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Section 29(1)
Regulation 3.1(2)

Patents Act 1990

NOTICE OF ENTITLEMENT
(To be filed before acceptance)

We, RIVERWOOD INTERNATIONAL LIMITED,
of Filwood Road, Fishponds, Bristol BS16 3SB, England,
being the person nominated for the grant of the patent and being the applicant in respect of
Application No. 24120/92, state the following:

The person nominated for the grant of the patent:

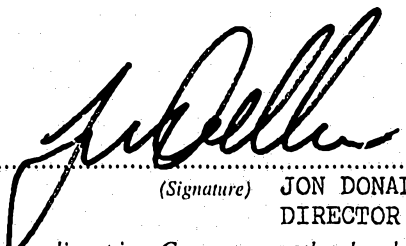
has entitlement from the actual inventor Geoffrey Campbell pursuant to the inventor's conditions of
employment with the applicant.

The person nominated for the grant of the patent:

is the applicant of the application listed in the declaration under Article 8 of the PCT.

The basic application listed in the declaration made under Article 8 of the PCT:

is the first application made in a Convention country in respect of the invention.



(Signature) JON DONALDSON
DIRECTOR

10/3/94

(Date)

(If the applicant is a Company or other legal entity, also indicate the name and standing of the authorized signatory.)



AU9224120

(12) PATENT ABRIDGMENT (11) Document No. AU-B-24120/92
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 670036

- (54) Title
CARTON FOR SEVERAL ARTICLES AND BLANK THEREFOR
- International Patent Classification(s)
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9117271 09.08.91 GB UNITED KINGDOM
- (43) Publication Date : **02.03.93**
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- (56) Prior Art Documents
US 2681143
AU 519495 42385/78 B65D 65/06 65/08 65/12
AU 513768 33177/78 B65D 5/30 5/24 5/42
- (57) Claim

1. A paperboard carton having a bottom panel, two side panels hingedly connected to the respective opposite side edges of the bottom panel and inner and outer top panels hingedly connected to upper edges of the respective side panels, the outer top panel overlaying at least a portion of the inner top panel and being secured thereto, a cut-out being formed in one only of the two top panels so as to constitute handle means and the overlaid, double-thickness portion of the top panel being located generally centrally between the upper edges of the side panels.

15. A paperboard carton blank including a bottom panel, two side panels hingedly connected to respective opposite side edges of the bottom panel, an outer top panel hingedly connected to an edge of one side panel opposite the bottom panel and an inner top panel hingedly connected

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(10) 670036

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to an edge of the outer side panel opposite the bottom panel, a cut-out being made in one only of the top panels and the blank being dimensioned such that when erected the outer top panel overlays at least a portion of the inner top panel, said double thickness portion of the top panel being located generally centrally between the upper edges of the said panels.

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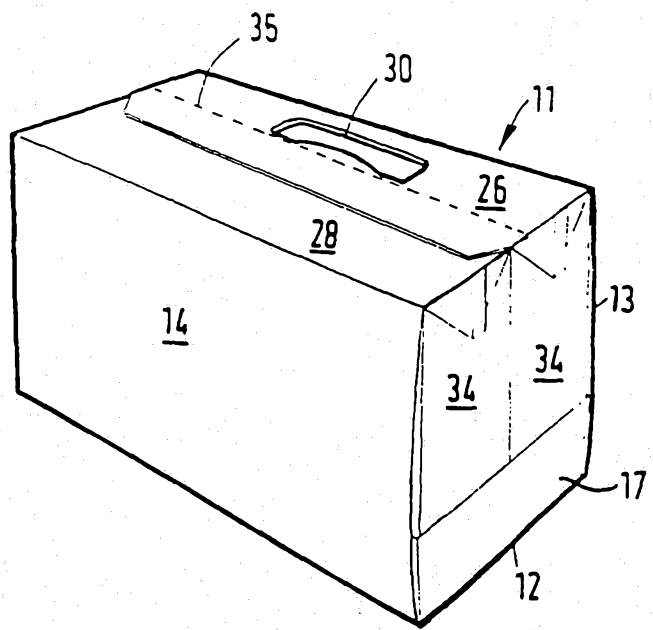
PCT

