuration allows each flap created between the internal, inclined fold line and each longitudinally extending side of each side wall portion to extend over the respective entire longitudinally extending sides, thereby providing the advantage of reduced risk of damage for the entire longitudinally extending sides. It may be noted that during erection of the package, the internal, inclined fold line of each side wall portion meets the internal, inclined fold line of the respective side of the first bottom panel. This configuration is such that the erection of the package can be made without damaging the corners of the first bottom panel or the side wall panels.

**[0013]** The first bottom panel may be provided with a cut-out configured to form a handle. The cut-out preferably extends in the longitudinal direction. The cut-out is preferably positioned across one of the internal, inclined fold lines of the first bottom panel. The cut-out is preferably positioned between a free corner of a free transversally extending side and a free longitudinally extending side and a centre point of the free longitudinally extending side. The cut-out is preferably positioned closer to the free corner of the free transversally extending side and the free longitudinally extending side than to the centre point of the free longitudinally extending side. The provision of a cut-out configured to form a handle simplifies the folding and unfolding of the package for the user by providing the cut-out as a handle to lift the first bottom panel during folding and unfolding. The various preferred features concerning the longitudinal extension, the positioning across one of the internal fold lines, and the positioning relative to the free corner, may be provided separately, in various permutations, or altogether and aids in facilitating access to the handle.

**[0014]** It may further be noted that the first bottom panel may have chamfered corners. This allows for a tight overlap of the first and second bottom panels, when erected, without the corners of the first bottom panel being folded which could happen if the corners of the first bottom panel are perfectly lining the corner between

the third side wall panel, the respective second and fourth side wall panel and the second bottom panel.

**[0015]** The second bottom panel may be provided with a cut-out configured to form a handle. The cut-out preferably extends in the longitudinal direction. The cut-out in the second bottom panel is preferably positioned between a fold line to the side wall portion and a centre point of a free longitudinally extending side of the second bottom panel. The cut-out is preferably positioned closer to the corner of the fold line to the side wall portion and the free longitudinally extending side of the bottom panel, than to the centre point of the free longitudinally extending side of the second bottom panel. It may be noted that the various preferred features may be provided separately, in various permutations, or altogether. This provision of a cut-out configured to form a handle simplifies the folding and unfolding of the package by providing the user with a handle to use for lifting the second bottom panel.

**[0016]** In one embodiment of the invention, each side wall portion is being separably connected to a respective one of the second and fourth side wall panel, preferably by a perforated separation line. The blank in this configuration will be comparably easy to keep flat and without extending parts. This allows for easy handling while transporting the blank before initial erection to form a package.

**[0017]** In a preferred embodiment, the blank is made of a paper-based material, preferably of a corrugated cardboard material. This material will provide a light weight package, yet suitable for carrying heavy loads and it may be mechanically stable. The paper-based material, such as a corrugated cardboard material, may provide a blank that is easy to erect and easy to transport to the site before use. A blank of a paper-based material, such as a corrugated cardboard material, is typically environmentally friendly and can be recycled in a simple manner.

**[0018]** The blank may further comprise:

a set of top panels comprising a first, second, third and fourth top panel, each top panel being foldably connected to an associated side wall panel, wherein the second and fourth side wall panels each comprises a cut-out configured to form a handle in the side wall panel, wherein the respective second and fourth top panels each comprises a cut-out, wherein, when the blank is erected into a package, the second and fourth top panels are folded relative to the second and fourth side wall panels such that the cut-out of the respective side wall panel and the cut-out of the associated top panel overlap and together form a handle, wherein the third top panel comprises two locking flaps, each locking flap being connected to a respective transversally extending side of the third top panel and being foldable relative to the third top panel along fold lines extending in the transverse direction, wherein each locking flap has a longitudinal exten-

sion from the third top panel past an extension of the fold line between the third side wall panel and the second side wall panel, respectively past an extension of the fold line between the third side wall panel and the fourth side wall panel,

wherein when the blank is erected into a package, the package is configured to be put in a closed state by folding the first and third top panels such that the third top panel is configured to at least partly overlap and be positioned above the first top panel, and by folding the locking flaps into the cut-outs forming the handle and thereby locking the package in a closed state.

**[0019]** The third top panel is configured to be folded such that it positions a portion of the first top panel underneath it in the erected closed state, thereby forming an essentially flat top of the package. Thus, the package, when in the closed state, is provided with a flat top, such that the provided package may be easy to stack. By such a configuration of the third top panel, the risk of unintentional unfolding and opening of the package may be prevented during stacking thereof.

**[0020]** When the locking flaps are folded into the cut-outs of the respective second and fourth side wall panels, a smooth handle is formed that may prevent any tearing of the blank when the package is lifted. The combination of providing the internal, inclined fold lines and the locking flaps is especially useful since the internal, inclined fold lines during the folding operation allowing the transversally extending side of the first bottom panel and the longitudinally extending side of each side wall portion to fit close to each other in the erected state such that the intended rectangularity of the package may be achieved with tight tolerances which in turn is used to allow the locking flaps to also fit with tight tolerances, thereby providing a strong locking effect. By providing a locking effect also at the top part of the package, dynamic deformations of the package during transportation is reduced. Such reduction of dynamic deformations will reduce the dynamic load carried by the bottom part of the package, thereby reducing the risk of undesired wear on the edges of the first and second bottom panels. Thereby the provision of locking flaps will increase the number of times the bottom will provide the desired tight tolerances. This is especially useful considering that the package is especially adapted to be used as a moving box, where it is advantageous if the cost of the box may be allocated to an increased number of occasions of use.

**[0021]** With such a design, it is possible to provide a strong package that is easy to erect, and which is suitable for carrying heavy loads. Any unintentional tearing of the top of the package may be reduced due to the configuration of the top panels. Any unintentional unfolding of the top panels when handling the package may be reduced as a result of the locking panels being folded into the cut-outs of the side wall panels. Tearing of the handle structure and thereby also tearing of the blank during

lifting or handling thereof may be reduced with the provided package. With the provided design, it is possible to provide a blank which is easy to transport between the time of use, and which is easy to erect into a package with a reduced risk of damaging the blank. Thereby, the blank and the package formed from the blank may be used a greater number of times compared to prior art designs. This is especially useful if the blank and package is used as a moving box.

**[0022]** Each locking flap may comprise an internal fold line having an extension in the transverse direction and being configured to, when the blank has been erected to the package, be folded inwards such that an outer part is configured to be folded into the cut-outs forming the handle and thereby locking the package in the closed state. By the provision of the internal fold line of the locking flap, erection of the package may be facilitated. By locking the outer part towards an inside of the package, any unintentional unfolding of the locking flaps may be prevented.

**[0023]** A first distance may be defined by the longitudinal extension of the locking flap past the extension of the fold line between the third side wall panel and the second side wall panel and the internal fold line of the locking flap, respectively the longitudinal extension of the locking flap past the extension of the fold line between the third side wall panel and the fourth side wall panel and the internal fold line of the locking flap.

**[0024]** A second distance may be defined by a distance between the cut-out in the second top panel and the fold line between the second side wall panel and the second top panel, respectively a distance between the cut-out of the fourth top panel and the fold line between the fourth side wall panel and the fourth top panel.

**[0025]** The first distance may correspond to, and may preferably be equal to, the second distance. By such a configuration, the internal fold line of the locking flap may become folded about an edge of the cut-out. Thereby, the handling of the package in the erected, and closed state, may be facilitated. Unintentional unfolding of the locking flaps and therewith the top panel may be avoided.

**[0026]** A third distance may be defined by a distance between the fold line between the third side wall panel and the third top panel and a longitudinally extending side of the locking flap facing the third side wall panel.

**[0027]** A fourth distance may be defined by a distance between the cut-out of the second top panel and the extension of the fold line between the third side wall panel and the second side wall panel, respectively by a distance between the cut-out of the fourth top panel and the extension of the fold line between the third side wall panel and the fourth side wall panel.

**[0028]** The third distance may correspond to and may preferably be equal to the fourth distance. By such a configuration, when the package is about to be put in a closed state the locking flap may be snugly inserted alongside an edge, of the respective cut-out, being closest to the third top panel. The risk of unintentional

unfolding of the locking flaps and therewith the top panel may thereby be reduced. Thereby, there is achieved a tight locking effect keeping the third top panel snugly in place. Moreover, the outer portion of the locking flap, preferably having a greater transversal extension than the other parts of the locking flap, may be only marginally larger than the other parts and still provide a distinct locking effect.

**[0029]** The blank may made of a paper-based material. Preferably the blank is made of a corrugated cardboard material. Paper-based material will provide a light weight package, yet suitable for carrying heavy loads. By the provision of a package as disclosed made of paper-based material, a mechanically stable package may be provided. The paper-based material, such as a corrugated cardboard material, may provide a blank that is easy to erect and easy to transport to the point of use. A blank of a paper-based material, such as a corrugated cardboard material, is typically environmentally friendly and can be recycled in a simple manner.

**[0030]** Each cut-out of the second and fourth side wall panels may have a shape corresponding to a shape of the associated cut-out of the respective second and fourth top panel. It is to be noted that by the shape of the cut-outs of the second and fourth side wall panels being corresponding to the respective cut-out of the second and fourth top panel, the width and/or height of the cut-outs may differ. By way of example, the cut-out of the respective second and fourth side wall panel may have a greater width than the cut-out of the respective second and fourth top panel. The sizes of the cut-outs may differ slightly, such that the locking flaps of the third top panel are inserted into the handles and locked in a desirous position. Thereby any unintentional unfolding of the locking flaps in the closed state may be prevented. It is to be noted that by the cut-outs having corresponding shapes but varying size, the locking flap may easily be inserted through the first cut-out and then lock relative to the second cut-out.

**[0031]** When cutting the blank, each locking flap may be cut from a geometrical rectangular extension of the respective second and fourth top panel. By such a configuration of the blank, the blank may be cut as a single piece blank. The amount of material needed for forming the package is reduced by the locking flaps essentially being formed by cuts of the respective second and fourth top panel. It is preferred that the locking flaps are cut such that no critical part of the respective second and fourth top panel is harmed. Thus, a package making efficient use of material may be provided while still providing mechanical stability and a strong structure.

