



(11)

EP 1 371 568 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.12.2003 Bulletin 2003/51

(51) Int Cl.⁷: **B65D 5/66**, B65D 5/00,
B65D 5/44, B65D 5/46

(21) Application number: **02077239.8**

(22) Date of filing: 10.06.2002

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
 Designated Extension States:
AL LT LV MK RO SI

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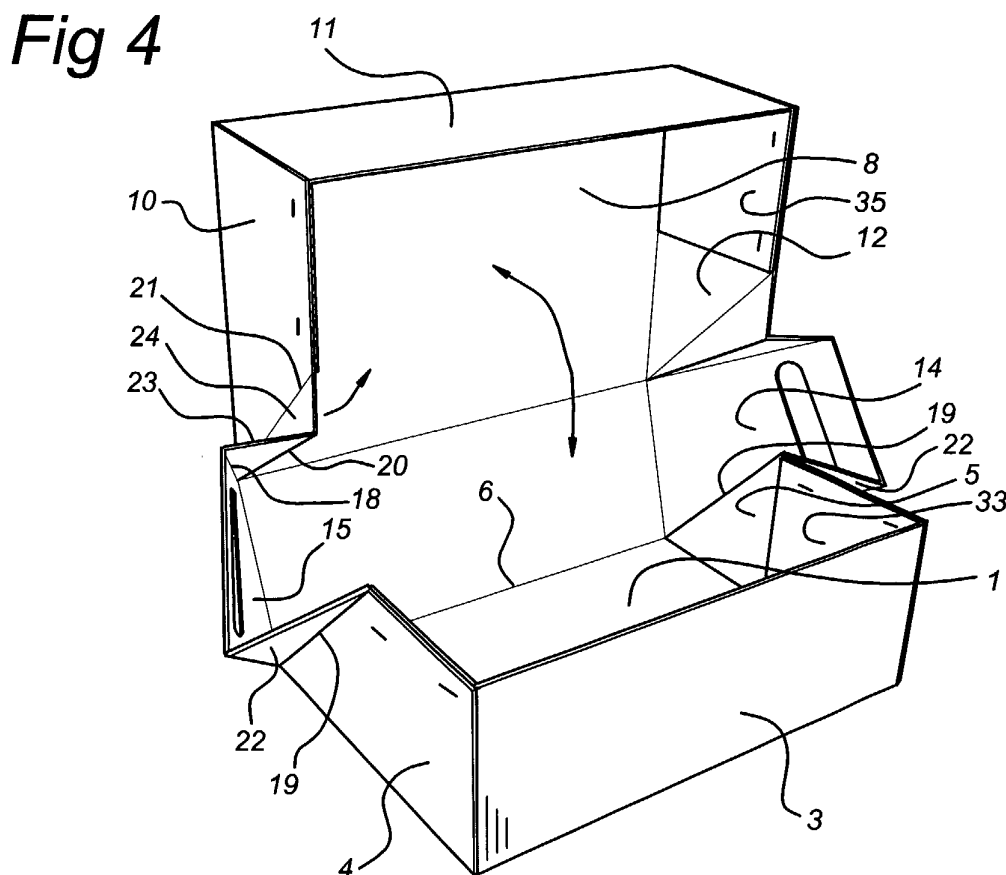
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(54) **Blank for a packaging carton**

(57) A blank for a packaging carton can be used two-fold. From the blank a carton can be obtained comprising a tray with a bottom and four walls, as well as a cover which is hingedly connected to the tray and which has

a top and three cover walls. In a second stage, after the contents of the packaging carton have been unpacked, the cover in its fully opened state together with a tray form an extended tray of more than twice the original size for the reuse and further packaging purposes.



Description

[0001] The invention is related to the field of packaging cartons which are used for various purposes in all types of industry and business. Such cartons are manufactured from different grades of cardboard material, for instance cardboard material with several flat and corrugated layers. The cartons are obtained by folding a prefabricated blank, which has the required shape and is provided with cutting lines and crease lines so as to enable an efficient manipulation of the blanks in a folding machine.

[0002] In particular types of industry, the cartons are frequently reused. For instance, cartons which are applied for packaging bakery goods, such as butter, are often used for transport of the baked goods after unpacking the butter contents. In this example, the carton comprises both a tray and a cover which snugly fits over the tray. The tray has a bottom and four upstanding tray walls; similarly, the cover has a top and four depending cover walls. These cover walls are about the same height as the tray walls, in such a way that after placing the cover onto the tray, a strong packaging carton is obtained.