ANNOUNCEMENT OF THE LATER PUBLICATION OF INTERNATIONAL SEARCH REPORT

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : B65D 71/32</p>	<p>A3</p>	<p>(11) International Publication Number: WO 93/02944 (43) International Publication Date: 18 February 1993 (18.02.93)</p>
<p>(21) International Application Number: PCT/GB92/01472 (22) International Filing Date: 7 August 1992 (07.08.92) (30) Priority data: 9117271.8 9 August 1991 (09.08.91) GB (71) Applicant (for all designated States except US): RIVERWOOD INTERNATIONAL LIMITED [GB/GB]; Filwood Road, Fishponds, Bristol BS16 3SB (GB). (72) Inventor; and (75) Inventor/Applicant (for US only) : CAMPBELL, Geoffrey [GB/GB]; 78 Chiphouse Road, Kingswood, Bristol BS15 4TX (GB). (74) Agent: MARLES, Alan, David; Stevens, Hewlett & Perkins, 1 St. Augustines Place, Bristol BS1 4UD (GB).</p>	<p>(81) Designated States: AT, AU, BR, CA, CH, DE, DK, ES, FI, GB, JP, KR, LU, NL, NO, SE, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 15 April 1993 (15.04.93)</p> <p style="font-size: 2em; text-align: center;">670036</p>	

(54) Title: CARTON FOR SEVERAL ARTICLES AND BLANK THEREFOR



(57) Abstract

There is provided a carton (11) for holding a number of articles (34). There is a bottom panel (12), two sidewalls (13, 14), end panels (17) and overlapping top panels (26, 28). The overlapping portions of panels (26, 28) are glued together and there is a cut-out portion (30) in the outer top panel (26). The cut-out portion (30) lies adjacent the overlapping portions and midway between the carton ends.

- 8 SEPTEMBER 1993

Carton and Blank Therefor

This invention relates to cartons and their blanks.

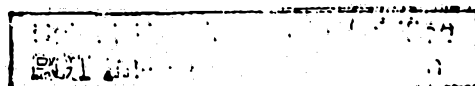
5 Many products are today sold in cartons which contain more than one article. For example, beverages are sold in multipacks containing any number of paralleliped containers, cans or bottles. Also, certain bulky items may be wrapped individually in a sleeve-like carton. These cartons not only provide a convenient way of carrying the article or articles contained therein, but they can also provide large, prominent spaces for advertising, promotions or instructions.

10 According to a first aspect of the present invention, there is provided a paperboard carton having a bottom panel, two side panels hingedly connected to the respective opposite side edges of the bottom panel and inner and outer top panels hingedly connected to upper edges of the respective side panels, the outer top panel overlaying at least a portion of the inner top panel and being secured thereto, a cut-out being formed in one only of the two top panels so as to constitute handle means and the overlaid, double-thickness portion of the top panel being located generally centrally between the upper edges of the side panels.

15 Preferably the cut-out is made in the outer top panel at a generally central location between its end edges and conveniently the edge of the cut-out nearest the inner top panel is adjacent the edge of the inner top panel.

20 In a preferred arrangement the cut-out is in the form of a slot for receiving the fingers of a user, so as to support from below the overlaid portions of the top panel.

25 Preferably cuts extend slightly towards the



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5 free edge of the outer top panel from the two ends of
the slot. Conveniently the edge of the slot nearest
the free edge of the outer top panel is arcuate and
the cuts extend in straight lines from the ends of
said arcuate edge. The cuts may extend at an angle
relative to the free edge of the outer top panel. In
a preferred arrangement, there is a further cut which
is spaced from the end of each first cut and which is
generally transverse relative to the lengthwise axis
10 of the carton.

In certain arrangements end panels are
provided. Preferably said end panels are partial and
are hingedly connected to respective opposite ends of
the bottom panel. A preferred feature is that tuck
flaps are provided for holding the end panels in
15 position, each tuck flap being hingedly connected to
its associated end panel and side wall and having a
score line between the side and end walls adapted to
facilitate folding of the tuck flap.

20 Ideally the outer and inner top panels are
adhesively secured to each other.

Preferably two lines of adhesive are used
between the two top panels, one line located adjacent
the free edge of the outer top panel and the other line
located adjacent the edge of the inner top panel. The
25 other line may extend generally below said further cuts
in the outer top panel.

