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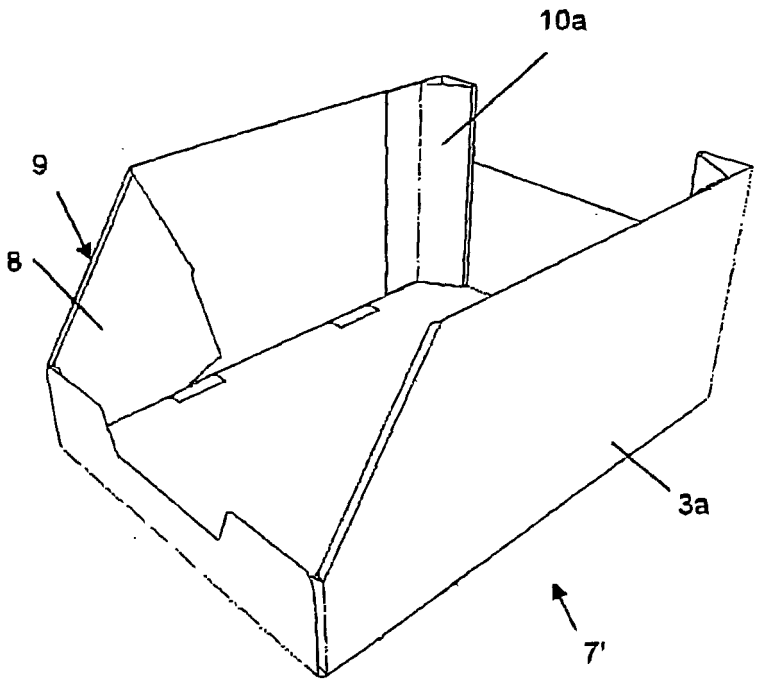
(54) Transport and display container

(57) The invention relates to a transport and/or display container made of a foldable material, such as corrugated cardboard, and erected from at least one blank (1, 1', 1") comprising a series of panels (2, 3a, 3b, 4, 5) hingedly interconnected along respective first hinge lines (6) constituting a bottom (2) and outer side walls (3a, 3b, 4, 5) of the container (7, 7', 7", 11). At least two opposite outer side walls (3a, 3b) each comprising at least one stiffening flap (8) hingedly interconnected along respective second hinge lines (9) with said outer side walls (3a, 3b) and being folded on said outer side walls (3a, 3b) such that an supporting edge (8a) of each stiffening flap (8) is supported by said bottom (2) are provided. Said second hinge lines (9) constitute an angle of less than 90° with a perpendicular erected on said bottom (2).

Fig. 6



EP 1 746 034 A1

Description

[0001] The present invention relates to a container made of a foldable material, such as cardboard, card or corrugated cardboard, which is erected from at least one blank comprising a series of panels which are hingedly interconnected along respective first hinge lines to constitute a bottom and outer side walls of the container. The container is configured to be easily transformed from a transport configuration into a display configuration. Such containers may take the form of a closed box or an open topped tray, for example.

[0002] From EP 0 763 473 B1 there is known such a transit and/or display container having a base part and a top part separable from the base along a line of perforation. This container can accordingly be easily transformed, e.g. by shop personal, from a transit or transport state into a display state without the need for special tools or equipment.

[0003] This known container, however, suffers from the disadvantage that the container itself is not able to bear heavier loads, especially if a number of such containers are stacked on each other for transport or storage. In particular, there is a risk of deformation and destruction of the side walls of this known container if the container is not filled with goods which can themselves bear loads.

[0004] Further, to increase the outer appearance of such a container one surface of the blank from which the container is erected is printed such that the container has printed outer side walls. In contrast to that the inner surface of the container which becomes visible after some of the goods have been withdrawn from the container does not show an attractive design.

[0005] From DE 87 03 278 U1 there is known a container having side walls which are each made of two panels having nearly the same shape and which are folded and glued on each other. Especially when using corrugated cardboard for such a container, the stiffening effect is very limited due to the waves of the corrugated cardboard running in parallel in both panels. Further, the blank from which this known container is erected may only be produced with a relatively high amount of waste which leads to increased costs.