**[0032]** The inventive concept may in short be said to relate to a blank for forming a package comprising a blank for forming a package, the blank comprising a set of side wall panels, a first bottom panel and a second bottom panel, wherein the second bottom panel is configured to be positioned beneath the first bottom panel when the blank has been erected into a package. The blank further

comprises two opposing side wall portions, each being foldably connected to the second bottom panel. The first bottom panel comprises two internal, inclined fold lines, wherein each internal, inclined fold line extends along a direction having a major component in the transverse direction, and wherein each internal, inclined fold line extends from a transversally extending side of the first bottom panel to a free, longitudinally extending side of the first bottom panel. Each side wall portion comprises an internal, inclined fold line extending in a direction having a major component in the longitudinal direction, each internal, inclined fold line extending from a longitudinally extending side of the side wall portion opposing the set of side wall panels to a respective free, transversally extending side of the respective side wall portion.

**[0033]** Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc]" are to be interpreted openly as referring to at least one instance of said element, device, component, means, step, etc., unless explicitly stated otherwise.

#### Brief description of drawings

**[0034]** The invention will by way of example be described in more detail with reference to the appended schematic drawings, which shows a presently preferred embodiment of the invention.

Figure 1 discloses a blank configured to form a package.

Figure 2 discloses a blank in an assembled but still flat-laid state.

Figure 3 discloses a package formed from the blank in figures 1 and 2.

Figure 4 discloses the package of figure 3 with closed lid.

Figure 5 discloses a detail of a package formed from the blank in figures 1 and 2 during the erecting procedure.

#### Detailed description of preferred embodiments

**[0035]** The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which currently preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided for thoroughness and completeness, and to convey examples within the scope of the invention to the skilled person.

**[0036]** With reference to figures 1-2, there is disclosed a blank 100 for forming a package 200, the blank comprising a set of four side wall panels; namely a first 101, a second 102, a third 103, and a fourth 104 side wall panel

arranged in the blank 100 consecutively after each other along a longitudinal direction L and foldably connected to each other along fold lines extending in a transversal direction T. As shown in figure 2, the blank 100 is configured to be folded at the fold line between the first side wall panel 101 and the second side wall panel 102 and at the fold line between the third side wall panel 103 and the fourth side wall panel 104 to be assembled to a flat-laid but assembled state. A fifth wall panel 105 is provided at a transversally extending side of the fourth side wall panel 104 and is attached to the first side wall panel 101 or vice versa. It may be attached using glue, staples, or any other kind of attachment method commonly used for paper-based materials. In this assembled, but still flat-laid configuration, the blank 100 is prepared to be easy to transport and store before use. It may be noted that in figures 1-2, dashed lines typically represent fold lines and solid lines typically represents cut-lines where the material is cut and separated or perforation-lines where the material is perforated and intended to be separated.

**[0037]** The blank 100 also comprises a first bottom panel 106 and a second bottom panel 108. Each bottom panel 106, 108 is foldably connected to the respective first side wall panel 101 and the third side wall panel 103 along fold lines extending in the longitudinal direction L.

**[0038]** The first bottom panel 106 comprises two internal, inclined fold lines 107a-b. The internal, inclined fold lines 107a-b extend along a direction having a major component in the transverse direction T. Further, each of the internal, inclined fold lines extend from a respective transversally extending side 106a, 106b of the first bottom panel 106 to a free, longitudinally extending side 106c of the first bottom panel 106. In a preferred embodiment, the internal, inclined fold lines originate at each of the corners created by the fold line FL16 extending in the longitudinal direction L connecting the first side wall panel 101 to the first bottom panel 106 and each of the free transversally extending sides 106a, 106b. Further, the free corners 106ac, 106bc of the free longitudinally extending side of the first bottom panel 106 may be chamfered.

**[0039]** In one embodiment, the first bottom panel 106 comprises a cut-out 112a, configured to form a handle. The cut-out 112a preferably extends in the longitudinal direction L. The cut-out 112a may be positioned at a position across one of the internal, inclined fold lines 107b. The cut-out 112a may be positioned between the free corner 106ac of the free transversally extending side 106b and the free longitudinally extending side 106c and a centre point of the free longitudinally extending side 106c, and is preferably positioned closer to the free corner 106ac of the free transversally extending side 106b and the free longitudinally extending side 106c than to the centre point of the free longitudinally extending side 106c.

**[0040]** Two opposing side wall portions 110a, 110b are each foldably connected to a respective transversally extending side of the second bottom panel 108. Each

of the side wall portions 110a, 110b may be separate from or may be separably connected to the respective one of the second side wall panel 102 and fourth side wall panel 104, preferably by a perforated separation line. As shown in figure 2, this configuration allows for the blank to be flat and facilitates securing that no parts extend from the blank 100 when the blank 100 is transported and before a first-time erection into a package 200. Further, each of the side wall portions 110a, 110b comprises an internal, inclined fold line 111a, 111b extending in a direction having a major component in the longitudinal direction L. Each of the internal, inclined fold lines 111a, 111b extends from a longitudinally extending side 110ac, 110bc of the side wall portion 110a, 110b opposing the set of side wall panels 102, 104 to a free, transversally extending side 110aa, 110bb of the side wall portion 110a, 110b. In a preferred embodiment, each of the internal, inclined fold lines 111a, 111b of each of the side wall portion 110a, 110b originates at the free, outer end FL80a', FL80b' of each of the fold line FL80a, FL80b between the second bottom panel 108 and each side wall portion 110a, 110b.

**[0041]** The second bottom panel 108 may comprise a cut-out 112b configured to form a handle. The cut-out 112b preferably extends in the longitudinal direction L. The cut-out 112b may be positioned between a fold line FL80b to the side wall portion 110b and a centre point of a free longitudinally extending side 108c of the second bottom panel 108. The cut-out 112b is preferably positioned closer to the fold line FL80b to the side wall portion 110b than to the centre point of the free longitudinally extending side 108c of the second bottom panel 108.

**[0042]** The second side wall panel 102 and fourth side wall panel 104 may comprise a cut-out 214 configured to form a handle. The cut-out 214 preferably extends in the longitudinal direction L.

**[0043]** From Figure 1, the locking flap 105 at the free transversally extending side of the fourth side wall panel 104 may be attached to the free transversally extending side of the first side wall panel 101. This may be accomplished by e.g. using glue or any other adhesive or by mechanical attachment such as by stapling. The result is a flat-laid intermediate state as shown in figure 2.

**[0044]** Figure 3 shows the blank being erected to a package 200. When the blank 100 is erected so as to configure it into a package 200, the first side wall panel 101 becomes positioned opposite to the third side wall panel 103, and the second side wall panel 102 becomes positioned opposite to the fourth side wall panel 104 whereby the side wall panels 101, 102, 103, 104 define the package volume. Using the cut-out 112a as a handle, the first bottom panel 106 is folded into the package volume relative to the first side wall panel 101. The side wall portions 110a, 110b are folded relative to the second bottom panel 108 and moved towards the volume of the package 200 by folding the second bottom panel 108 relative to the third side wall panel 103 using the cut-out 112b as a handle. The side wall portions 110a, 110b are

folded relative to the second bottom panel 108 such that the side wall portions 110a, 110b becomes positioned parallel to the respective inside of the second side wall panel 102 and the fourth side wall panel 104. The first bottom panel 106 is folded back downwardly towards the second bottom panel 108, wherein each internal, inclined fold line 107a, 107b of the first bottom panel 106 are folded so as to form flaps created from folding pointing towards the inside of the first side wall panel 101, thereby facilitating passage of the first bottom panel 106 between the side wall portions 110a, 110b extending alongside the insides of the second and fourth side walls 102, 104.

**[0045]** Folding the side wall portions 110a, 110b at their respective internal, inclined fold lines 111a, 111b such that the outer flaps created from folding are pointing towards the second side wall panel 102 and fourth side wall panel 104 facilitates folding the first bottom panel 106 down into the volume and further down to be placed on top of the second bottom panel 108.

**[0046]** With reference to figures 2, 3, and 5, the package is designed to be erected using the above described procedure. The procedure is explained in more detail below.

i. The two longer side wall panels 101, 103 are moved relative to each other such that the side wall panels 101, 102, 103, 104 forms a rectangular volume with their bottom edges facing upwardly, i.e. the package is initially upside down.

ii. The first bottom panel 106 is folded such that it basically covers the upwardly facing opening formed by the upwardly facing bottom edges of the side wall panels.

iii. The side wall portions 110a, 110b are folded inwardly into flat abutment with the second bottom panel 108 such that the side wall portions 110a, 110b abuts the inside surface of the second bottom panel 108.

iv. The second bottom panel 108 is folded on top of the first bottom panel 106 such that the side wall portions 110a, 110b becomes sandwiched between the outside surface of the first bottom panel 106 and the inside surface of the second bottom panel 108.

v. The package is flipped around such that it now is oriented in the intended orientation and rests on the outside surface of the second bottom panel 108.

vi. The first bottom panel 106 is folded upwardly towards the inside surface of the first side wall panel 101. Note: it is with the inventive concept only necessary to fold the first bottom panel 106 upwardly such that the user can reach past it and get hold of a side wall portion 110a.

vii. One of the side wall portions 110a is folded upwardly towards the associated side wall panel 104.

01 During this upwardly folding the triangular flap outside fold line 111a will abut the first bot-

tom panel 106 and slightly trail the main portion of the side wall portion 110a.

02 Once the edge formed by the fold line 111a passes the edge formed by the fold line 107b, the triangular flap formed by the fold line 107b will be folded relative to the first bottom panel 106 towards the corner of the package.

03 The flap formed by the fold line 111a will continue to trail the main portion of the side wall portion 110a and will slide with its outer edge along the flap formed by the fold line 107b.

04 When the first side wall portion 110a has been folded almost all the way towards the side wall panel 104, the triangular flap formed by the fold line 111a will point towards the first bottom panel 106 and will with its outer edge abut the intended bottom surface of the flap formed by the fold line 107b. The first bottom panel 106 will lean slightly inward into the volume but will be held in position by the interaction of the triangular flaps. This situation is shown in Figure 5.

viii. The second side wall portion 110b can now easily be folded towards the associated side wall panel 102, without the user having to hold the first bottom panel 106 nor the first side wall portion 110a, until the corresponding positioning of the flaps is also automatically reached at the other corner.

ix. The first bottom panel 106 can now easily be folded downwardly again to form a bottom.