According to a second aspect of the present
invention there is provided a paperboard carton blank
including a bottom panel, two side panels hingedly
connected to respective opposite side edges of the
bottom panel, an outer top panel hingedly connected to
30 an edge of one side panel opposite the bottom panel and
an inner top panel hingedly connected to an edge of the
other side panel opposite the bottom panel, a cut-out
being made in one only of the top panels.
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5 Preferably end panels are hingedly connected to respective opposite end edges of the bottom panel and each end panel is hingedly connected at its side edges to a pair of tuck panels which are in turn hingedly connected to the respective side panels, a score line being formed in each tuck panel between the side panel and the end panel. It is preferred that each score line is 47° from the adjacent side panel and 43° from the end panel.

10 Conveniently the hinged connections are formed by fold lines and/or score lines and/or a mixture of both.

15 Embodiments of the present invention will now be described in more detail. The description makes reference to the accompanying diagrammatic drawings in which:

Figure 1 shows a blank for forming a carton according to the present invention,

20 Figure 2 shows a perspective view of a made-up carton according to the present invention,

Figure 3 shows the carton of figure 2 in use,

Figure 4 shows a perspective view of another made-up carton according to the present invention in use,

25 Figure 5a and 5b show an end view and a plan view of a further made-up carton according to the present invention, and

Figure 6 shows a perspective view of a further made-up carton embodiment in use, and

30 Figure 7 shows a blank for forming the carton shown in figure 6.

35 Referring to figure 1, there is shown a blank 10 pressed from a single sheet of paperboard for a carton 11 which is shown in figures 2 and 3. There is provided a bottom panel 12 which is generally

5 rectangular in shape and is of a size determined by the articles which the carton is to contain. In this illustrated embodiment, the carton is to contain six regular parallelepiped containers of the type which are often used for milk, fruit juices etc, all the faces of which being generally rectangular.

10 The blank 10 has two side panels 13, 14 hingedly connected to respective side edges of the bottom panel 12 along fold lines 15, 16. Partial end walls 17, 18 are also hingedly connected to respective end edges of the bottom panel 12 along fold lines 19, 20. Tuck flaps 21, 22 connect respective end panels to respective side walls by way of fold lines 23, 24 and reverse fold 25.

15 There is also provided an outer top panel 26 hingedly connected to side panel 13 along fold line 27 and an inner top panel 28 hingedly connected to side panel 14 along fold line 29. In the outer top panel there is a cut-out portion 30. A small curved lip 31 is, however, retained, hingedly connected to the outer top panel 26 along fold line 32.

20 In the arrangement shown the angle 33 of each reverse fold 25 relative to the tuck flap side fold 24 is 47° although this is only an example of suitable tuck flap geometry.

25 To produce the carton 11, the articles 34 are placed in position on the bottom panel 12 and the side panels 13, 14 and end panels are folded upwards towards the articles 34 whilst simultaneously tucking in the tuck flaps between the articles 34 and the side panels 13, 14. The inner top panel 28 is then folded over the top of the articles 34 and one or more lines of adhesive applied to the areas which are to be overlaid by the outer top panel 26. The outer top panel 26 is then folded over the top of the articles

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34 and is secured to the inner top panel 28 by virtue of the adhesive.

5 The geometry of the carton blank 10 is such that the outer top panel 26 overlays the inner top panel 28 by a suitable amount. When the weight distribution of the articles is uniform, as in the illustrated embodiment, the secured portions of the two top panels 26, 28 extend generally centrally along the top of the carton.

10 The cut-out portion 30 is positioned so that, when the top panels 26, 28 are secured, it lies alongside the edge 35 of the inner top panel 28, which edge 35 is shown in figures 2 and 3 as hidden detail.

15 The cut-out portion 30 is shaped and sized to allow a user to insert four fingers of one hand and bend the fingers under the overlaid portions of the top panels. Because this overlaid portion is generally central, the carton is well balanced and can, therefore, be easily lifted. The lip 31 can be bent slightly about fold line 32 and around the edge 20 35 of inner top panel 28 to aid grip and improve comfort. The thumb of the user can also be braced against the carton to improve stability when lifted. Much of the weight of the articles 34 is borne by the central, overlapping portions which are double 25 thickness. Also the inner top panel 28 is not weakened in any way because there are no cut-out portions which tend to produce areas of weakness especially at the corners.