[0003] In the prior art packaging carton, the tray and the cover are separate components, which have to be manufactured separately from two blanks and which subsequently have to be assembled during the packaging process. The object of the invention is to provide a blank for a packaging tray which can be handled in a relatively simple way and which can be reused after unpacking.

[0004] This object is achieved through a blank for a packaging carton, said carton comprising a tray with a bottom and four tray walls as well as a cover which is hingedly connected to one of the tray walls, said cover having a top and three cover walls, such that in the closed state of the carton the cover walls each are opposite a corresponding tray wall, said blank comprising:

- a bottom panel,
- four tray wall panels which are each connected through a respective crease line to the bottom panel,
- a top panel which is connected through a crease line, which is opposite the crease line between said tray wall panel and the bottom panel, to said tray wall panel,
- three cover wall panels which are each connected through a respective crease line to the top panel,
- two opposite intermediate panels which are each connected through respective crease lines to the tray wall panel which is connected to the top panel, said crease lines running between the bottom panel and the top panel, each intermediate panel being also connected through respective crease lines to a tray wall panel and a cover wall panel which are located next to said intermediate panel,

wherein each tray wall panel which is connected to an intermediate wall panel has an oblique crease line which runs from the intersection of the crease line through which the intermediate wall panel is connected to said tray wall panel, and the crease line through which said tray wall panel is connected to the bottom panel, said oblique crease line ending at the free edge of said tray wall panel and defining a triangular tray wall panel part,

wherein each cover wall panel which is connected to an intermediate panel has two oblique crease lines which run from the intersection of the crease line through which the intermediate wall panel is connected to said cover wall panel, and the crease line through which said cover wall panel is connected to the top panel, said two oblique crease lines ending at the free edge of said cover wall panel and defining two triangular cover wall panel parts, in such a way

that each intermediate panel with connected tray wall panel and cover wall panel can be folded over with respect to the tray wall panel which is connected to both the bottom panel and the top panel, to the bottom panel respectively to the top panel,

that the tray wall panel which is connected to the bottom panel and the top panel can be folded with respect to the bottom panel, while simultaneously each triangular tray wall panel part can be folded over its crease lines so as to bring said triangular tray wall panel part between the intermediate panel and the remainder of said tray wall panel,

that the top panel can be folded with respect to the tray wall panel to which it is connected, while simultaneously the two triangular cover wall panel parts of each cover wall panel at a first stage can be folded towards each other and subsequently can be folded back in such a way that they come to lie between the intermediate panel and the remainder of the cover wall panel.

[0005] By means of the blank according to the invention, a packaging carton can be obtained which has a tray with a fixed cover. In the state wherein the cover is folded over onto the tray, a strong and stiff carton is obtained. The three cover walls enclose the tray on three sides; the fourth side is formed by the tray wall which is connected to both the top and the bottom and thus adds to the strength and stiffness of the carton as well. After opening the carton by folding the cover in such a way that the top thereof comes to lie in the same plane as the bottom, an extended tray is obtained which can be used for further packaging purposes, e.g. for baked goods.

[0006] In the process of folding the cover with respect to the tray, the triangular panel parts of the tray wall panels and the cover wall panels play an important role. Due to the fact that they are able to pivot around their crease lines, they allow the folding action of the cover with respect to the tray despite the unitary character of the tray wall panel and cover wall panel with interposed intermediate panel on each side of the blank. The material of

the blank is deformed in this process, in particular near the intersections of the oblique crease lines. With the aim of alleviating the stresses in the material, each triangular cover wall panel part defined between the two oblique crease lines of the cover wall panels has an open area next to the point of intersection of these crease lines.

[0007] Preferably, the distance between the crease lines of the top panel are slightly larger than the corresponding distances between the crease lines of the bottom panel. As a result, the cover can be fitted easily over and around the tray.

[0008] The tray wall panels can be connected to each other in several ways. The same holds for the cover wall panels. Preferably, the tray wall panel and the cover wall panel other than the tray wall panels and the cover wall panels which are connected to an intermediate panel are connected through crease lines to flap panels which overlap said tray wall panels and cover wall panels connected to an intermediate panel, said flaps in the folded state of the tray wall panels and cover wall panels can be connected, e.g. by glueing, to said tray wall panels and cover wall panels which are connected to an intermediate panel.