01 The first bottom panel 106 is easily accessible since it already leans slightly inwardly into the volume.

02 There is, compared to prior art, no need to push the side wall portions 110a, 110b tightly against the side wall panels 102, 104 to allow the first bottom panel 106 to pass the side wall portions 110a, 110b.

03 The triangular flaps formed by the fold lines 111a, 111b will initially be folded slightly further into the volume in the same direction as the movement of the first bottom panel 106.

04 The triangular flaps formed by the fold lines 107a, 107b will initially trail the first bottom panel 106 a bit more than shown in Figure 5. Once the outer edge of the flap formed by the fold lines 107a, 107b passes the outer edge of the flap formed by the fold lines 111a, 111b the bottom panel 106 is released and can be folded to form the bottom of the package.

**[0047]** Figure 5 discloses the state of the package after step vii (01-04) has been completed. It may be noted that the package may be left in this position.

**[0048]** The fact that the flaps and edges formed by the fold lines will interact, significantly facilitates the erection of the package. It is e.g. no longer necessary to keep the

first bottom panel 106 in position after the first side wall portion 110a has been folded upwardly; it is automatically kept in place. Moreover, the first bottom panel 106 is allowed to lean inwardly into the volume such that it is easily accessible. Furthermore, it is e.g. no longer necessary for the user to position the side wall portions 110a, 110b tightly against the side wall panels 102, 104 before first bottom panel 106 can be folded down into its final position.

**[0049]** The side wall portions 110a, 110b are provided with fold lines 111a, 111b. The fold lines 111a, 111b are oriented with a major component in the longitudinal direction L, which results in that there are formed inwardly extending flaps formed by the portions outside the fold lines 111a, 111b that can interact with the flaps of the first bottom panel 106. Moreover, the inwardly extending flaps will also automatically push the side wall portions 110a, 110b outwardly against the side wall panels 102, 104 directly when the first bottom panel 106 is folded downwardly which in a sense directly corrects any non-correct positioning of the side wall portions 110a, 110b.

**[0050]** It may be noted that the longitudinal extension of the side wall portions 110a, 110b is such that the free ends 110aa, 110bb essentially coextends with the fold lines between the first and fourth side wall panels 101, 104 respectively between the first and second side wall panels 101, 102. The bottom panels 106, 108 and the side wall portions 110a, 110b have free ends 106c, 108c, 110ac, 110bc extending at a transversal distance from the first, second, third and fourth side wall panels 101, 102, 103, 104 essentially being equal to or marginally smaller than the longitudinal extension of the second and fourth side wall panels 102, 104 such that the bottom panels 106, 108 and the side wall portions 110a, 110b may be folded into the volume of the package 200 and still cover the bottom and form stable connections between the side wall panels 101, 103.

**[0051]** The blank 100 may be made of a paper-based material. Preferably the blank 100 is made of a corrugated cardboard material. Paper-based material will provide a light weight package, yet suitable for carrying heavy loads. By the provision of a package 200 as disclosed made of paper-based material, a mechanically stable package may be provided. The paper-based material, such as a corrugated cardboard material, may provide a blank 100 that is easy to erect and easy to transport to the point of use. A blank 100 of a paper-based material, such as a corrugated cardboard material, is typically environmentally friendly and can be recycled in a simple manner.

**[0052]** The blank 100 may further comprise a set of top panels. The set of top panels comprises a first, second, third and a fourth top panel 201, 202, 203, 204. Each top panel 201, 202, 203, 204 is foldably connected to an associated side wall panel 101, 102, 103, 104.

**[0053]** The third top panel 203 comprises two locking flaps 216. Each locking flap 216 is connected to a respective transversally extending side of the third top

panel 203 and is foldable relative to the third top panel 203 along fold lines extending in the transverse direction T. Each locking flap 216 has a longitudinal extension from the third top panel 203 past an extension of the fold line FL23 between the third side wall panel 103 and the second side wall panel 102, respectively past an extension of the fold line FL34 between the third side wall panel 103 and the fourth side wall panel 104.

**[0054]** The second and fourth side wall panels 102, 104 each comprises a cut-out 214 configured to form a handle in the side wall panel 102, 104. The respective second and fourth top panel 202, 204 each comprises a cut-out 212. When erecting the package, the second and fourth top panels 202, 204 are configured to be folded relative to the second and fourth side wall panels 102, 104 such that the cut-out 214 of the respective side wall panel 102, 104 and the cut-out 212 of the associated top panel 202, 204 overlap and together form a handle.

**[0055]** With reference to Figures 3-4, there is disclosed a package formed by erecting the blank 100. Figure 3 discloses the package during erection of the blank 100, and Fig 4 discloses the package 200 in the closed state. When the blank 100 is erected into a package 200, the package 200 is configured to be put in a closed state by folding the first and third top panels 201, 203 such that the third top panel 203 is configured to at least partly overlap and is positioned above the first top panel 201, and by folding the locking flaps 216 into the cut-outs 214, 212. The locking flaps 216 are folded inwards into the cut-outs, and then preferably also folded relative to the respective side wall panel 102, 104 in an upward motion. Thereby the locking flaps 216 form an upper, smooth part of the handle and also locks the package 200 in the closed state. The third top panel 203 partly overlaps the first top panel 201. It may be noted that the third top panel 203 only presents a single edge whereby an almost flat exterior of the top of the package 200 is formed when the package 200 is in the closed state. By such flat top of the package 200, the package is easily stackable, and there is a reduced risk of packages catching the flaps or panels of other packages during stacking and handling, which would increase the risk of unintentional opening of packages or unintentional damaging of packages or increase the risk of incorrect relative positioning when stacking the packages.

**[0056]** Each locking flap 216 may comprise an internal fold line FL216 having an extension in the transverse direction T. The internal fold line FL216 may provide the locking flap 216 with an outer part 216b. When the blank 100 has been erected into the package, the locking flap 216 is configured to be folded inwards such that the outer part 216b may be folded into the cut-outs 212, 214 forming the handle and thereby lock the package 200 in the closed state. The outer portion 216b preferably has an extension in the transverse direction T being greater than the rest of the locking flap 216, at least wider than the part of the locking flap 216 where the internal fold line FL216 is provided. The internal fold line FL216 is pre-

ferably formed of more than one parallel fold line to allow the part of the locking panel 216 being provided with the internal fold lines 216 to be folded into the cut-outs 212, 214 and to allow the outer part 216b to be folded upwardly alongside the inner side of the respective second and fourth top panel 202, 204.

**[0057]** When cutting the blank 100, each locking flap 216 may be cut from a geometrical rectangular extension of the respective second and fourth top panel 202, 204.

**[0058]** The cut-out 214 of the second and fourth side wall panels 102, 104 may each have a shape corresponding to the shape of the associated cut-out 212 of the respective second and fourth top panel 202, 204. The cut-outs 214 of the second and fourth side wall panels 102, 104 may be wider than the cut-out 212 of the respective second and fourth top panel 202, 204. Hence, the outer part 216b of the locking flap can easily pass through the cut-out 214 of the respective second and fourth side wall panels 102, 104, and lock relative to the cut-out 212 of the respective second and fourth top panel 202, 204.

**[0059]** As is evident from Figures 1-2, the cut-outs 214 forming a handle of the side wall panels may be partially a cut-out comprising a fold line on a side facing the second respective fourth top panel 202, 204. By such a configuration, the partly cut-out 214 may be folded inwards when the package 200 is erected to form a mechanical locking mechanism between the respective second or fourth side wall panel 102, 104 and the respective second or fourth top panel 202, 204.

**[0060]** The longitudinal extension of the locking flap 216 past the extension of the fold line FL23 between the third side wall panel 103 and the second side wall panel 102 and the internal fold line FL216 of the locking flap 216, respectively the longitudinal extension of the locking flap 216 past the extension of the fold line FL34 between the third side wall panel 103 and the fourth side wall panel 104 and the internal fold line FL216 of the locking flap 216 may be defined as a first distance D1.

**[0061]** A distance between the cut-out 212 in the second top panel 202 and the fold line FL2 between the second side wall panel 102 and the second top panel 202, respectively a distance between the cut-out 212 of the fourth top panel 204 and the fold line FL4 between the fourth side wall panel 104 and the fourth top panel 204 may be defined as a second distance D2.

**[0062]** The first distance D1 may correspond to the second distance D2. It is preferred that the first distance D1 is equal to the second distance D2. By such a design, the internal fold line FL216 of the locking flap 216 becomes folded about an edge of the cut-out 212 when erecting the package. By the first distance D1 being equal to the second distance D2, the locking mechanism of the locking flap 216 may be provided having a high mechanical stability.

**[0063]** A distance between the fold line FL3 between the third side wall panel 103 and the third top panel 203 and a longitudinally extending side of the locking flap 216 facing the third side wall panel 103 may define a third

distance D3.

**[0064]** A distance between the cut-out 212 of the second top panel 202 and the extension of the fold line FL23 between the third side wall panel 103 and the second side wall panel 102, respectively a distance between the cut-out 212 of the fourth top panel 204 and the extension of the fold line FL34 between the third side wall panel 103 and the fourth side wall panel 104 may define a fourth distance D4.

**[0065]** The third distance D3 may correspond to the fourth distance D4. It is preferred that the third distance D3 is equal to the fourth distance D4. By such a configuration the locking tab 216 may be snugly inserted around an edge of the cut-outs 212 facing the third top panel 103 when the package 200 is about to be put in a closed state.

**[0066]** It is contemplated that there are numerous modifications of the embodiments described herein, which are still within the scope of the invention as defined by the appended claims.