30 In figure 4 there is shown a similar carton 40 in which like components have been given like reference numerals. In this carton, however, each end is closed with two end flaps 41, 42 hingedly connected to respective side panels 13, 14. These end 35 flaps 41, 42 replace the end panels 17, 18 and tuck

flaps 21, 22. This arrangement clearly results in a more closed carton which can of course carry more graphics, advertising or promotions.

5 In place of the parallelepiped containers 34, the carton could contain cans for say beverages or foodstuffs. The carton could also contain a single item if a carton having a simple, strong carrying means is required.

10 A further example is shown in figures 5a and 5b. This carton 50 is for carrying bottles 51. Again, it has many similarities with the embodiment shown in figures 1 to 3 and so like components have been given like reference numerals. The principal difference is that each side panel 13, 14 is two-part in form, having an upper section 52 and a lower section 53. This ensures that the carton 50 conforms more accurately to the contours of the bottles 51.

15 The carton 11 shown in figure 6 is very similar to that shown in figure 3 and so like reference numerals have been given to like parts. Similarly the blank of figure 7 is very similar to that shown in figure 1.

20 The difference is that in the figure 6 and 7 arrangement there is an angled cut 60, 61 at the ends of the slot 30. Each cut 60, 61 has an associated transverse cut 62, 63 from which it is slightly spaced. Although not essential, the arcuate edge 64 of the slot 30 in this arrangement extends the entire length of the slot 30.

25 Figure 7 also shows a preferred adhesive pattern. The adhesive is applied in two lines 65, 66, either on the underside of the outer top panel 26 or on the top side of the inner top panel 28 or indeed a combination. Line 65 is located so as to be adjacent the free edge 67 of the outer top panel 26 and the

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line 66 is located so as to lie generally below the transverse cuts 62, 63, below the free ends of cuts 60, 61 and at the free edge of the lower top panel 28.

5 The cuts 62, 63 and 60, 61, together with the adhesive line 66 serve to dissipate the lifting loads over the panel 26 so as to reduce the tendency for the carton to tear at the corners of the slots.

10 It will be appreciated that any of the fold lines mentioned above could instead be scored lines or part-scored/part-folded. Also, the simple shapes could be made more complex, especially with regard to the end closures. For example, the side panels could incorporate known heel/top receiving apertures for cans or bottles.

15 It will also be evident that for combining the strength and comfort qualities of the present arrangement the glued, overlapping portions of the top panels should extend centrally of the carton when carrying a uniformly distributed weight. If not
20 uniformly distributed then said portions should pass over the centre of gravity of the loaded carton. The finger receiving slot should be located in one top panel only so that the fingers can extend under the overlapping portions. For best balance the fingers
25 should support above the centre of gravity of the loaded carton.

30 The term paperboard is intended to cover all forms of card and corrugated/strengthened board.

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Claims

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1. A paperboard carton having a bottom panel, two side panels hingedly connected to the respective opposite side edges of the bottom panel and inner and outer top panels hingedly connected to upper edges of the respective side panels, the outer top panel overlaying at least a portion of the inner top panel and being secured thereto, a cut-out being formed in one only of the two top panels so as to constitute handle means and the overlaid, double-thickness portion of the top panel being located generally centrally between the upper edges of the side panels.
 2. A carton as claimed in claim 1 wherein the cut-out is made in the outer top panel at a generally central location between its end edges.
 3. A carton as claimed in claim 2 wherein the edge of the cut-out nearest the inner top panel is adjacent the edge of the inner top panel.
 4. A carton as claimed in claim 3 wherein the cut-out is in the form of a slot for receiving the fingers of a user, so as to support from below the overlaid portions of the top panel.
 5. A carton as claimed in claim 4 wherein cuts extend slightly towards the free edge of the outer top panel from the two ends of the slot.
 6. A carton as claimed in claim 5 wherein the edge of the slot nearest the free edge of the outer



top panel is arcuate and the cuts extend in straight lines from the ends of said arcuate edge.