[0009] As addressed before, the packaging carton which can be manufactured from the blank according to the invention can be reused in its folded open state. In that state, a fairly large extended tray is obtained, the size of which is somewhat more than twice the size of the original tray. Due to this larger size, said extended tray could become less stable. It is therefore desirable to add reinforcements to this extended tray. This is made possible in an embodiment in which a cutting line is provided in at least one tray wall panel and at least one cover wall panel connected to and enclosing an intermediate panel, said cutting lines each extending into the bottom panel respectively top panel and at their ends being bounded by a first crease line which runs between said cutting lines and through said tray wall panel, said intermediate panel and said cover wall panel, and by a second crease line which runs between the same cutting lines through said bottom panel, the tray wall panel positioned between the bottom panel and the top panel, and the top panel, in such a way that in the state in which the cover is fully folded open so as to form an extended tray, the blank parts defined between said crease lines and said cutting lines can be folded inwards so as to provide a stiffening member in said extended tray. Preferably, two stiffening members are defined on opposite sides of the extended tray.

[0010] The two stiffening members which can be formed on opposite sides of the extended tray provide additional stiffness. Moreover, the intermediate panels each can have a cutting line which defines a hand grip. Because of the fact that the stiffeners are at the same position as the hand grips, the extended tray will not easily yield in bending when it is carried at said hand grips.

[0011] The invention will now be described further

with reference to an embodiment of the blank and packaging carton according to the invention as shown in the drawings.

5 Figure 1 shows a blank according to the invention. Figure 2 shows a packaging carton in closed state as manufactured from the blank according to figure 1.

10 Figure 3 shows an extended tray, in which the cover is in the fully opened position with respect to the tray.

Figures 4 and 5 show two steps in the manufacturing process.

15 **[0012]** The blank as shown in figure 1 comprises a bottom panel 1 and four tray walls 2, 3, 4 and 5. The tray wall 2 is connected to the bottom panel through a crease line 6; the other tray wall panels 3 up to 5 are connected to the bottom panel 1 through crease lines 7.

20 **[0013]** Furthermore, the blank is provided with a top panel 8, which through crease line 9 is connected to the tray wall panel 2. The three cover wall panels 10, 11, 12 are connected to the top panel 8 through crease lines 13.

25 **[0014]** The tray wall panel 2 which is positioned between the bottom panel 1 and the cover panel 8 is connected to intermediate wall panels 14, 15 through crease lines 16. Furthermore, the intermediate wall panels 14, 15 are connected to the tray wall panels 5, 4 through crease lines 17, and to the cover wall panels 10, 12 through crease lines 18.

30 **[0015]** The tray wall panels 4, 5 are furthermore each provided with an oblique crease line 19, which run at an angle of 45 degrees with respect to their crease lines 7. The oblique crease line 19 runs from the intersection between the crease lines 7, 17, towards the free edge of the tray wall panel 4, 5 in question. Between each oblique crease line 19 and the corresponding crease line 7 a triangular tray wall panel part 22 is defined.

35 **[0016]** The cover wall panels 10, 12 are each provided with two oblique crease lines 20, 21, which run at different angles with respect to their crease lines 13. They originate at the intersection between the crease lines 13, 18, and end at the free edge of the cover wall panels 10, 12. Between each oblique crease line 20 and crease line 18 a first triangular cover wall panel part 23 is defined, and between the two oblique crease lines 20, 21 a second triangular cover wall panel part 24 is defined. An open area 32 is defined near the intersection point of the oblique crease lines 20, 21.

40 **[0017]** Each intermediate panel 14, 15 has furthermore a crease line 25 and a cut line 26 between which a hand grip panel part 27 is defined.

45 **[0018]** Furthermore, in each tray wall panel 4, 5 and the adjoining part of the bottom panel 1 a cutting line 28 has been applied, in the cover wall panels 10, 12 and the adjoining part of the top panel 8 a cutting line 29 has been applied. Between the ends of each pair of cutting

lines 28, 29, crease lines 30, 31 have been applied. The lines 28-31 together with crease lines 16 define stiffening parts 39, 40, which will be discussed later.

[0019] The tray wall panel 3 is connected to flap panels 33 through crease lines 34, the cover wall panel 11 is connected to flap panels 35 through crease lines 36.

[0020] From this blank, the packaging carton as shown in figure 2 can be manufactured. The manufacturing process will be described further with reference to figures 4 and 5. Said packaging carton comprises a tray which in total has been indicated by reference numeral 37; the tray 37 has been closed by the cover which has been indicated by reference numeral 38.