**[0067]** The side wall portions 110a, 110b may for instance comprise a cut-out preferably extending in the transversal direction T. The cut-out may be placed centrally on the side wall portion as seen along the free transversally extending side of each side wall portion. The cut-out of the side wall portions 110a, 110b may be configured such that each coincide with the respective cut-out 214 of the second side wall panel 102 and fourth side wall panel 104. This configuration allows the bottom part to, in a sense, be locked to the side walls, thereby further increasing the strength of the package 200. The provision of such a cut-out is especially useful if the cut-out 214 is positioned fairly low on the respective side wall panel 102, 104 such that the longitudinal extension of the respective side wall portion 110a, 110b, as seen in a flat-laid state of the blank 100, is such that the side wall portions 110a, 110b will extend upwardly along the inside of the respective side wall 102, 104 to a height above the cut-outs 214 when the blank 100 is folded into a package 200. In the disclosed embodiment, the cut-outs 214 are provided fairly high compared to the longitudinal extension of the side wall portions 110a, 110b such that the side wall portions 110a, 110b will not reach the cut-outs 214 when the blank 100 is folded into a package 200.

**[0068]** The person skilled in the art realizes that the present invention by no means is limited to the preferred embodiments described above. On the contrary, many modifications and variations are possible within the scope of the appended claims.

**[0069]** Additionally, variations to the disclosed embodiments can be understood and effected by the skilled person in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these

measured cannot be used to advantage.

## Claims

1. A blank (100) for forming a package (200), the blank (100) comprising:

a set of side wall panels comprising a first, second, third and fourth side wall panel (101, 102, 103, 104) arranged consecutively one after another along a longitudinal direction (L) and foldably connected to each other along fold lines extending in a transverse direction (T), a first bottom panel (106) foldably connected to the first side wall panel (101) along a fold line extending in the longitudinal direction (L), a second bottom panel (108) foldably connected to the third side wall panel (103) along a fold line extending in the longitudinal direction (L), wherein the second bottom panel (108) is configured to be positioned beneath the first bottom panel (106) when the blank (100) has been erected into a package (200), and two opposing side wall portions (110a, 110b), each being foldably connected to a respective transversally extending side of the second bottom panel (108), and wherein the second bottom panel (108) is configured such that, when the blank (100) is erected into a package (200), the side wall portions (110a, 110b) are folded relative to the second bottom panel (108) and form together with the respective second (102) and fourth (104) side wall panel two opposing double-walled side walls, **characterized in that** the first bottom panel (106) comprises two internal, inclined fold lines (107a, 107b), wherein each internal, inclined fold line (107a, 107b) extends along a direction having a major component in the transverse direction (T), and wherein each internal, inclined fold line (107a, 107b) extends from a transversally extending side (106a, 106b) of the first bottom panel (106) to a free, longitudinally extending side (106c) of the first bottom panel (106), wherein each side wall portion (110a, 110b) comprises an internal, inclined fold line (111a, 111b) extending in a direction having a major component in the longitudinal direction (L), each internal, inclined fold line (111a, 111b) extending from a longitudinally extending side (110ac, 110bc) of the side wall portion (110a, 110b) opposing the set of side wall panels (101 - 104) to a respective free, transversally extending side (110aa, 110bb) of the respective side wall portion (110a, 110b).

2. The blank (100) according to claim 1, wherein at least one, preferably each, of the internal, inclined fold lines (107a, 107b) of the first bottom panel (106) originates at a respective one of corners created by the fold line (FL16) extending in the longitudinal direction (L) connecting the first side wall panel (101) to the first bottom panel (106) and the respective one of the free transversally extending sides (106a, 106b).
3. The blank (100) according to any one of claims 1-2, wherein at least one, preferably each of the internal, inclined fold lines (111a, 111b) of each of the side wall portions (110a, 110b) originates at a free, outer end (FL80a', FL80b') of a respective one of fold lines (FL80a, FL80b) between the second bottom panel (108) and a respective one of the side wall portions (110a, 110b).
4. The blank (100) according to any one of claims 1-3, wherein the first bottom panel (106) is provided with a cut-out (112a) configured to form a handle, the cut-out (112a) preferably extending in the longitudinal direction (L).
5. The blank (100) according to claim 4, wherein the cut-out (112a) in the first bottom panel (106) is positioned across one of the internal, inclined fold lines (107b).
6. The blank (100) according to claim 4 or 5, wherein the cut-out (112a) is positioned between a free corner (106ac) of a free transversally extending side (106b) and a free longitudinally extending side (106c) and a centre point of the free longitudinally extending side (106c), preferably closer to the free corner (106ac) than to the centre point of the free longitudinally extending side (106c).
7. The blank (100) according to any one of claims 1-6, wherein the second bottom panel (108) is provided with a cut-out (112b) configured to form a handle, the cut-out (112b) preferably extending in the longitudinal direction (L).
8. The blank (100) according to claim 7, wherein the cut-out (112b) in the second bottom panel (108) is positioned between a fold line (FL80b) to the side wall portion (110b) and a centre point of a free longitudinally extending side (108c) of the second bottom panel (108), preferably closer to the fold line (FL80b) to the side wall portion (110b) than to the centre point of the free longitudinally extending side (108c) of the second bottom panel (108).
9. The blank (100) according to any one of claims 1-8, wherein each side wall portion (110a, 110b) being separably connected to a respective one of the second (102) and fourth (104) side wall panel, preferably by a perforated separation line.
10. The blank (100) according to any one of claims 1-9, wherein the blank (100) is made of a paper-based material, preferably of a corrugated cardboard material.
11. The blank (100) according to any one of claims 1-10, wherein the blank (100) further comprises:  
a set of top panels comprising a first, second, third and fourth top panel (201, 202, 203, 204), each top panel (201, 202, 203, 204) being foldably connected to an associated side wall panel (101, 102, 103, 104), wherein the second and fourth side wall panels (102, 104) each comprises a cut-out (214) configured to form a handle in the side wall panel (102, 104), wherein the respective second and fourth top panels (202, 204) each comprises a cut-out (212), wherein, when the blank (100) is erected into a package (200), the second and fourth top panels (202, 204) are folded relative to the second and fourth side wall panels (102, 104) such that the cut-out (214) of the respective side wall panel (102, 104) and the cut-out (212) of the associated top panel (202, 204) overlap and together form a handle, wherein the third top panel (203) comprises two locking flaps (216), each locking flap (216) being connected to a respective transversally extending side of the third top panel (203) and being foldable relative to the third top panel (203) along fold lines extending in the transverse direction (T), wherein each locking flap (216) has a longitudinal extension from the third top panel (203) past an extension of the fold line (FL23) between the third side wall panel (103) and the second side wall panel (102), respectively past an extension of the fold line (FL34) between the third side wall panel (103) and the fourth side wall panel (104), wherein when the blank (100) is erected into a package (200), the package (200) is configured to be put in a closed state by folding the first and third top panels (201, 203) such that the third top panel (203) is configured to at least partly overlap and be positioned above the first top panel (201), and by folding the locking flaps (216) into the cut-outs (214, 212) forming the handle and thereby locking the package (200) in a closed state.
12. The blank (100) according to claim 11, wherein each locking flap (216) comprises an internal fold line

(FL216) having an extension in the transverse direction (T) and being configured to, when the blank (100) has been erected to the package (200), be folded inwards such that an outer part (216b) is configured to be folded into the cut-outs forming the handle and thereby locking the package (200) in the closed state.

13. The blank (100) according to claim 12, wherein a first distance (D1) is defined by the longitudinal extension of the locking flap (216) past the extension of the fold line (FL23) between the third side wall panel (103) and the second side wall panel (102) and the internal fold line (FL216) of the locking flap (216), respectively the longitudinal extension of the locking flap (216) past the extension of the fold line (FL34) between the third side wall panel (103) and the fourth side wall panel (104) and the internal fold line (FL216) of the locking flap (216),

wherein a second distance (D2) is defined by a distance between the cut-out (212) in the second top panel (202) and the fold line (FL2) between the second side wall panel (102) and the second top panel (202), respectively a distance between the cut-out (212) of the fourth top panel (204) and the fold line (FL4) between the fourth side wall panel (104) and the fourth top panel (204), and

wherein the first distance (D1) corresponds to, and is preferably equal to, the second distance (D2).

14. The blank (100) according to any one of claims 11-13, wherein a third distance (D3) is defined by a distance between the fold line (FL3) between the third side wall panel (103) and the third top panel (203) and a longitudinally extending side of the locking flap (216) facing the third side wall panel (103), and

wherein a fourth distance (D4) is defined by a distance between the cut-out (212) of the second top panel (202) and the extension of the fold line (FL23) between the third side wall panel (103) and the second side wall panel (102), respectively by a distance between the cut-out (212) of the fourth top panel (204) and the extension of the fold line (FL34) between the third side wall panel (103) and the fourth side wall panel (104), and

wherein the third distance (D3) corresponds to, and is preferably equal to, the fourth distance (D4).

15. A package (200) formed by erecting the blank (100) of any one of claims 1-14 into a package (200).

## Patentansprüche

1. Zuschnitt (100) zum Bilden einer Verpackung (200), der Zuschnitt (100) umfassend:

einen Satz von Seitenwandplatten, umfassend eine erste, zweite, dritte und vierte Seitenwandplatte (101, 102, 103, 104), die entlang einer Längsrichtung (L) hintereinander angeordnet und entlang sich in Querrichtung (T) erstreckender Faltlinien faltbar miteinander verbunden sind,

eine erste Bodenplatte (106), die entlang einer sich in Längsrichtung (L) erstreckenden Faltlinie faltbar mit der ersten Seitenwandplatte (101) verbunden ist,

eine zweite Bodenplatte (108), die faltbar mit der dritten Seitenwandplatte (103) entlang einer Faltlinie verbunden ist, die sich in der Längsrichtung (L) erstreckt, wobei die zweite Bodenplatte (108) ausgebildet ist, um unter der ersten Bodenplatte (106) positioniert zu werden, wenn der Zuschnitt (100) zu einer Verpackung (200) aufgerichtet wurde, und

zwei gegenüberliegende Seitenwandabschnitte (110a, 110b), die jeweils mit einer entsprechenden sich quer erstreckenden Seite der zweiten Bodenplatte (108) faltbar verbunden sind, und wobei die zweite Bodenplatte (108) derart ausgebildet ist, dass bei dem Aufrichten des Zuschnitts (100) zu einer Verpackung (200) die Seitenwandabschnitte (110a, 110b) relativ zu der zweiten Bodenplatte (108) gefaltet werden und zusammen mit der entsprechenden zweiten (102) und vierten (104) Seitenwandplatte zwei gegenüberliegende doppelwandige Seitenwände bilden, **dadurch gekennzeichnet, dass**

die erste Bodenplatte (106) zwei innere, schräge Faltlinien (107a, 107b) umfasst, wobei sich jede innere, schräge Faltlinie (107a, 107b) entlang einer Richtung erstreckt, die eine Hauptkomponente in der Querrichtung (T) aufweist, und wobei sich jede innere, schräge Faltlinie (107a, 107b) von einer sich quer erstreckenden Seite (106a, 106b) der ersten Bodenplatte (106) zu einer sich längs erstreckenden freien Seite (106c) der ersten Bodenplatte (106) erstreckt, wobei jeder Seitenwandabschnitt (110a, 110b) eine innere, schräge Faltlinie (111a, 111b) umfasst, die sich in einer Richtung erstreckt, die eine Hauptkomponente in der Längsrichtung (L) aufweist, wobei sich jede innere, schräge Faltlinie (111a, 111b) von einer sich längs erstreckenden Seite (110ac, 110bc) des Seitenwandabschnitts (110a, 110b), die dem Satz von Seitenwandplatten (101-104) gegenüberliegt, zu einer entsprechenden sich quer erstreckenden freien

Seite (110aa, 110bb) des entsprechenden Seitenwandabschnitts (110a, 110b) erstreckt.