[0006] It is an object of the present invention to overcome or mitigate these above-mentioned disadvantages of conventional transit and/or display containers.

[0007] According to the invention, to solve the above object there is provided a container made of a foldable material, such as cardboard or card, in particular corrugated cardboard, and erected from at least one blank comprising a series of panels hingedly interconnected along respective first hinge lines constituting a bottom and outer side walls of the container, wherein at least two opposite outer side walls each comprise at least one stiffening flap hingedly interconnected along respective second hinge lines with said outer side walls and being folded on said outer side walls such that a supporting edge of each stiffening flap is supported by said bottom, and wherein said second hinge lines constitute an angle of less than 90° with a perpendicular line erected on said bottom.

[0008] Thus, in accordance with the invention, the stiffness of at least two opposite outer side walls of the container is increased by folding the stiffening flaps on the these outer side walls. As the stiffening flaps are supported by the bottom of the container the side walls are capable of bearing relatively high loads, e.g. if several containers are stacked over each other for transport or storage. The stiffening effect of the stiffening flaps can be further increased by the use of corrugated cardboard for the container according to the present invention. Due to the angle of less than 90° between a perpendicular erected on the bottom and the second hinge lines, the waves of the corrugated cardboard of the stiffening flaps and the opposite side walls to which the stiffening flaps are joined run in different directions which leads to a further reinforcement of the side walls.

[0009] As an additional advantage of the above described inventive container not only the outer surfaces of the outer side walls are printed to increase the appearance of the container but also the inner surface of the container covered by the stiffening flaps can be provided with an attractive design without having to print both surfaces of the blank from which the container is erected. Further, the appearance of the container is increased by the second hinge lines which provide for a closed edge without showing a cut edge of the corrugated cardboard.

[0010] In a preferred embodiment of the present invention said second hinge lines constitute an angle of 0° or about 0° with a perpendicular line erected on said bottom. As an alternative, in a further preferred embodiment of the present invention said second hinge lines constitute an angle between about 10° and about 80°, in particular about 45° with a perpendicular erected on said bottom.

[0011] Preferably at least one of said outer side walls is provided with and/or defines a withdrawal opening for withdrawal of products from said container, wherein said second hinge lines abut to said at least one of said outer side wall. Thus the withdrawal opening is provided with an attractive design as the closed and printed outer surface of the blank from which the inventive container is erected is provided near the withdrawal opening with a printed inner and outer surface of the container.

[0012] The height of at least a part of the stiffening flap may be about the same as the height of at least a part of the outer side wall which is interconnected to the stiffening flap via a second hinge line. Due to this construction of the container at least a part of the stiffening flap extends from the bottom of the container to the top of the outer side wall such that the stiffening flap reinforces the outer side wall along its full height.

[0013] To further increase the stiffening and reinforcement of the container the stiffening flaps may be fixed on said outer side walls, in particular by staples and/or glue. This prevents a relative movement between the stiffening flaps and the outer side walls which may lead to a weak-

ness in the outer side walls.

[0014] In a preferred embodiment there are provided at least two stiffening elements each comprising at least three flaps which are hingedly interconnected with each other and said outer side walls along respective second hinge lines and which are folded on said walls such that the stiffening elements have a triangular cross-section in a plane parallel to said bottom. In other words, the flaps constituting the stiffening elements may be folded and fixed on said outer side walls like triangular columns for further increasing the stiffness of the container.

[0015] Preferably, the height of said stiffening elements is about the same as the height of at least a part of the outer side wall which is interconnected to the respective stiffening element. Thus, the stiffening elements reinforce the outer side walls along the full height of said outer side walls. Consequently, the inventive container may bear relatively high loads, in particular if such containers are stacked over each other for transport and/or storage.

[0016] Advantageously, at least one of said panels from which the container is erected comprises at least one line of weakness allowing a first part of the container to be separated from a second part of the container. The second part of the container may be fully separable from the first part of the container or may alternatively be only partly separable from said first part of the container.

[0017] In a further preferred embodiment said first part of the container constitutes a tray made from a one-piece blank and said second part of the container constitutes a top made from a further one-piece blank.