[0021] In figure 2 the fully closed state of the packaging carton according to the invention is shown. In contrast, figure 3 shows the fully opened position, in which a so-called extended tray is obtained. This tray can be stiffened by pushing inwardly the stiffening parts 39, 40 which is made possible by the cutting lines 28, 29, and the crease lines 16, 30 and 31. The extended tray can easily be handled and carried through the handgrips which are obtained by pushing inward the panel parts 27, so as to form handgrips, which are defined between the crease lines 25 and the cutting lines 26.

[0022] Figures 4 and 5 show two stages of forming the blank according to figure 1 into the carton of figure 2. Beforehand, the panels 4, 15, 10 have been folded upward with respect to the panels 1, 2, 8 according to the crease lines 7, 16, 13. Also, the opposite panels 5, 14, 12 have been folded upwardly with respect to panels 1, 2, 8. Then, panels 3, 11 are folded upwardly and their respective flaps 33, 35 are connected, e.g. by glueing, stapling etc., to the adjoining, upwardly folded panels 4, 5 respectively 10, 12. In fact, the shape according to figure 3 has been obtained then, be it that the stiffening part 39, 40 are not pushed inwardly.

[0023] From this halfproduct, the shape shown in figure 4 is obtained. First of all the triangular panels 22 are folded outwardly along their corresponding crease lines 19, such that the panel 2 can be folded upwardly according to its crease line 6 with respect to the panel 1. Then, the oblique panels 23, 24 are folded inwardly towards each other according to their respective crease lines 18, 20, 21 leading to the position shown in figure 5.

[0024] Upon further pressing downwardly the cover 38, the panels 22 are firmly pressed against the outside of the remainder of the panels 4, 5, and the triangular panels 23, 24 are folded in opposite direction, away from each other, in such a way that they come to lie in a single plane, next to and against the inside of the remainder of the corresponding panels 10, 12 as well as against the outside of the intermediate panels 15, 14. In this process, the triangular panels 23 and connected intermediate panels 15, 14 are temporarily pressed in inward direction at the location of their crease lines 18 (see inwardly directed arrow). When the cover 38 reaches its closed position, an outwardly directed movement of the crease lines 18 occurs, leading to the closed state as

shown in figure 1.

Claims

1. Blank for a packaging carton, said carton comprising a tray (37) with a bottom and four tray walls as well as a cover (38) which is hingedly connected to one of the tray walls, said cover having a top and three cover walls, such that in the closed state of the carton the cover walls each are opposite a corresponding tray wall, said blank comprising:

- a bottom panel (1),
- four tray wall panels (2-5) which are each connected through a respective crease line (6, 7) to the bottom panel (1),
- a top panel (8) which is connected through a crease line (9), which is opposite the crease line (6) between said tray wall panel (2) and the bottom panel (1), to said tray wall panel (2),
- three cover wall panels (10-12) which are each connected through a respective crease line (13) to the top panel (8),
- two opposite intermediate panels (14, 15) which are each connected through respective crease lines (16) to the tray wall panel (2) which is connected to the top panel (8), said crease lines (16) running between the bottom panel (1) and the top panel (8), each intermediate panel (14, 15) being also connected through respective crease lines (17, 18) to a tray wall panel (4, 5) and a cover wall panel (10, 12) which are located next to said intermediate panel (14, 15),

wherein each tray wall panel (4, 5) which is connected to an intermediate wall panel (14, 15) has an oblique crease line (19) which runs from the intersection of the crease line (17) through which the intermediate wall panel (14, 15) is connected to said tray wall panel (4, 5), and the crease line (7) through which said tray wall panel (4, 5) is connected to the bottom panel (1), said oblique crease line (19) ending at the free edge of said tray wall panel (4, 5) and defining a triangular tray wall panel part (22),

wherein each cover wall panel (10, 12) which is connected to an intermediate panel (14, 15) has two oblique crease lines (20, 21) which run from the intersection of the crease line (18) through which the intermediate wall panel (14, 15) is connected to said cover wall panel (10, 12), and the crease line (13) through which said cover wall panel (10, 12) is connected to the top panel (8), said two oblique crease lines (20, 21) ending at the free edge of said cover wall panel (10, 12) and defining two triangular cover wall panel parts (23, 24), in such a way that each intermediate panel (14, 15) with