- 5
7. A carton as claimed in claim 5 or claim 6 wherein the cuts extend at an angle relative to the free edge of the outer top panel.
- 10
8. A carton as claimed in any one of claims 5 to 7 wherein there is a further cut which is spaced from the end of each first cut and which is generally transverse relative to the lengthwise axis of the carton.
- 15
9. A carton as claimed in any one of claims 1 to 8 wherein end panels are provided.
10. A carton as claimed in claim 9 wherein said end panels are partial and are hingedly connected to respective opposite ends of the bottom panel.
- 20
11. A carton as claimed in claim 10 wherein tuck flaps are provided for holding the end panels in position, each tuck flap being hingedly connected to its associated end panel and side wall and having a score line between the side and end walls adapted to facilitate folding of the tuck flap.
- 25
12. A carton as claimed in any one of claims 1 to 11 wherein the outer and inner top panels are adhesively secured to each other.
13. A carton as claimed in claim 12 wherein two lines of adhesive are used between the two top panels, one line located adjacent the free edge of the outer top panel and the other line located



adjacent the edge of the inner top panel.

14. A carton as claimed in claim 13 wherein said other line extends generally below said further cuts in the outer top panel.

5 15. A paperboard carton blank including a bottom panel, two side panels hingedly connected to respective opposite side edges of the bottom panel, an outer top panel hingedly connected to an edge of one side panel opposite the bottom
10 panel and an inner top panel hingedly connected to an edge of the outer side panel opposite the bottom panel, a cut-out being made in one only of the top panels and the blank being dimensioned such that when erected the outer top panel
15 overlays at least a portion of the inner top panel, said double thickness portion of the top panel being located generally centrally between the upper edges of the said panels.

20 16. A blank as claimed in claim 15 wherein end panels are hingedly connected to respective opposite end edges of the bottom panel and each end panel is hingedly connected at its side edges to a pair of tuck panels which are in turn hingedly connected to the respective side panels, a score line being
25 formed in each tuck panel between the side panel and the end panel adapted to facilitate folding of the tuck panel.

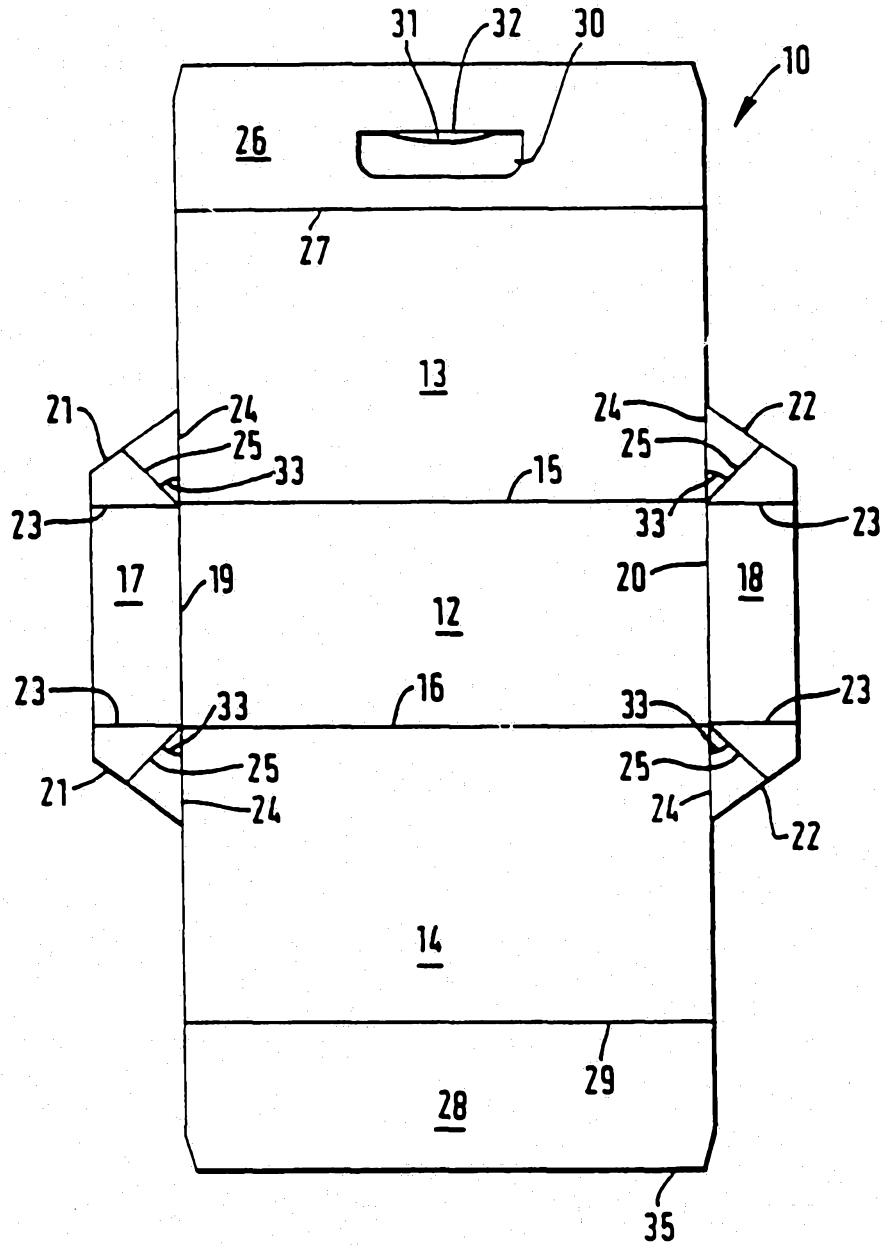
17. A blank as claimed in claim 16 wherein each score line is 47° from the side panel.

