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(12) # EUROPEAN PATENT APPLICATION

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(54) **Multi-trip containers.**

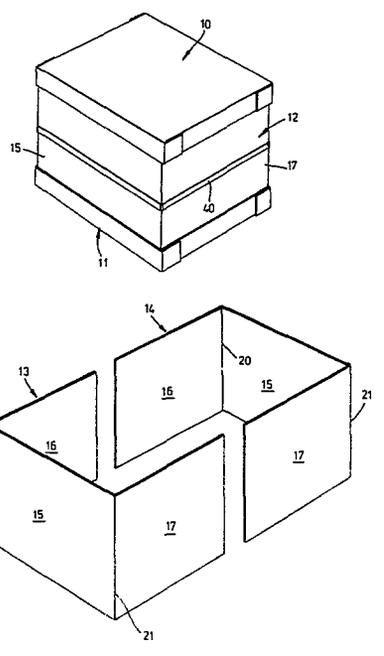
(57) A multi-trip container, i.e. an assembled container which can be used to transport goods and be returned in a collapsed state for re-assembly, includes two U-shaped wall portions 13, 14 which face each other and come together to form an upstanding wall 12, having a pair of opposed double-thickness walls, 16, 16 and 17, 17 and two opposed single-thickness walls 15, 15.

A lid 10 and base 11 are provided which are each erected from blanks to have a top or bottom and flanged surrounding edges or lip 32, 33.

The material from which the parts of the container are formed is of dual-wall or triple-wall cardboard, either wax-impregnated or not. For a container 18.30 × 15.15 × 14.17 cm. the material may be dual-wall 7-ply wax-impregnated (at 200°F) or triple-wall 9 or 11-ply non-waxed.

The U-shaped wall members are creased so that the limbs 16, 17 can fold to overlie the web 15 when out-of-use.

The container is advcantageous in being light but sturdy, easily handled during assembly and requires no stapling to attach one piece to the other.



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Multi-Trip Containers

This invention relates to re-usable containers, i.e. containers which can be erected for use, i.e. transportation of goods,and dismantled to take up a smaller volume for return transportation or storage.

At present one form of preparing goods for transportation is to stack the goods on a base or pallet located to top over the goods and surround the whole in shrink-wrap plastics. With such a package, the goods themselves bear any weight placed on them and must withstand lateral knocks. Breakage or buckling of some goods can thus cause collapse of the entire package and other stacked thereon.

It is an object of the present invention to obviate or mitigate the aforesaid disadvantages.

According to the present invention there is provided a re-usable container including an upstanding wall for location on a base, said wall comprising a pair of U-shaped wall members made of corrugated cardboard, the limbs of which engage each other to provide opposed wall portions of double thickness relative to the other opposed wall portions formed by the webs of the U-shaped members, the limbs of each member being hingeable relative to the respective web.

Preferably, said limbs are hingeable only between a collapsed position overlying the inner face of the web and an erected position substantially 90^{o} from said collapsed position.

Preferably also, in the erected container the limbs of one member abut the inner face of the limbs of the other member.

Preferably also, a lid is provided having a lipped peripheral edge which overlies the erected wall.

Preferably also, a base is provided having a lipped peripheral edge which overlies the erected wall.

Preferably also, the cardboard is at least 3-ply in thickness.

Preferably also, the cardboard is 3, 5 or 7-ply, dual-walled and wax-impregnated; or 7-ply non-wax-impregnated.

Alternatively, the cardboard is 9 or 11-ply triple-walled.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of an assembled container according to the invention;

Fig. 2 is a perspective view of the assembled wall members of the container;

Fig. 3 is a perspective view of the wall members before assembly;

Fig. 4 is a perspective view of the container base erected;

Fig. 5 is a perspective view of the container lid erected; and

Fig. 6 is a plan view of the lid/base prior to erection.

Referring to the drawings (Figs. 1 to 3) a re-usable, i.e. multi-trip, container,comprises a top 10, a base 11 and an upstanding wall 12, which is formed by two wall members 13, 14.

Each wall member 13, 14 is U-shaped having a base or web 15 and two parallel limbs 16, 17 lying at 90^{o} to the web.

The wall members 13, 14 are located with the limbs 16, 17 of one engaging the limbs 16, 17 of the other so as to form a pair of opposed walls of double thickness relative to the other pair of opposed walls.

The limbs of one member 13 engage the inner face of the respective limbs of the other member 14 (Fig. 2) rather than a staggered effect of one inside, one outside. Because of this arrangement, the web 15 of one member may be slightly wider than that of the other, but preferably, both members are of identical dimensions.

In the present embodiment, the erected container wall is 18.3 cm. wide, 15.15 cm. long and 14.17 cm. high.

Preferably, the double-thickness side is the shorter side (Fig. 3); this ensures less tendency for the inner limbs to flop about within the container before filling.

The material from which the wall is made is heavy-duty corrugated cardboard, for example, dual-wall 7-ply waterproofed by wax-impregnation (at 200°F) or triple-wall, 9 or 11-ply non-waxed. The material is .197 cm. thick.

Such a wall, standing on its own (with corrugations vertical) will support a weight of 2 metric tons.