connected tray wall panel (4, 5) and cover wall panel (10, 12) can be folded over with respect to the tray wall panel (2) which is connected to both the bottom panel (1) and the top panel (8), to the bottom panel (1) respectively to the top panel (8),

that the tray wall (2) panel which is connected to the bottom panel (1) and the top panel (8) can be folded with respect to the bottom panel (1), while simultaneously each triangular tray wall panel part (22) can be folded over its crease lines (17, 19) so as to bring said triangular tray wall panel part (22) between the intermediate panel (14, 15) and the remainder of said tray wall panel (4, 5),

that the top panel (8) can be folded with respect to the tray wall panel (2) to which it is connected, while simultaneously the two triangular cover wall panel parts (23, 24) of each cover wall panel (10, 12) at a first stage can be folded towards each other and subsequently can be folded back in such a way that they come to lie between the intermediate panel (14, 15) and the remainder of the cover wall panel (10, 12).

2. Blank according to claim 1, wherein each triangular cover wall panel part (24) defined between the two oblique crease lines (20, 21) has an open area (32) next to the point of intersection of these crease lines (20, 21).

3. Blank according to claim 1 or 2, wherein the distance between the crease lines (9, 13) of the top panel (8) are slightly larger than the corresponding distances between the crease lines (6, 7) of the bottom panel (1).

4. Blank according to any of the preceding claims, wherein the tray wall panel (3) and the cover wall panel (11) other than the tray wall panels (4, 5) and the cover wall panels (10, 12) which are connected to an intermediate panel (14, 15) are connected through crease lines (34) to flap panels (33) which overlap said tray wall panels (4, 5) and cover wall panels (10, 12) connected to an intermediate panel (14, 15), said flap panels (33) in the folded state of the tray wall panels (3-5) and cover wall panels (10-12) can be connected, e.g. by glueing, to said tray wall panels (4, 5) and cover wall panels (10, 12) which are connected to an intermediate panel (14, 15).

5. Blank according to any of the preceding claims, wherein a cutting line (28, 29) is provided in at least one tray wall panel (4, 5) and at least one cover wall panel (10, 12) connected to and enclosing an intermediate panel (14, 15), said cutting lines (28, 29) each extending into the bottom panel (1) respectively top panel (8) and at their ends being bounded by a first crease line (30) which runs between said

cutting lines (28, 29) and through said tray wall panel (4, 5), said intermediate panel (14, 15) and said cover wall panel (10, 12), and by a second crease line (31) which runs between the same cutting lines (28, 29) through said bottom panel (1), the tray wall panel (2) positioned between the bottom panel (1) and the top panel (8), and the top panel, in such a way that in the state in which the cover (38) is fully folded open so as to form an extended tray, the stiffening parts (39, 40) defined between said crease lines (30, 31) and said cutting lines (28, 29) can be folded inwards so as to provide a stiffening member in said extended tray.

6. Blank according to claim 5, wherein two stiffening members (39, 40) are defined on opposite sides of the extended tray.

7. Blank according to any of the preceding claims, wherein the intermediate panels (14, 15) each have a cutting line (26) and a crease line (25) which defines a hand grip.