30 18. A blank as claimed in claim 17 wherein the hinged connections are formed by fold lines and/or score lines and/or a mixture of both.



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FIG. 1



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FIG. 2

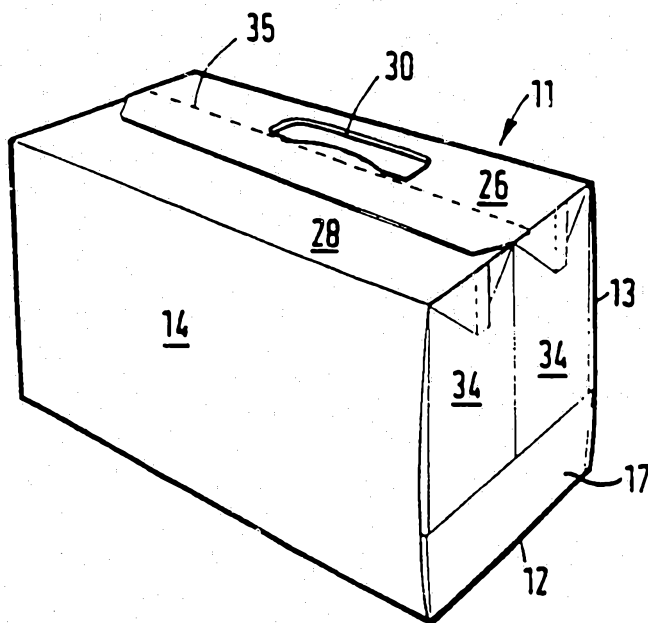
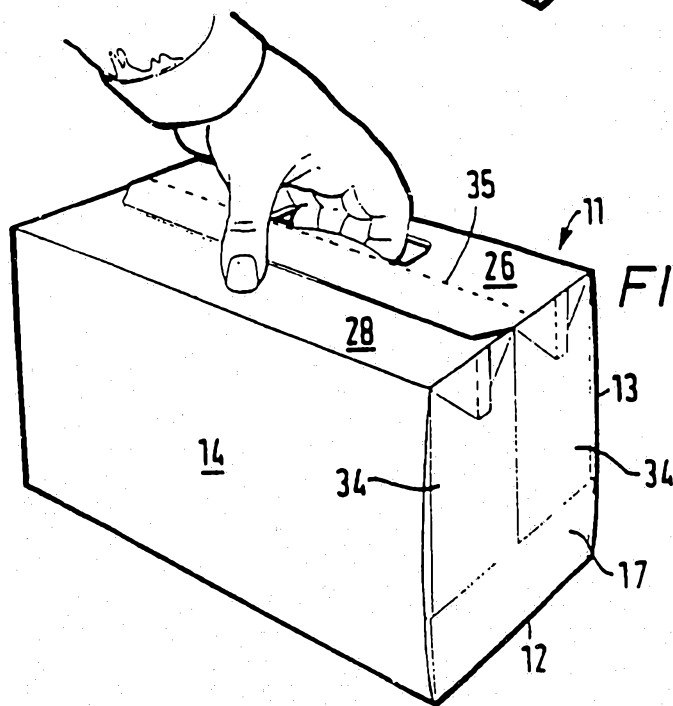