[0018] Depending on the orientation of the second hinge lines said stiffening flaps may have a polygonal shape which may include cut outs or protrusions. However, to achieve a reinforcement and stiffening of the outer side walls of the container, the stiffening flaps are provided with a supporting edge which is supported by said bottom in the erected configuration of the container.

[0019] It is preferred that said stiffening flaps constitute inner side walls covering at least a part of the containers in a surface. Thus, at least a part of the containers' inner surface may be provided with an attractive printed design without having to print both surface of the blank from which the container is erected.

[0020] The invention will now be described in detail with reference to the preferred embodiments and the drawings. All features described and/or illustrated in the drawings form the subject matter of the invention, independently of their inclusion or combination in the claims. In the drawings;

Fig. 1 shows a blank of a first part of a container according to a first preferred embodiment,

Fig. 2 shows a preferred container erected from the blank shown in Fig.,

Fig. 3 shows the container of Fig. 2 in a state detaching a top part from said container,

Fig. 4 shows the container of Fig. 2 after detaching the top part,

Fig. 5 shows a blank of a first part of a container according to a further preferred embodiment,

Fig. 6 shows a preferred container erected from the blank shown in Fig. 5,

Fig. 7 shows a blank of a first part of a container according to a further preferred embodiment, and

Fig. 8 shows a preferred container erected from the blank shown in Fig. 7.

[0021] The one-piece blank 1 depicted in Fig. 1 comprises a series of panels 2, 3a, 3b, 4 and 5 hingedly interconnected along respective first hinge lines. Blank 1 can be erected into a first part 7 of a container depicted in Fig. 2, wherein the series of panels constitute bottom 2 and outer side walls 3a, 3b, 4 and 5, respectively.

[0022] Two opposite outer side walls 3a, 3b are provided with a stiffening flap 8 which is joined to the outer side walls 3a, 3b via second hinge lines 9. In addition, three further flaps are hingedly interconnected with each other and with said outer side walls 3a, 3b along respective hinge lines.

[0023] As can be seen from Figures 2 and 4, the stiffening flaps may be folded onto side walls 3a, 3b and fixed on said side walls e.g. by staples, glue or the like. Further, flaps 10 can be folded and fixed on said outer side walls such that these flaps constitute a stiffening element 10a having a triangular cross-section in a plane parallel to the bottom 2 of the container 7.

[0024] The second hinge line 9 interconnecting stiffening flap 8 with side walls 3a and 3b, respectively, constitutes an angle of less than 90°, in particular about 45° in the drawings, with a perpendicular erected on said bottom 2. The polygonal shape of the stiffening flaps 8 is designed such that the stiffening flaps 8 are supported by said bottom 2 via a supporting edge 8a and extend over the full height of the side walls 3a and 3b. Further, the height of the stiffening elements 10a is about the same as the height of the outer side walls 3a or 3b. Consequently, the opposite outer side walls 3a and 3b are reinforced by the stiffening flaps 8 and the stiffening elements 10a such that the side walls are capable of bearing higher loads.

[0025] The height of side wall 4 is smaller than the height of side walls 3a and 3b such that side wall 4 constitutes a withdrawal opening for withdrawal of products from said container 7. Further, a cut out is provided in side wall 4 to facilitate withdrawal of products.

[0026] As can be seen from Fig. 3, a top part 11 or cover can be secured on the first part 7 of the container. To facilitate opening of the closed container as depicted

in Fig. 3, at least one line of weakness 12 is provided in side walls 3a and 3b, respectively, to define a section of the side walls which is e.g. glued to the top part 11 of the container and may be separated from the first part 7 of the container together with the top part 11 of the container by separating the at least one line of weakness 12. After removal of the top part 11 the first part 7 of the container as depicted in Fig. 4 is ready for display and withdrawal of products from said container.

[0027] To facilitate stacking a series of such containers, cut outs 13 are provided in panel 2 constituting the bottom of the container such that protrusions which are not shown in Figures 1 to 4 may be inserted in these cut outs to increase stability of the stacked containers.

[0028] A further embodiment of the present invention is depicted in Figures 5 and 6 showing a blank 1' and a first part 7' of a container erected from said blank. This embodiment differs from the first embodiment described above with reference to Figures 1 to 4 in that no line of weakness is provided in the outer side walls 3a, 3b, 4 or 5 of the first part 7' of the container.