Fig 1

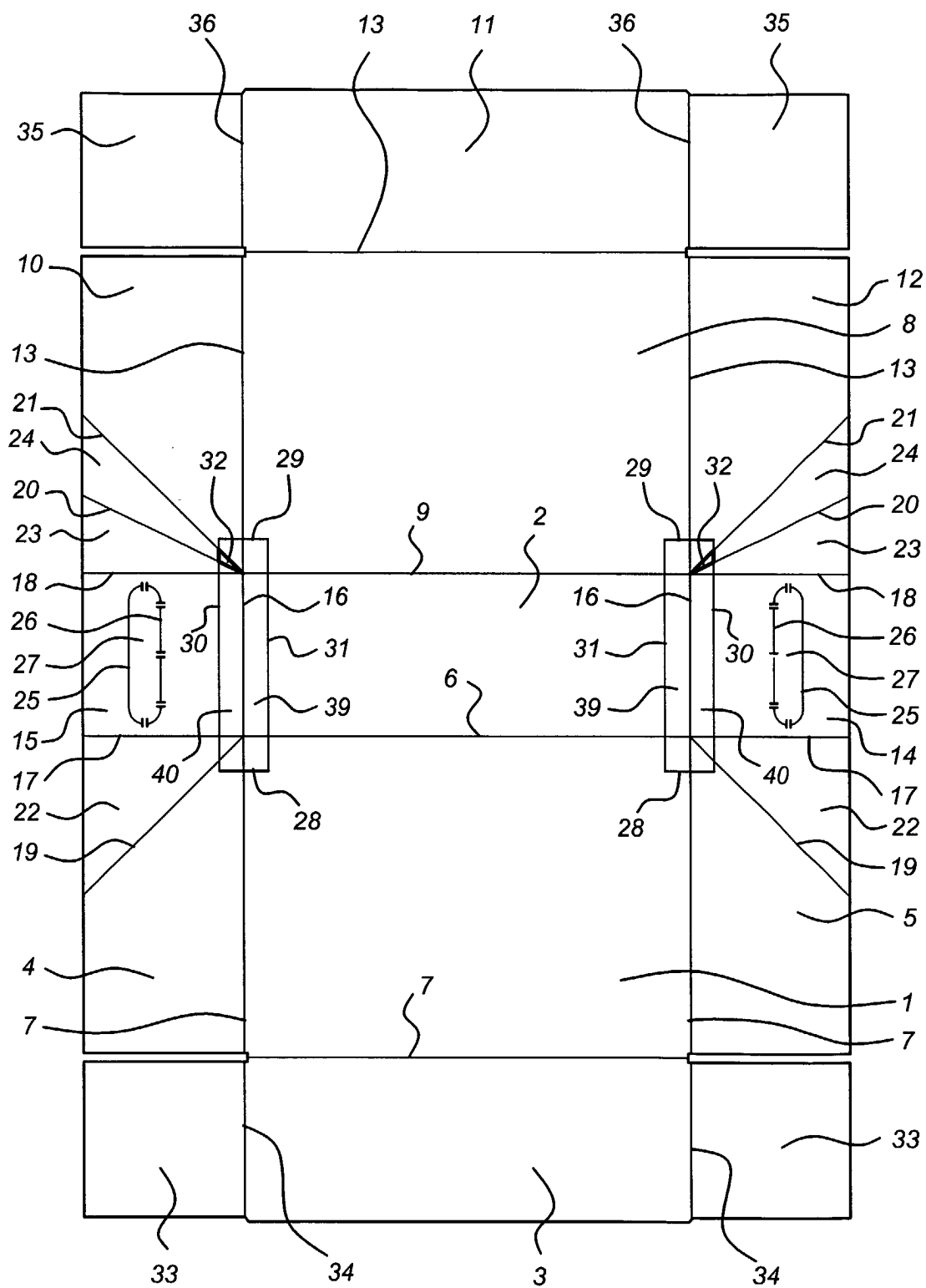


Fig 2

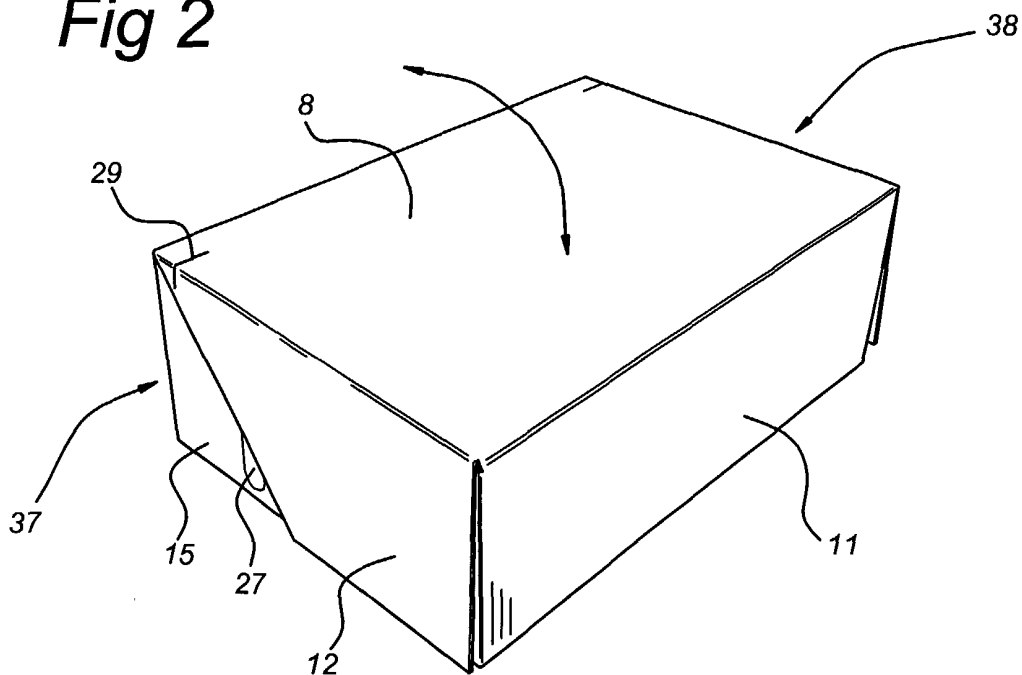


Fig 3

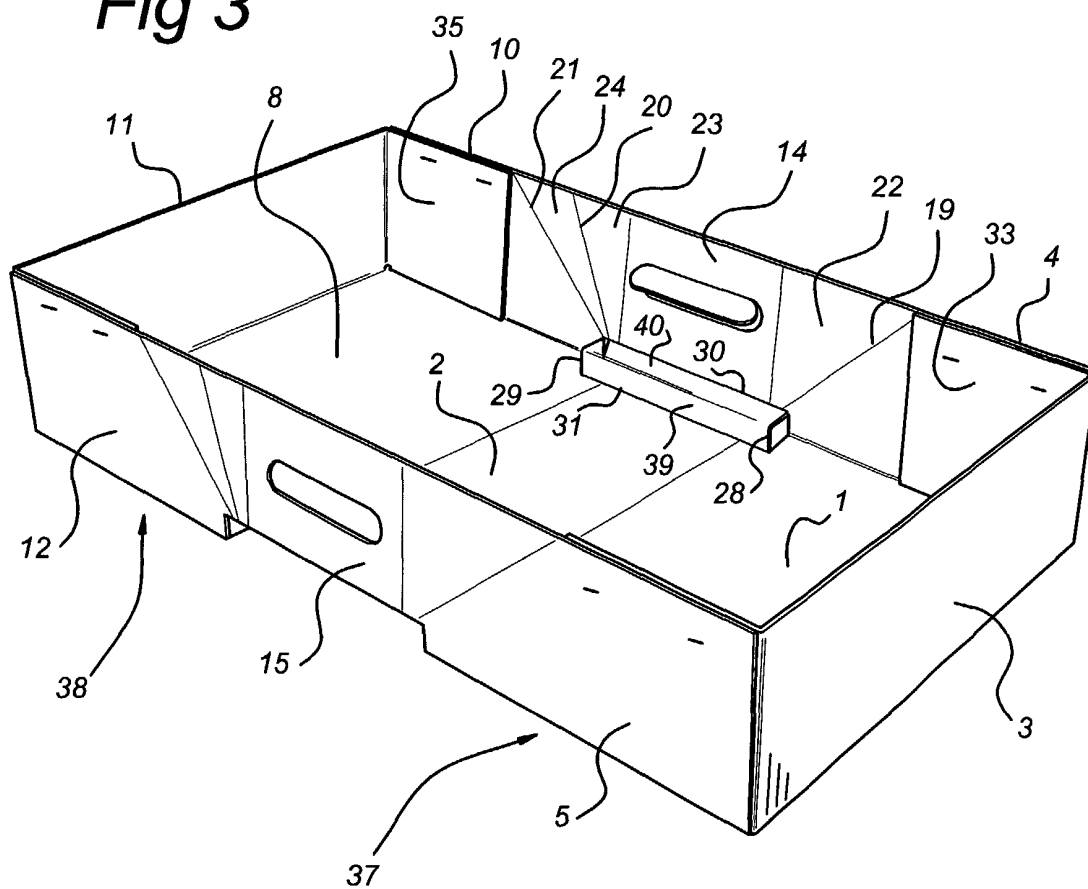


Fig 4