FIG. 3



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FIG. 4

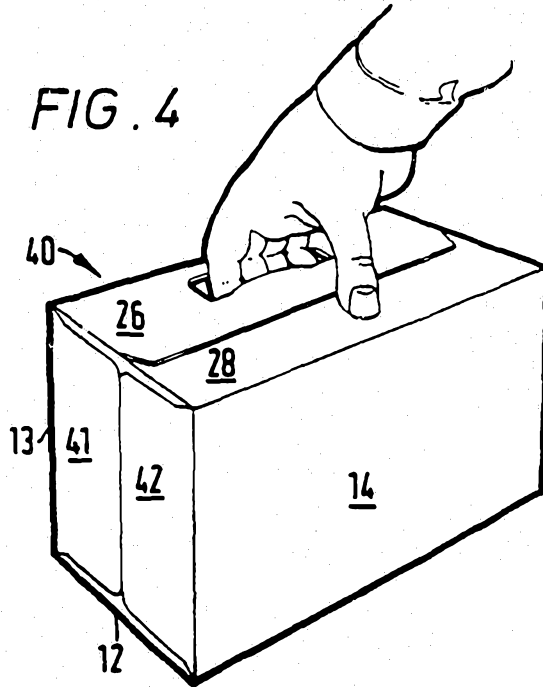
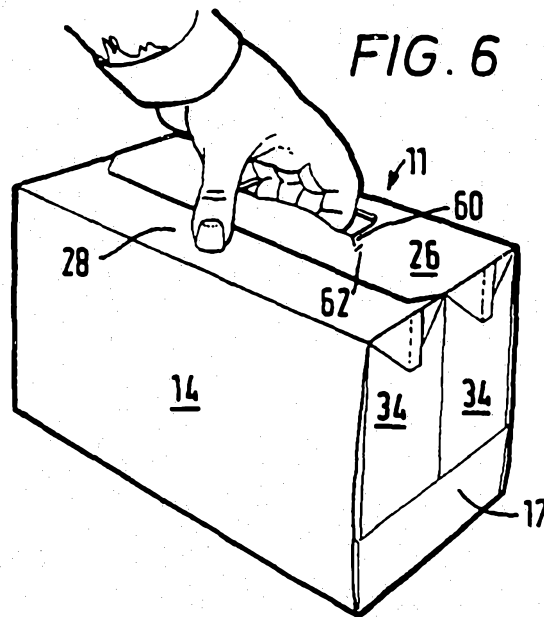


FIG. 6



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FIG. 5a

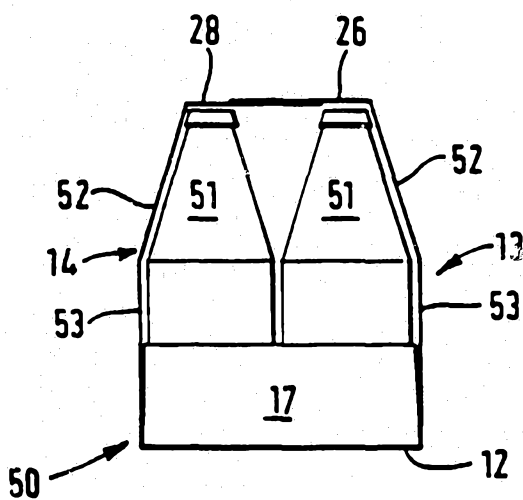
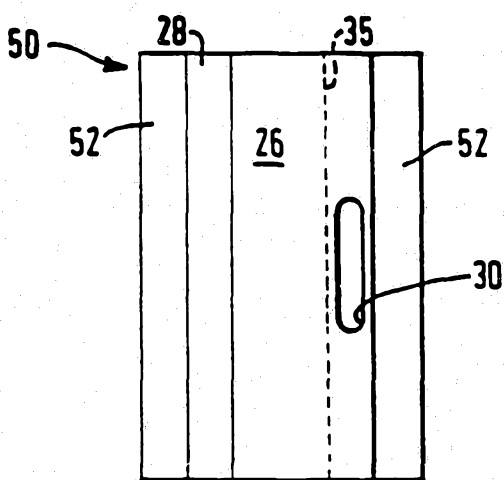