[0029] A third preferred embodiment of the present invention is shown in Figures 7 and 8 depicting a blank 1" and a first part 7" of a container to be erected from said blank 1". On principle, the design and construction of the blank 1" and the first part 7" of the container of this embodiment is similar to that described above with reference to Figures 1 to 4. However, further to stiffening flaps 8 which are joined to side walls 3a and 3b, respectively, via second hinge lines 9, there are provided further flaps 10b which are interconnected to each stiffening flap 8 via respective hinge lines.

[0030] When erecting the first part 7" of the container from said blank 1" stiffening flaps 8 are folded onto the outer side walls 3a and 3b, respectively, as described above. In addition, further flaps 10b are folded onto side walls 3a and 3b constituting further stiffening elements 10a which have a triangular cross-section in a plane parallel to said bottom. Thus, there are provided four stiffening elements 10a and the stiffening flaps 8 folded onto the side walls 3a and 3b in the first part 7" of the container as depicted in Fig. 8. This leads to a reinforcement of side walls 3a and 3b such that these side walls are capable of bearing higher loads.

[0031] In the blank 1" there are provided cut outs 13 in panel 2 constituting the bottom of the container. Further, at least one of the flaps 10 and 10b is provided with a protrusion 14. The cut outs 13 and the protrusions 14 are designed and located such that the protrusions 14 may be inserted into the cut outs 13 when stacking several containers on each other e.g. during transport or storage. Thus, not only the stability of the container itself but also the stability of a stack of containers may be increased.

Reference numerals

[0032]

1, 1', 1"	blank
2	panel, bottom
3a, 3b	panel, outer side wall
4	panel, outer side wall
5	panel, outer side wall
6	first hinge line
7, 7', 7"	first part of container
8	stiffening flap
8a	supporting edge
9	second hinge line
10, 10b	further flap
10a	stiffening element
11	top part of container
12	line of weakness
13	cut out
14	protrusion

Claims

1. Transport and/or display container made of a foldable material, such as cardboard or card, in particular corrugated cardboard, and erected from at least one blank (1, 1', 1") comprising a series of panels (2, 3a, 3b, 4, 5) hingedly interconnected along respective first hinge lines (6) constituting a bottom (2) and outer side walls (3a, 3b, 4, 5) of the container (7, 7', 7", 11); wherein at least two opposite outer side walls (3a, 3b) each comprise at least one stiffening flap (8) hingedly interconnected along respective second hinge lines (9) with said outer side walls (3a, 3b) and being folded on said outer side walls (3a, 3b) such that an supporting edge (8a) of each stiffening flap (8) is supported by said bottom (2);
and wherein said second hinge lines (9) constitute an angle of less than 90° with a perpendicular erected on said bottom (2).

2. Container according to claim 1, wherein said second hinge lines (9) constitute an angle of 0° or about 0° with a perpendicular erected on said bottom (2).

3. Container according to claim 1, wherein said second hinge lines (9) constitute an angle between about 10° and about 80°, in particular about 45° with a perpendicular erected on said bottom (2).

4. Container according to any of claims 1 to 3, wherein at least one of said outer side walls (4) is provided with and/or defines a withdrawal opening for withdrawal of products from said container (7, 7'. 7", 11), wherein said second hinge lines (9) abut to said at least one of said outer side walls (4).

5. Container according to any of claims 1 to 4, wherein the height of at least a part of the stiffening flap (8) is about the same as the height of at least a part of the outer side wall (3a, 3b) which is interconnected

to the stiffening flap (8) via the second hinge line (9).

6. Container according to any of claims 1 to 5, wherein said stiffening flaps (8) are fixed on said outer side walls (3a, 3b) in particular by staples and/or glue,

7. Container according to any of claims 1 to 6, wherein there are provided at least two stiffening elements (10a) each comprising at least three flaps (10, 10b) which are hingedly interconnected with each other and said outer side walls (3a, 3b) along respective hinge lines and which are folded on said outer side walls (3a, 3b) such that the stiffening elements (10a) have a triangular cross-section in a plane parallel to said bottom (2).