2. Zuschnitt (100) nach Anspruch 1, wobei zumindest eine, vorzugsweise jede, der inneren, schrägen Falllinien (107a, 107b) der ersten Bodenplatte (106) an einer entsprechenden einen der Ecken beginnt, die durch die sich in Längsrichtung (L) erstreckende Falllinie (FL16), die die erste Seitenwandplatte (101) mit der ersten Bodenplatte (106) verbindet, und die entsprechende eine der sich quer erstreckenden freien Seiten (106a, 106b) erzeugt wird. 5
3. Zuschnitt (100) nach einem der Ansprüche 1 bis 2, wobei zumindest eine, vorzugsweise jede, der inneren, schrägen Falllinien (111a, 111b) jedes der Seitenwandabschnitte (110a, 110b) an einem freien, äußeren Ende (FL80a', FL80b') einer entsprechenden einen der Falllinien (FL80a, FL80b) zwischen der zweiten Bodenplatte (108) und einem entsprechenden einen der Seitenwandabschnitte (110a, 110b) beginnt. 10
4. Zuschnitt (100) nach einem der Ansprüche 1 bis 3, wobei die erste Bodenplatte (106) mit einem zum Bilden eines Griiffs ausgebildeten Ausschnitt (112a) vorgesehen ist, wobei sich der Ausschnitt (112a) vorzugsweise in Längsrichtung (L) erstreckt. 15
5. Zuschnitt (100) nach Anspruch 4, wobei der Ausschnitt (112a) in der ersten Bodenplatte (106) über eine der inneren, schrägen Falllinien (107b) positioniert ist. 20
6. Zuschnitt (100) nach Anspruch 4 oder 5, wobei der Ausschnitt (112a) zwischen einer freien Ecke (106ac) einer sich quer erstreckenden freien Seite (106b) und einer sich längs erstreckenden freien Seite (106c) und einem Mittelpunkt der sich längs erstreckenden freien Seite (106c) positioniert ist, vorzugsweise näher an der freien Ecke (106ac) als an dem Mittelpunkt der sich längs erstreckenden freien Seite (106c). 25
7. Zuschnitt (100) nach einem der Ansprüche 1 bis 6, wobei die zweite Bodenplatte (108) mit einem zum Bilden eines Griiffs ausgebildeten Ausschnitt (112b) vorgesehen ist, wobei sich der Ausschnitt (112b) bevorzugt in der Längsrichtung (L) erstreckt. 30
8. Zuschnitt (100) nach Anspruch 7, wobei der Ausschnitt (112b) in der zweiten Bodenplatte (108) zwischen einer Falllinie (FL80b) zu dem Seitenwandabschnitt (110b) und einem Mittelpunkt einer sich längs erstreckenden freien Seite (108c) der zweiten Bodenplatte (108) positioniert ist, vorzugsweise näher an der Falllinie (FL80b) zu dem Seitenwandabschnitt (110b) als an dem Mittelpunkt der sich längs 35

erstreckenden freien Seite (108c) der zweiten Bodenplatte (108).

9. Zuschnitt (100) nach einem der Ansprüche 1 bis 8, wobei jeder Seitenwandabschnitt (110a, 110b) mit einer entsprechenden Seitenwandplatte der zweiten (102) und vierten (104) Seitenwandplatte trennbar verbunden ist, vorzugsweise durch eine perforierte Trennlinie. 40
10. Zuschnitt (100) nach einem der Ansprüche 1 bis 9, wobei der Zuschnitt (100) aus einem papierbasierten Material, bevorzugt aus einem Wellkartonmaterial, hergestellt ist. 45
11. Zuschnitt (100) nach einem der Ansprüche 1 bis 10, wobei der Zuschnitt (100) ferner umfasst: 50

einen Satz von Deckplatten, umfassend eine erste, zweite, dritte und vierte Deckplatte (201, 202, 203, 204), wobei jede Deckplatte (201, 202, 203, 204) faltbar mit einer zugehörigen Seitenwandplatte (101, 102, 103, 104) verbunden ist,

wobei die zweite und vierte Seitenwandplatte (102, 104) jeweils einen zum Bilden eines Griiffs in der Seitenwandplatte (102, 104) ausgebildeten Ausschnitt (214) umfasst,

wobei die entsprechenden zweiten und vierten Deckplatten (202, 204) jeweils einen Ausschnitt (212) umfassen,

wobei, wenn der Zuschnitt (100) zu einer Verpackung (200) aufgerichtet ist, die zweite und die vierte Deckplatte (202, 204) relativ zu der zweiten und der vierten Seitenwandplatte (102, 104) so gefaltet werden, dass der Ausschnitt (214) der entsprechenden Seitenwandplatte (102, 104) und der Ausschnitt (212) der zugehörigen Deckplatte (202, 204) sich überlappen und zusammen einen Griff bilden,

wobei die dritte Deckplatte (203) zwei Verriegelungsklappen (216) umfasst, wobei jede Verriegelungsklappe (216) mit einer entsprechenden sich quer erstreckenden Seite der dritten Deckplatte (203) verbunden ist und relativ zu der dritten Deckplatte (203) entlang sich in der Querrichtung (T) erstreckenden Falllinien faltbar ist, wobei jede Verriegelungsklappe (216) eine Längserstreckung von der dritten Deckplatte (203) über eine Erstreckung der Falllinie (FL23) zwischen der dritten Seitenwandplatte (103) und der zweiten Seitenwandplatte (102) bzw. über eine Erstreckung der Falllinie (FL34) zwischen der dritten Seitenwandplatte (103) und der vierten Seitenwandplatte (104) aufweist, 55

wobei, wenn der Zuschnitt (100) zu einer Verpackung (200) aufgerichtet ist, die Verpackung

(200) ausgebildet ist, um durch Falten der ersten und dritten Deckplatte (201, 203), sodass die dritte Deckplatte (203) ausgebildet ist, um zumindest teilweise zu überlappen und über der ersten Deckplatte (201) positioniert zu werden, und durch Falten der Verriegelungskappen (216) in die den Griff bildenden Ausschnitte (214, 212) und dadurch Verriegeln der Verpackung (200) in einem geschlossenen Zustand in einen geschlossenen Zustand gebracht zu werden.

12. Zuschnitt (100) nach Anspruch 11, wobei jede Verriegelungsklappe (216) eine innere Faltlinie (FL216) umfasst, die eine Erstreckung in der Querrichtung (T) aufweist und ausgebildet ist, dass sie, wenn der Zuschnitt (100) zu der Verpackung (200) aufgerichtet wurde, nach innen gefaltet wird, sodass ein äußerer Teil (216b) zum Falten in die den Griff bildenden Ausschnitte ausgebildet ist und dadurch die Verpackung (200) in dem geschlossenen Zustand verriegelt.

13. Zuschnitt (100) nach Anspruch 12, wobei ein erster Abstand (D1) durch die Längserstreckung der Verriegelungsklappe (216) über die Erstreckung der Faltlinie (FL23) zwischen der dritten Seitenwandplatte (103) und der zweiten Seitenwandplatte (102) und die innere Faltlinie (FL216) der Verriegelungsklappe (216) bzw. der Längserstreckung der Verriegelungsklappe (216) über die Erstreckung der Faltlinie (FL34) zwischen der dritten Seitenwandplatte (103) und der vierten Seitenwandplatte (104) und der inneren Faltlinie (FL216) der Verriegelungsklappe (216) definiert ist,

wobei ein zweiter Abstand (D2) durch einen Abstand zwischen dem Ausschnitt (212) in der zweiten Deckplatte (202) und der Faltlinie (FL2) zwischen der zweiten Seitenwandplatte (102) und der zweiten Deckplatte (202) bzw. einen Abstand zwischen dem Ausschnitt (212) der vierten Deckplatte (204) und der Faltlinie (FL4) zwischen der vierten Seitenwandplatte (104) und der vierten Deckplatte (204) definiert ist, und

wobei der erste Abstand (D1) dem zweiten Abstand (D2) entspricht und diesem vorzugsweise gleich ist.

14. Zuschnitt (100) nach einem der Ansprüche 11 bis 13, wobei ein dritter Abstand (D3) durch einen Abstand zwischen der Faltlinie (FL3) zwischen der dritten Seitenwandplatte (103) und der dritten Deckplatte (203) und einer sich längs erstreckenden Seite der Verriegelungsklappe (216), die der dritten Seitenwandplatte (103) zugewandt ist, definiert ist und

wobei ein vierter Abstand (D4) durch einen Abstand zwischen dem Ausschnitt (212) der zweiten Deckplatte (202) und der Erstreckung der Faltlinie (FL23) zwischen der dritten Seitenwandplatte (103) und der zweiten Seitenwandplatte (102) bzw. durch einen Abstand zwischen dem Ausschnitt (212) der vierten Deckplatte (204) und der Erstreckung der Faltlinie (FL34) zwischen der dritten Seitenwandplatte (103) und der vierten Seitenwandplatte (104) definiert ist, und

wobei der dritte Abstand (D3) dem vierten Abstand (D4) entspricht und diesem vorzugsweise gleich ist.