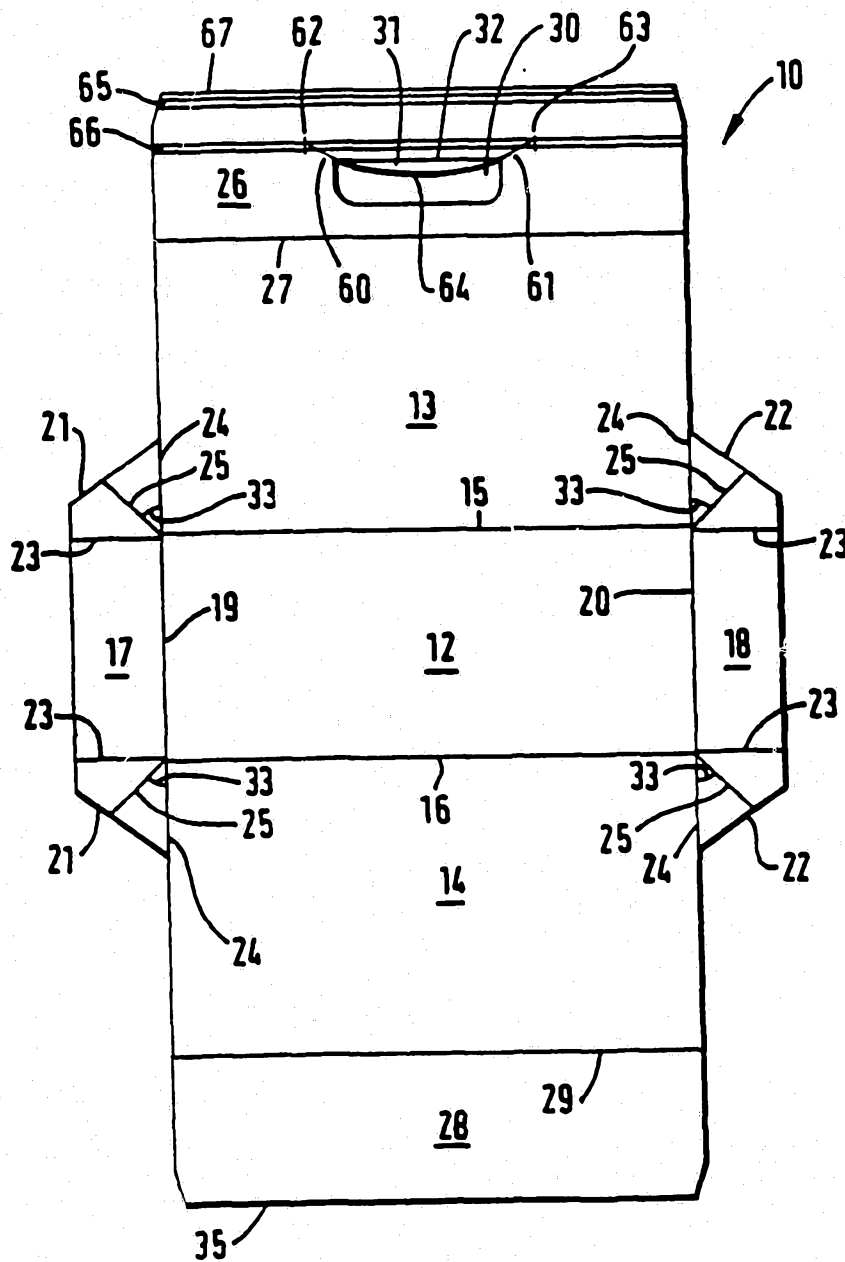
FIG. 5b



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FIG. 7



INTERNATIONAL SEARCH REPORT

PCT/GB 92/01472

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 B65D71/32		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	B65D	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US,A,2 681 143 (WALDORF PAPER PRODUCTS CO) 15 June 1954	1-5, 13, 16
Y	see figures 1,2 ---	6-9, 14
Y	US,A,4 405 078 (CHAMPION INTERNATIONAL CORP.) 20 September 1983 see figure 1 ---	6-9
Y	US,A,4 328 923 (JOHNS-MANVILLE CORP.) 11 May 1982 see figure 7 -----	14
<p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
09 MARCH 1993		18. 03. 93
International Searching Authority		Signature of Authorized Officer
EUROPEAN PATENT OFFICE		MARTIN A.G.M.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB92/01472

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

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

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

- claims 1-9, 16
- claims 10-12, 17-19
- claims 13-15

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

1-9, 13-15, 16
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

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

GB 9201472
SA 63160

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 09/03/93

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-2681143		None	
US-A-4405078	20-09-83	None	
US-A-4328923	11-05-82	None	

EPO FORM P0019

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