8. Container according to claim 7, wherein the height of said stiffening elements (10a) is about the same as the height of at least a part of the outer side wall (3a, 3b) which is interconnected to the stiffening element (10a).

9. Container according to any of claims 1 to 8, wherein at least one of said panels (3a, 3b) comprises at least one line of weakness (12) allowing a first part (7, 7', 7") of the container to be separated from a second part (11) of the container.

10. Container according to claim 9, wherein said second part (11) of the container is fully separable from said first part (7, 7', 7").

11. Container according to claim 9, wherein said second part (11) of the container is only partly separable from said first part (7, 7', 7").

12. Container according to any of claims 8 to 11, wherein said first part (7, 7'. 7") of the container constitutes a tray made from a one-piece blank (1, 1', 1") and said second part (11) of the container constitutes a top made from a one-piece blank.

13. Container according to any of claims 1 to 12, **characterized in that** said stiffening flaps (8) have a polygonal shape.

14. Container according to any of claims 1 to 13, **characterized in that** said stiffening flaps (8) constitute inner side walls covering at least a part of the containers inner surface.

Fig. 1

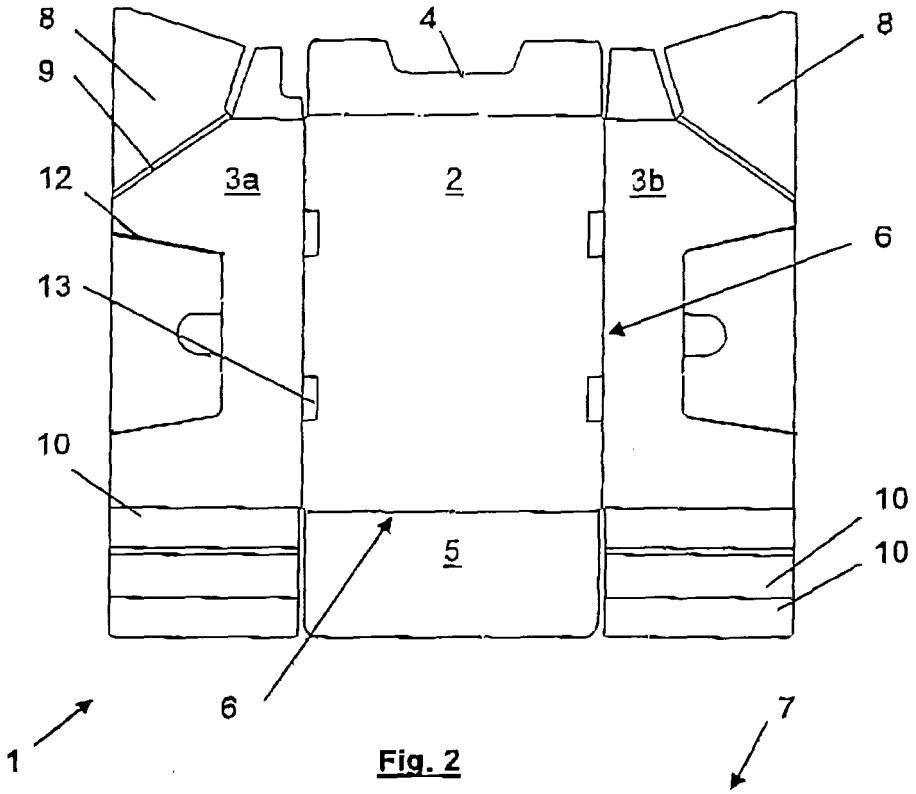


Fig. 2

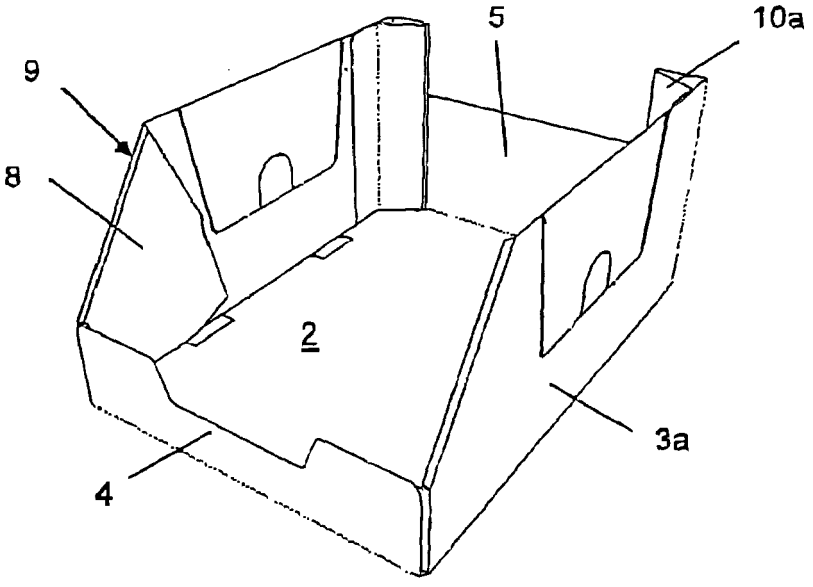


Fig. 3

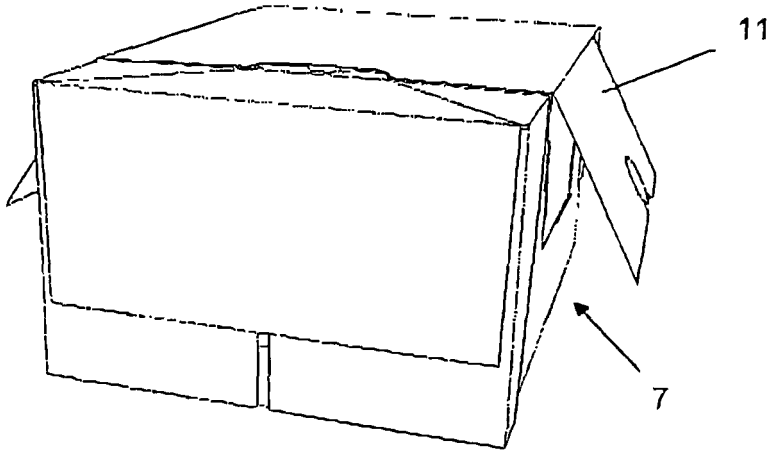


Fig. 4

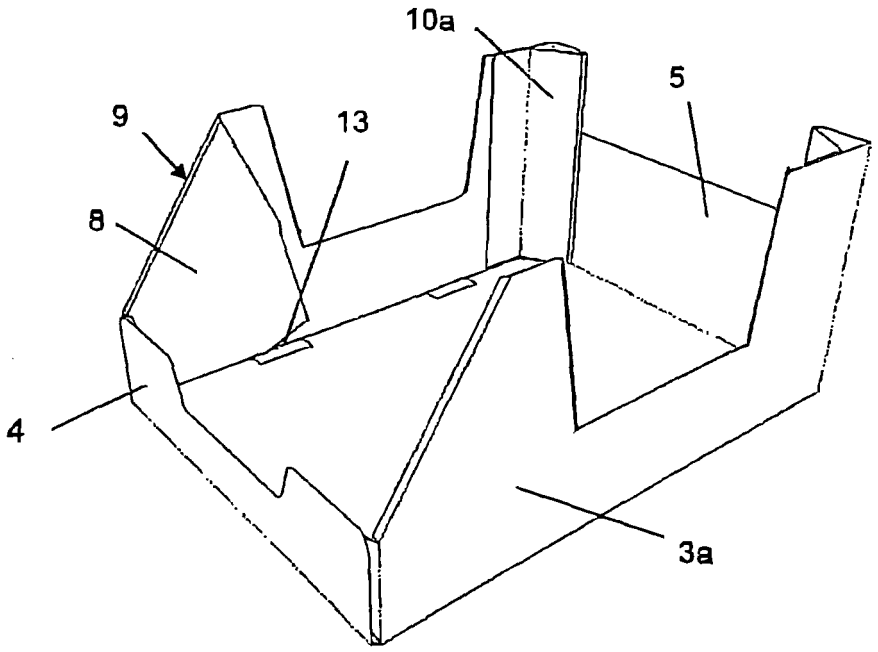