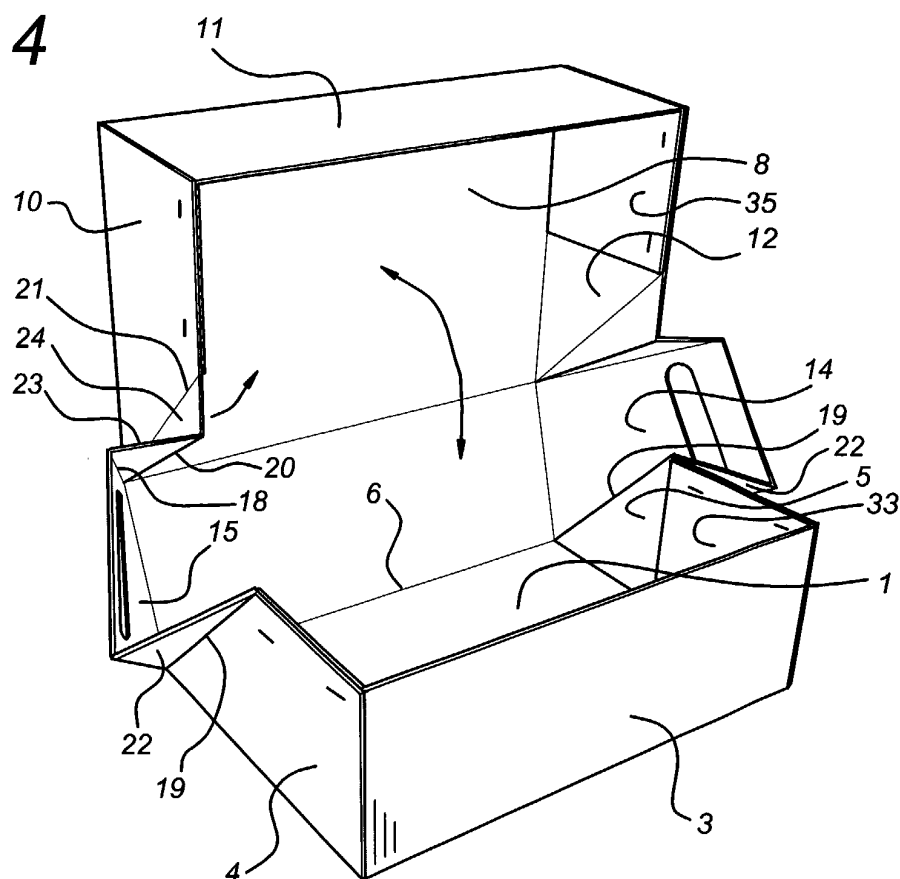
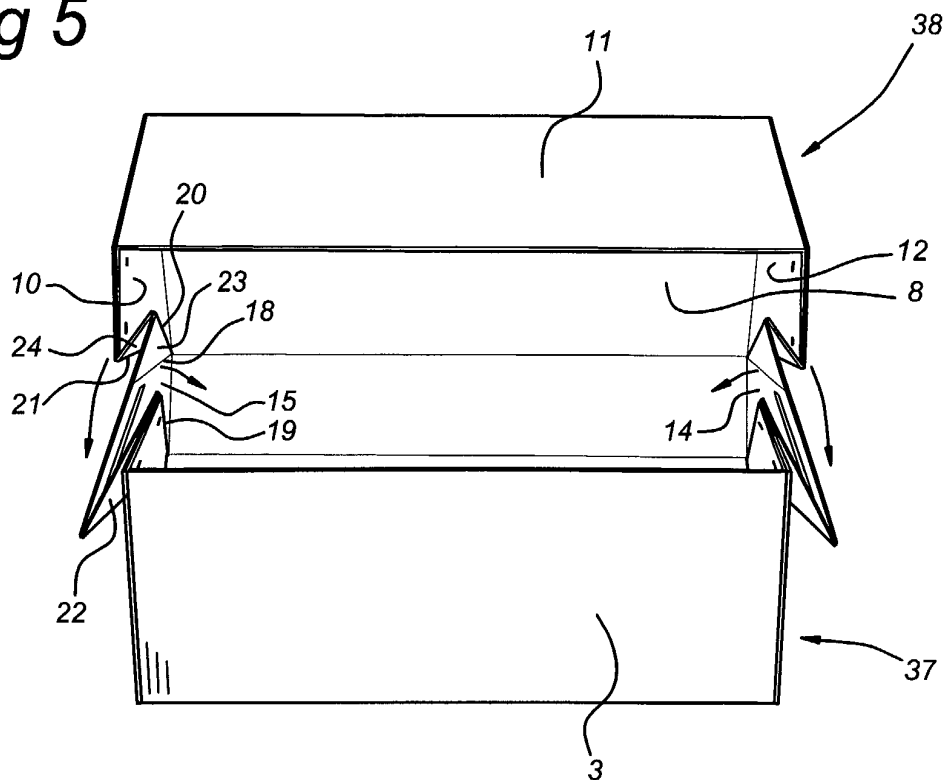


Fig 5





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 07 7239

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 November 2002	Examiner Bridault, A
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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