15. Verpackung (200), die durch Aufrichten des Zuschnitts (100) nach einem der Ansprüche 1 bis 14 zu einer Verpackung (200) gebildet wird.

## Revendications

1. Ébauche (100) pour former un emballage (200), l'ébauche (100) comprenant :

un ensemble de panneaux de paroi latérale comprenant un premier, un deuxième, un troisième et un quatrième panneau de paroi latérale (101, 102, 103, 104) agencés consécutivement les uns après les autres le long d'une direction longitudinale (L) et reliés de manière pliable les uns aux autres le long de lignes de pliage s'étendant dans une direction transversale (T), un premier panneau inférieur (106) relié de manière pliable au premier panneau de paroi latérale (101) le long d'une ligne de pliage s'étendant dans la direction longitudinale (L), un deuxième panneau inférieur (108) relié de manière pliable au troisième panneau de paroi latérale (103) le long d'une ligne de pliage s'étendant dans la direction longitudinale (L), dans laquelle le deuxième panneau inférieur (108) est configuré pour être positionné sous le premier panneau inférieur (106) lorsque l'ébauche (100) a été érigée en un emballage (200), et deux portions de paroi latérale opposées (110a, 110b), chacune étant reliée de manière pliable à un côté respectif s'étendant transversalement du deuxième panneau inférieur (108), et dans laquelle le deuxième panneau inférieur (108) est configuré de telle sorte que, lorsque l'ébauche (100) est érigée en un emballage (200), les portions de paroi latérale (110a, 110b) sont pliées par rapport au deuxième panneau inférieur (108) et forment conjointement avec les deuxième (102) et quatrième (104) panneaux de paroi latérale respectifs deux parois latérales opposées à double paroi, **carac-**

**térisée en ce que**

- le premier panneau inférieur (106) comprend deux lignes de pliage inclinées internes (107a, 107b), dans laquelle chaque ligne de pliage inclinée interne (107a, 107b) s'étend le long d'une direction ayant une composante principale dans la direction transversale (T), et dans laquelle chaque ligne de pliage inclinée interne (107a, 107b) s'étend depuis un côté s'étendant transversalement (106a, 106b) du premier panneau inférieur (106) jusqu'à un côté libre s'étendant longitudinalement (106c) du premier panneau inférieur (106), dans laquelle chaque portion de paroi latérale (110a, 110b) comprend une ligne de pliage inclinée interne (111a, 111b) s'étendant dans une direction ayant une composante principale dans la direction longitudinale (L), chaque ligne de pliage inclinée interne (111a, 111b) s'étendant depuis un côté s'étendant longitudinalement (110ac, 110bc) de la portion de paroi latérale (110a, 110b) opposé à l'ensemble de panneaux de paroi latérale (101-104) vers un côté libre s'étendant transversalement (110aa, 110bb) respectif de la portion de paroi latérale (110a, 110b) respective.
2. Ébauche (100) selon la revendication 1, dans laquelle au moins une, de préférence chacune, des lignes de pliage inclinées internes (107a, 107b) du premier panneau inférieur (106) prend naissance au niveau de l'un respectif des coins créés par la ligne de pliage (FL16) s'étendant dans la direction longitudinale (L) reliant le premier panneau de paroi latérale (101) au premier panneau inférieur (106) et de l'un respectif des côtés libres s'étendant transversalement (106a, 106b).
  3. Ébauche (100) selon l'une quelconque des revendications 1 et 2, dans laquelle au moins l'une, de préférence chacune, des lignes de pliage inclinées internes (111a, 111b) de chacune des portions de paroi latérale (110a, 110b) prend naissance au niveau d'une extrémité extérieure libre (FL80a', FL80b') de l'une respective des lignes de pliage (FL80a, FL80b) entre le deuxième panneau inférieur (108) et l'une respective des portions de paroi latérale (110a, 110b).
  4. Ébauche (100) selon l'une quelconque des revendications 1 à 3, dans laquelle le premier panneau inférieur (106) est muni d'une découpe (112a) configurée pour former une poignée, la découpe (112a) s'étendant de préférence dans la direction longitudinale (L).
  5. Ébauche (100) selon la revendication 4, dans laquelle la découpe (112a) dans le premier panneau inférieur (106) est positionnée en travers de l'une des lignes de pliage inclinées internes (107b).
  6. Ébauche (100) selon la revendication 4 ou 5, dans laquelle la découpe (112a) est positionnée entre un coin libre (106ac) d'un côté libre s'étendant transversalement (106b) et un côté libre s'étendant longitudinalement (106c) et un point central du côté libre s'étendant longitudinalement (106c), de préférence plus proche du coin libre (106ac) que du point central du côté libre s'étendant longitudinalement (106c).
  7. Ébauche (100) selon l'une quelconque des revendications 1 à 6, dans laquelle le deuxième panneau inférieur (108) est muni d'une découpe (112b) configurée pour former une poignée, la découpe (112b) s'étendant de préférence dans la direction longitudinale (L).
  8. Ébauche (100) selon la revendication 7, dans laquelle la découpe (112b) dans le deuxième panneau inférieur (108) est positionnée entre une ligne de pliage (FL80b) vers la portion de paroi latérale (110b) et un point central d'un côté libre s'étendant longitudinalement (108c) du deuxième panneau inférieur (108), de préférence plus proche de la ligne de pliage (FL80b) vers la portion de paroi latérale (110b) que du point central du côté libre s'étendant longitudinalement (108c) du deuxième panneau inférieur (108).
  9. Ébauche (100) selon l'une quelconque des revendications 1 à 8, dans laquelle chaque portion de paroi latérale (110a, 110b) est reliée de manière séparable à l'un respectif parmi le deuxième (102) et le quatrième (104) panneau de paroi latérale, de préférence par une ligne de séparation perforée.
  10. Ébauche (100) selon l'une quelconque des revendications 1 à 9, dans laquelle l'ébauche (100) est composée d'un matériau à base de papier, de préférence d'un matériau en carton ondulé.
  11. Ébauche (100) selon l'une quelconque des revendications 1 à 10, dans laquelle l'ébauche (100) comprend en outre :
    - un ensemble de panneaux supérieurs comprenant un premier, un deuxième, un troisième et un quatrième panneau supérieur (201, 202, 203, 204), chaque panneau supérieur (201, 202, 203, 204) étant relié de manière pliable à un panneau de paroi latérale (101, 102, 103, 104) associé,
    - dans laquelle les deuxième et quatrième panneaux de paroi latérale (102, 104) comprennent chacun une découpe (214) configurée pour former une poignée dans le panneau de paroi

latérale (102, 104), dans laquelle les deuxième et quatrième panneaux supérieurs (202, 204) respectifs comprennent chacun une découpe (212), dans laquelle, lorsque la découpe (100) est érigée en un emballage (200), les deuxième et quatrième panneaux supérieurs (202, 204) sont pliés par rapport aux deuxième et quatrième panneaux de paroi latérale (102, 104) de telle sorte que la découpe (214) du panneau de paroi latérale (102, 104) respectif et la découpe (212) du panneau supérieur (202, 204) associé se chevauchent et forment ensemble une poignée, dans laquelle le troisième panneau supérieur (203) comprend deux rabats de verrouillage (216), chaque rabat de verrouillage (216) étant relié à un côté respectif s'étendant transversalement du troisième panneau supérieur (203) et étant pliable par rapport au troisième panneau supérieur (203) le long de lignes de pliage s'étendant dans la direction transversale (T), dans laquelle chaque rabat de verrouillage (216) a une extension longitudinale à partir du troisième panneau supérieur (203) au-delà d'une extension de la ligne de pliage (FL23) entre le troisième panneau de paroi latérale (103) et le deuxième panneau de paroi latérale (102), respectivement au-delà d'une extension de la ligne de pliage (FL34) entre le troisième panneau de paroi latérale (103) et le quatrième panneau de paroi latérale (104), dans laquelle lorsque l'ébauche (100) est érigée en un emballage (200), l'emballage (200) est configuré pour être mis dans un état fermé en pliant les premier et troisième panneaux supérieurs (201, 203) de telle sorte que le troisième panneau supérieur (203) est configuré pour au moins partiellement chevaucher le premier panneau supérieur (201) et être positionné au-dessus de celui-ci, et en pliant les rabats de verrouillage (216) dans les découpes (214, 212) formant la poignée et verrouillant ainsi l'emballage (200) dans un état fermé.

**12.** Ébauche (100) selon la revendication 11, dans laquelle chaque rabat de verrouillage (216) comprend une ligne de pliage interne (FL216) ayant une extension dans la direction transversale (T) et qui est configurée pour, lorsque l'ébauche (100) a été érigée en l'emballage (200), être pliée vers l'intérieur de telle sorte qu'une partie externe (216b) est configurée pour être pliée dans les découpes formant la poignée et verrouillant ainsi l'emballage (200) dans l'état fermé.

**13.** Ébauche (100) selon la revendication 12, dans laquelle une première distance (D1) est définie par

l'extension longitudinale du rabat de verrouillage (216) au-delà de l'extension de la ligne de pliage (FL23) entre le troisième panneau de paroi latérale (103) et le deuxième panneau de paroi latérale (102) et la ligne de pliage interne (FL216) du rabat de verrouillage (216), respectivement l'extension longitudinale du rabat de verrouillage (216) au-delà de l'extension de la ligne de pliage (FL34) entre le troisième panneau de paroi latérale (103) et le quatrième panneau de paroi latérale (104) et la ligne de pliage interne (FL216) du rabat de verrouillage (216),

dans laquelle une deuxième distance (D2) est définie par une distance entre la découpe (212) dans le deuxième panneau supérieur (202) et la ligne de pliage (FL2) entre le deuxième panneau de paroi latérale (102) et le deuxième panneau supérieur (202), respectivement une distance entre la découpe (212) du quatrième panneau supérieur (204) et la ligne de pliage (FL4) entre le quatrième panneau de paroi latérale (104) et le quatrième panneau supérieur (204), et dans laquelle la première distance (D1) correspond à, et est de préférence égale à, la deuxième distance (D2).