Fig. 5

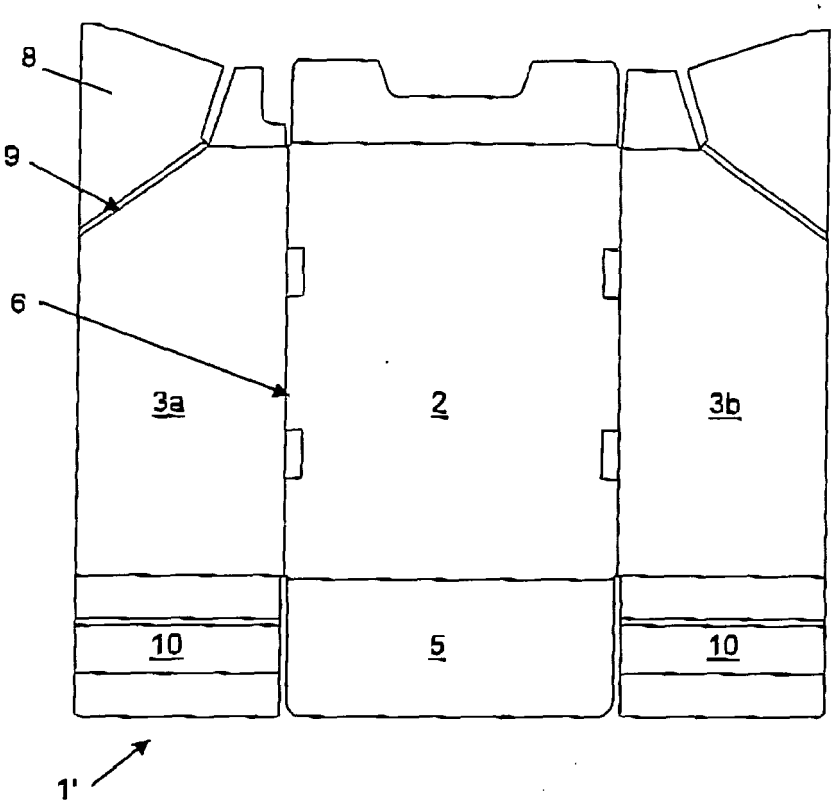


Fig. 6

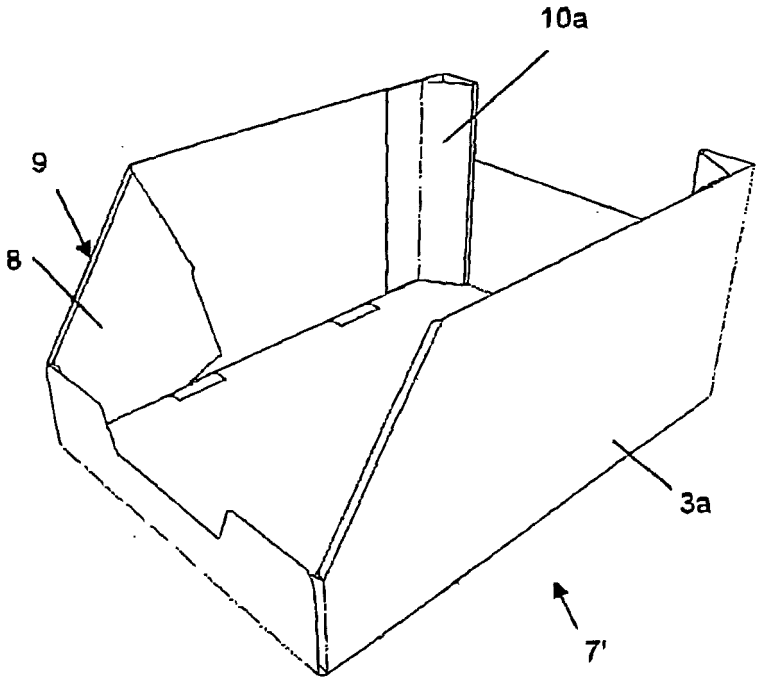


Fig. 7

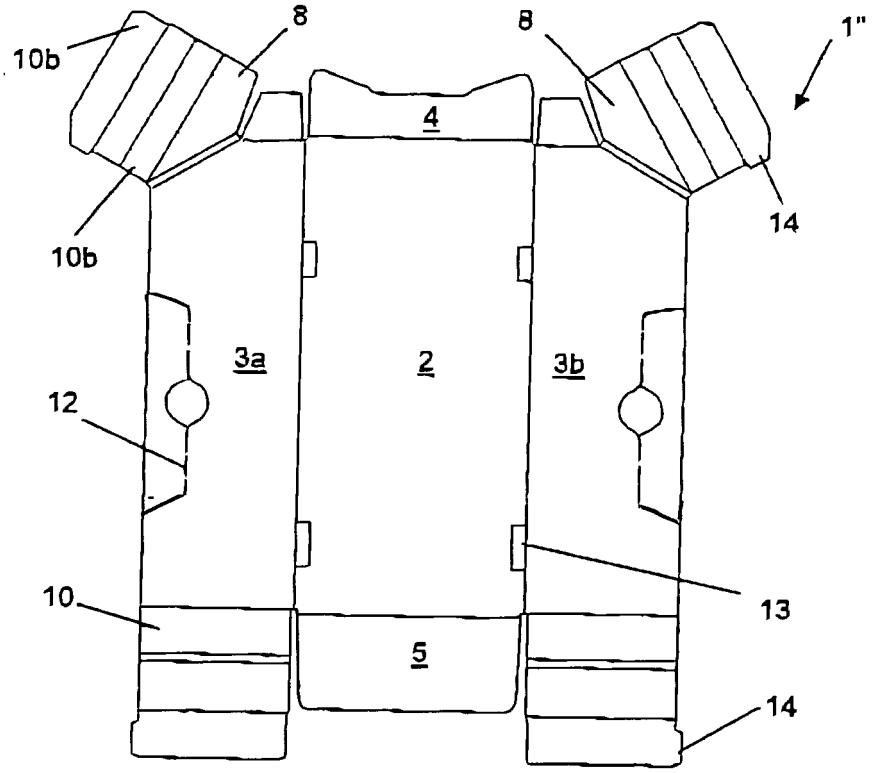
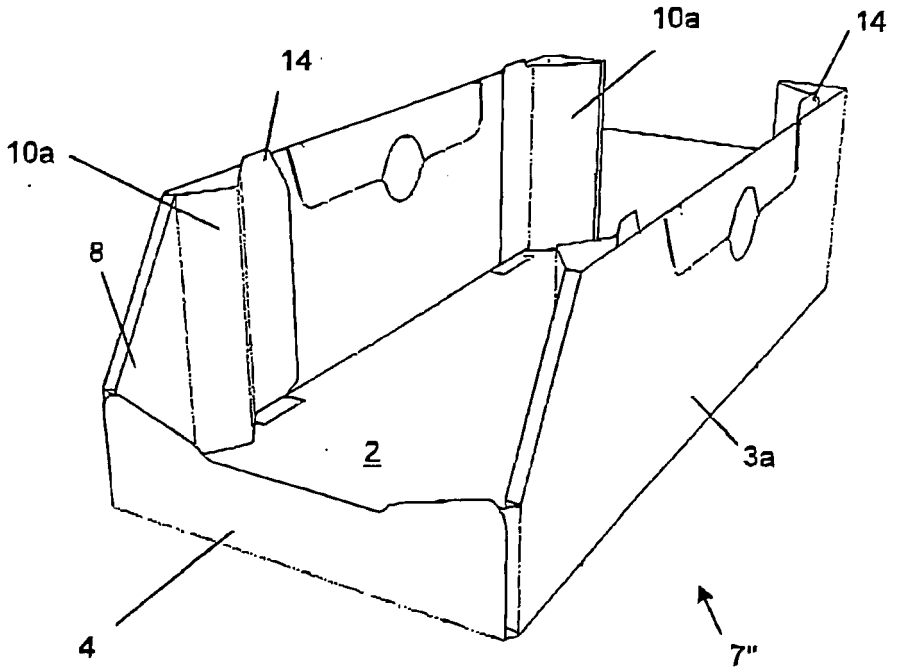


Fig. 8



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EUROPEAN SEARCH REPORT

Application Number
EP 05 01 5642

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 August 2005	Appelt, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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