**14.** Ébauche (100) selon l'une quelconque des revendications 11 à 13, dans laquelle une troisième distance (D3) est définie par une distance entre la ligne de pliage (FL3) entre le troisième panneau de paroi latérale (103) et le troisième panneau supérieur (203) et un côté s'étendant longitudinalement du rabat de verrouillage (216) faisant face au troisième panneau de paroi latérale (103), et

dans laquelle une quatrième distance (D4) est définie par une distance entre la découpe (212) du deuxième panneau supérieur (202) et l'extension de la ligne de pliage (FL23) entre le troisième panneau de paroi latérale (103) et le deuxième panneau de paroi latérale (102), respectivement par une distance entre la découpe (212) du quatrième panneau supérieur (204) et l'extension de la ligne de pliage (FL34) entre le troisième panneau de paroi latérale (103) et le quatrième panneau de paroi latérale (104), et dans laquelle la troisième distance (D3) correspond à, et est de préférence égale à, la quatrième distance (D4).

**15.** Emballage (200) formé en érigeant l'ébauche (100) selon l'une quelconque des revendications 1 à 14 en un emballage (200).

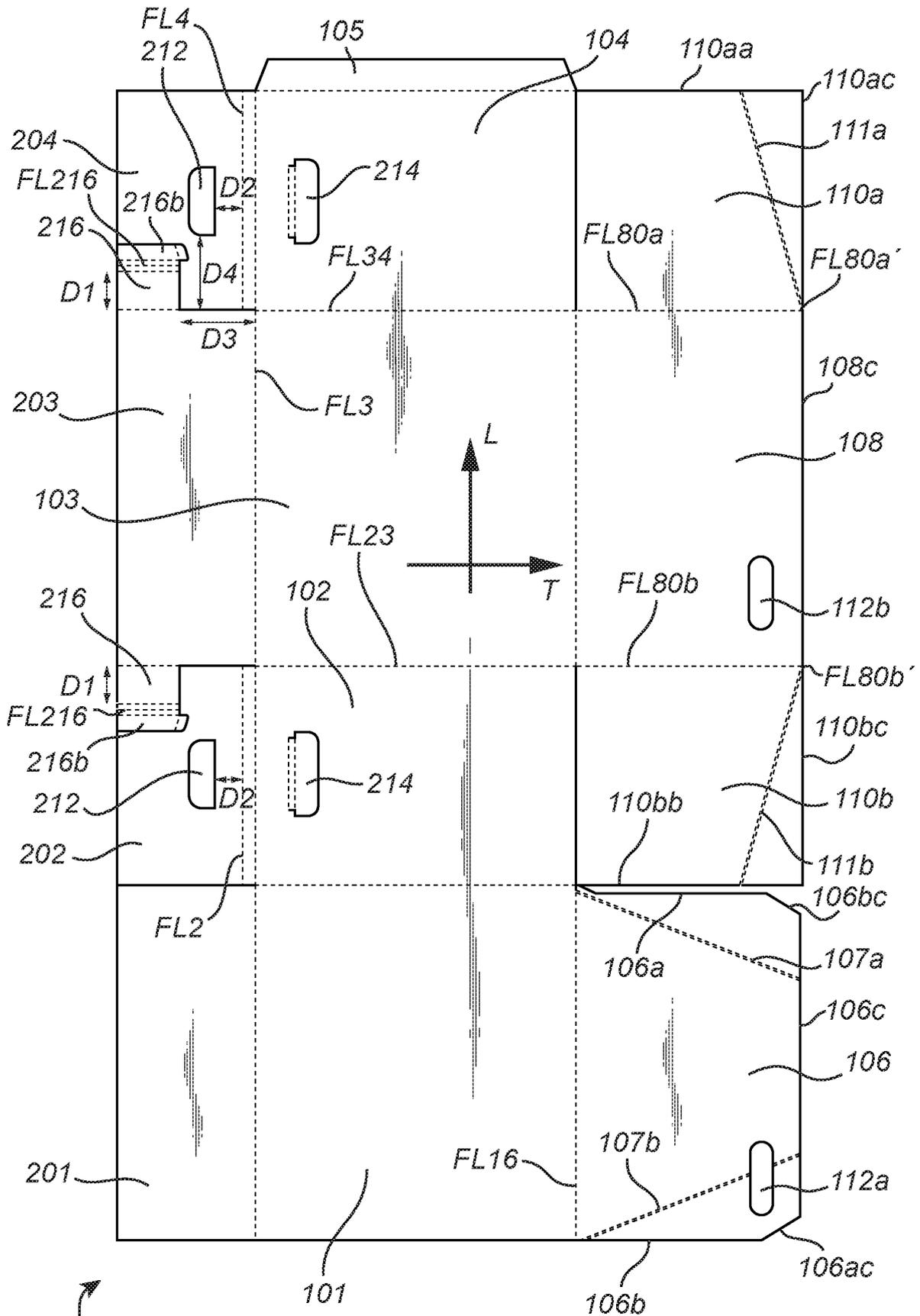


Fig. 1

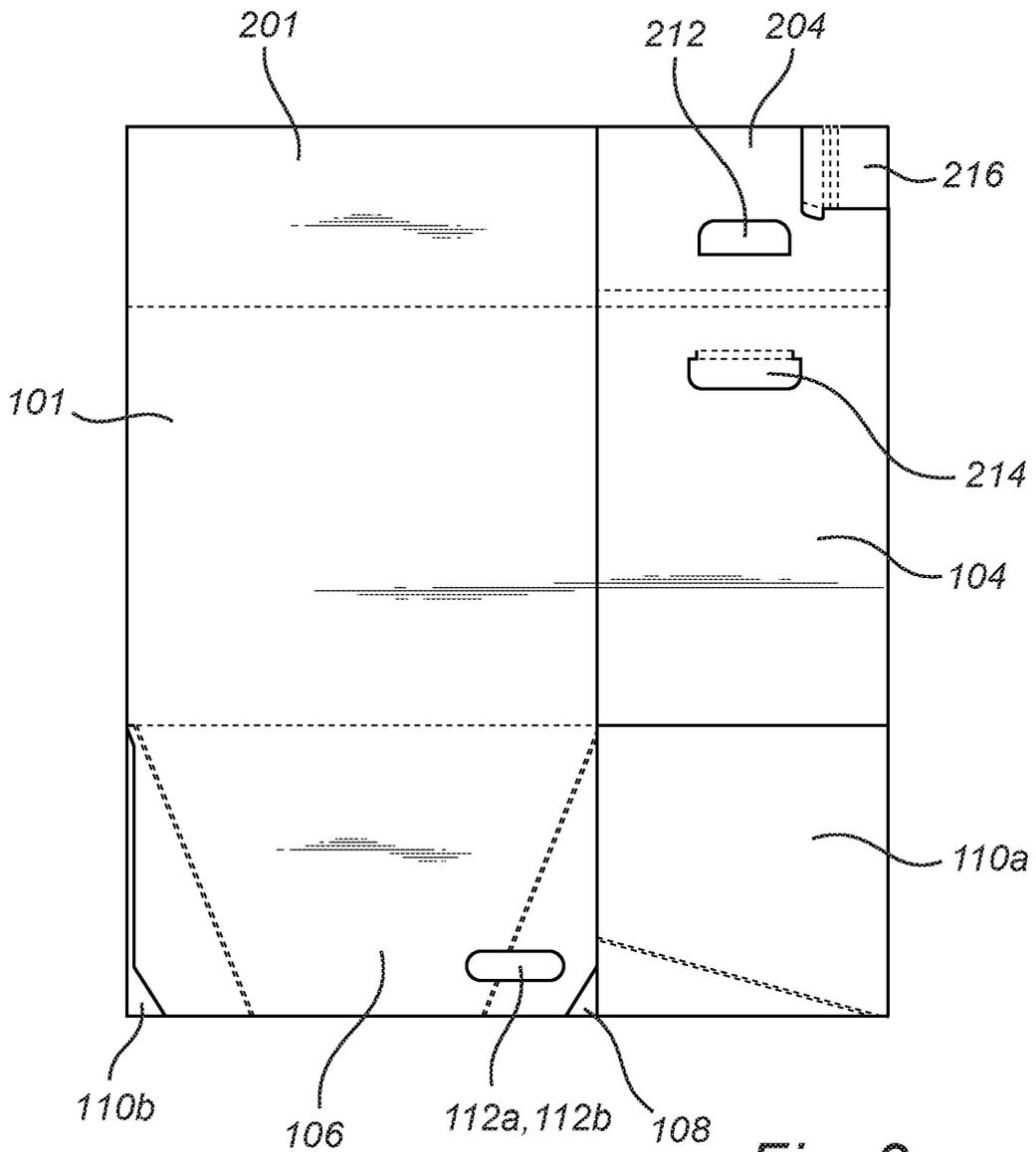


Fig. 2

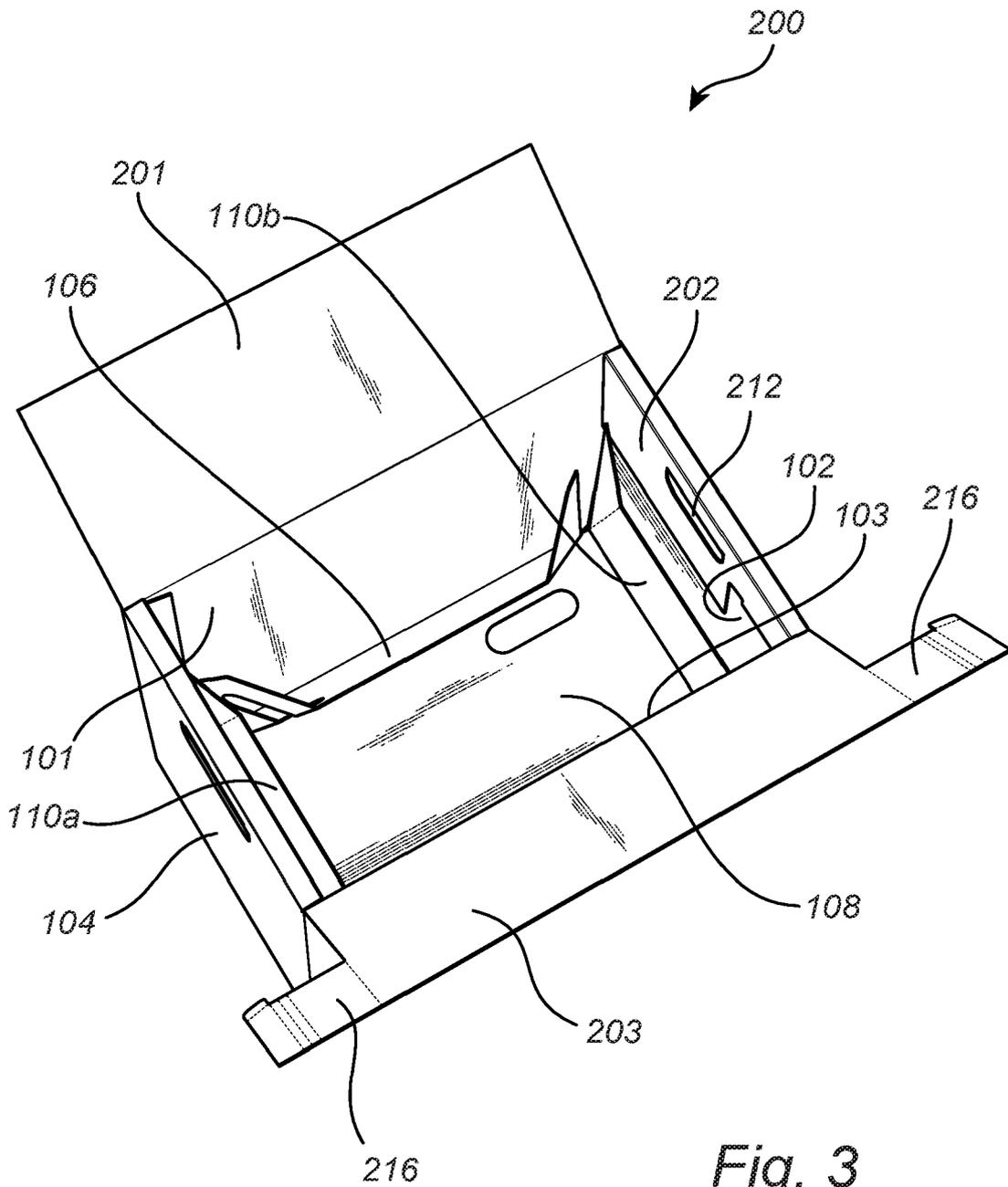
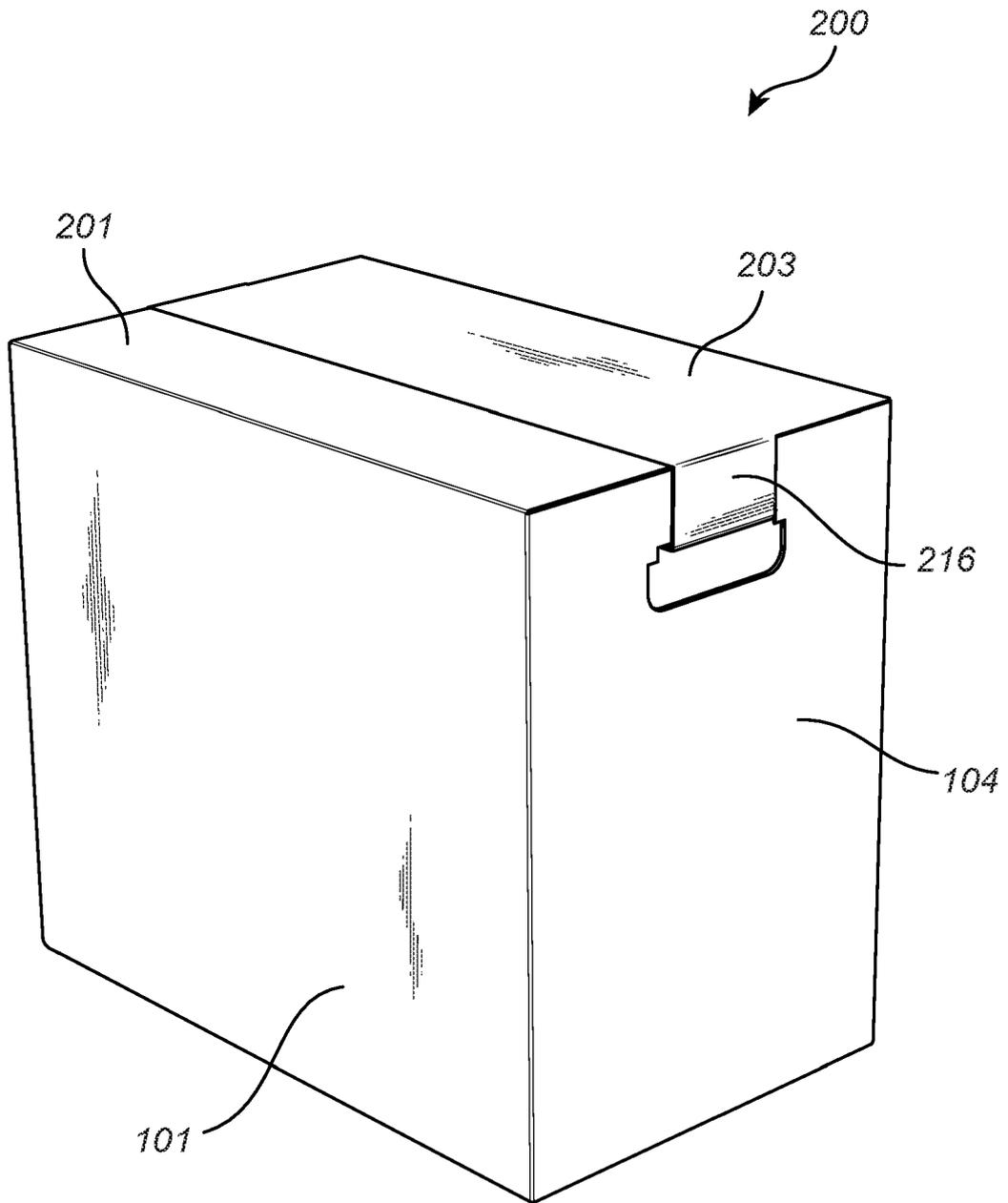


Fig. 3



*Fig. 4*

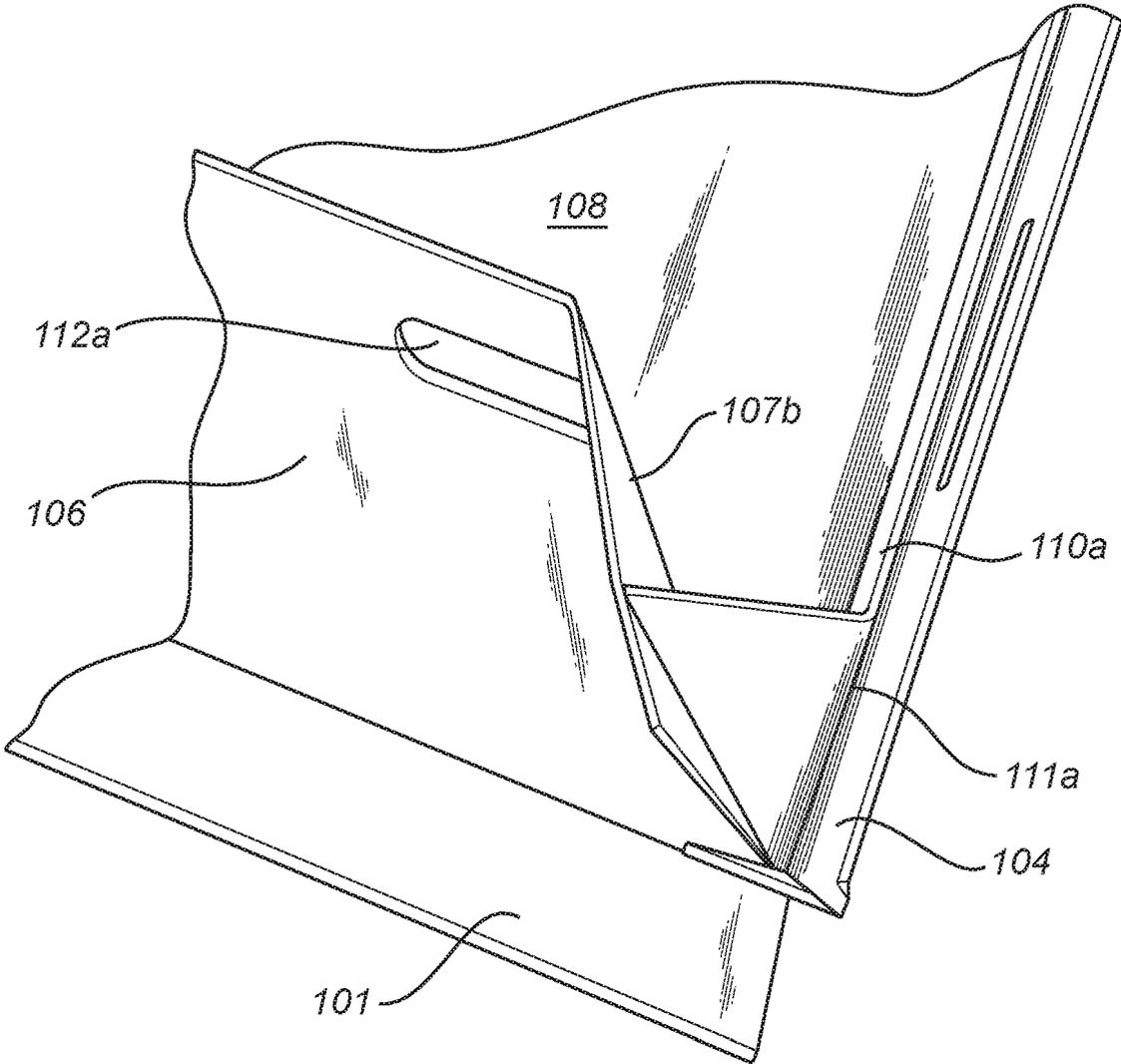


Fig. 5

**REFERENCES CITED IN THE DESCRIPTION**

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