Each wall member is initially a flat sheet which is scored in two places 20, 21 to form hingeable limbs. Each hinge is scored, e.g. 5 or more times, to provide the required flexibility and the limbs are so formed as to hinge only between a collapsed position in which they overlie the inner face of the web and the erected position at 90° thereto.

Referring now to Figs. 4 to 6, the lid 10 and base 11 are formed of the same corrugated cardboard material. The material for both the lid and base is initially a sheet 30 (Fig. 6) which is scored along a line 31 parallel to the edge to provide a lip or flanged edges 32, 33 which, in the lid, extends downward, and in the base extends upwards. A cut 34 is made at each corner, these being parallel and separating one pair of opposed flanges 32 (the shorter sides) from the other (longer) pair 33. Thus, when the lid/base is erected, extensions 35 are formed on said other (longer) pair of flanges 33. These extensions 33 are folded over to lie against the outer face of the respective shorter flanges 32.

When the wall 12 is located in the base 11 and the lid 10 is located on the wall, these folded portions 35, therefore, overlie the shorter double-thickness walls 16, 17.

The components of the container are bound together by strips 40 of plastics binding, e.g. ·197 cm. wide, each strip being secured by crimping in a metal holder (only one strip is shown).

In use, the components of the container can be brought to an assembly and filling point and erected by hand then filled with, for example, glassware such as jam jars or bottles. After filling, the lid is placed in position and the plastics straps fitted on; one is placed horizontally around the flange of the base and of the lip respectively, two are placed horizontally around the wall and two are placed vertically around the lid and base.

After unpacking of the container at its destination, the wall members can be folded inwards to their collapsed positions. The lid and base remain erected with their surrounding horizontal straps. The components can then be returned for re-use.

The container can be used to carry liquid or granular products by including a plastics liner (not shown). At its destination, the container wall can be cut to provide a hatch through which, after punching the liner, the liquid or granular products can flow out. A hatch (not shown) may be pre-cut in the container and taped over. The strength of the wall will not be adversely reduced.

Slots or holes may also be pre-cut in the container when the goods to be transported are fresh fruit or vegetables.

In an alternative embodiment (not shown) a container is provided which is intended to be of smaller dimensions and of thinner material than that described in my co-pending Application, although the construction and formation is the same.

The material is at least 3 or 5-ply dual-walled corrugated cardboard wax-impregnated, or at least 7-ply non-wax-impregnated.

Advantages of a container, as hereinbefore described, are as follows:-

the weight of stacked containers is supported by the walls of the containers rather than by the products as with a shrink-wrapped package;

the material of the container is light-weight;

a container, as described in the preferred embodiment, may weight about 22 kilos. and can thus be lifted easily by one or two persons. A corresponding container made of wood could not be so lifted;

accidental damage from the fork of a fork-lift apparatus is likely to be more localised in a cardboard container; forks can penetrate cardboard, whereas, they will split wood. Thus, a cardboard container is likely only to be holed whereas a wooden container may shatter and cause a collapse of stacked containers;

the material is combustable so that, after it has served its usefulness, it can be burned or recycled. A corresponding container in plastics material could not be disposed of so effectively;

the container is easily erected and labour costs are reduced;

the construction of shrink-wrap or wood or conventional cartons demands sophisticated and expensive stitchers, staplers, shrinkers, etc.;

erection may be done by one person and no staples are used to attach one piece of cardboard to another. The plastic banding can be easily secured using a standard crimping machine;

the containers do not need to be mechanically handled into position for filling but only when filled, therefore reducing fork-lift, etc. movement in close proximity to workers.

Where it is practical to do so the lid may be omitted.

CLAIMS

1. A re-usable container including an upstanding wall, a base supporting the wall, said wall being erected from members which are collapsible for out-of-use storage characterised in that, said members comprise a pair of U-shaped wall members (13, 14) made of corrugated cardboard, the limbs (16, 17) of which engage each other to provide opposed wall portions (16, 16 and 17, 17) of double thickness relative to the other opposed wall portion (15) formed by the webs of the U-shaped members, the limbs (16, 17) of each member (13, 14) being hingeable (at 21) relative to the respective web (15).

2. A container according to Claim 1, characterised in that said limbs (16, 17) are hingeable only between a collapsed position overlying the inner face of the web (15) and an erected position substantially 90^{o} from said collapsed position.

3. A container according to Claim 1 or 2, characterised in that in the erected container the limbs (16, 17) of one member (13) abut the inner face of the limbs (16, 17) of the other member (14).

4. A container according to Claim 1, 2 or 3, characterised in that a lid (10) is provided having a lipped peripheral edge (32,33) which overlies the erected wall.

5. A container according to any one of Claims 1 to 4, characterised in that the base (11) has a lipped peripheral edge (32, 33) which surrounds the erected wall.

6. A container according to any one of Claims 1 to 5 characterised in that the cardboard is at least 3-ply in thickness.

7. A container according to Claim 7, characterised in that the cardboard is 3, 5 or 7-ply dual-walled and wax-impregnated.

8. A container according to Claim 6, characterised in that the cardboard is 7-ply non-wax-impregnated.

9. A container according to Claim 6, characterised in that the cardboard is 9 or 11-ply triple-walled.

10. A re-usable container substantially as herein-before described, with reference to the accompanying drawings.

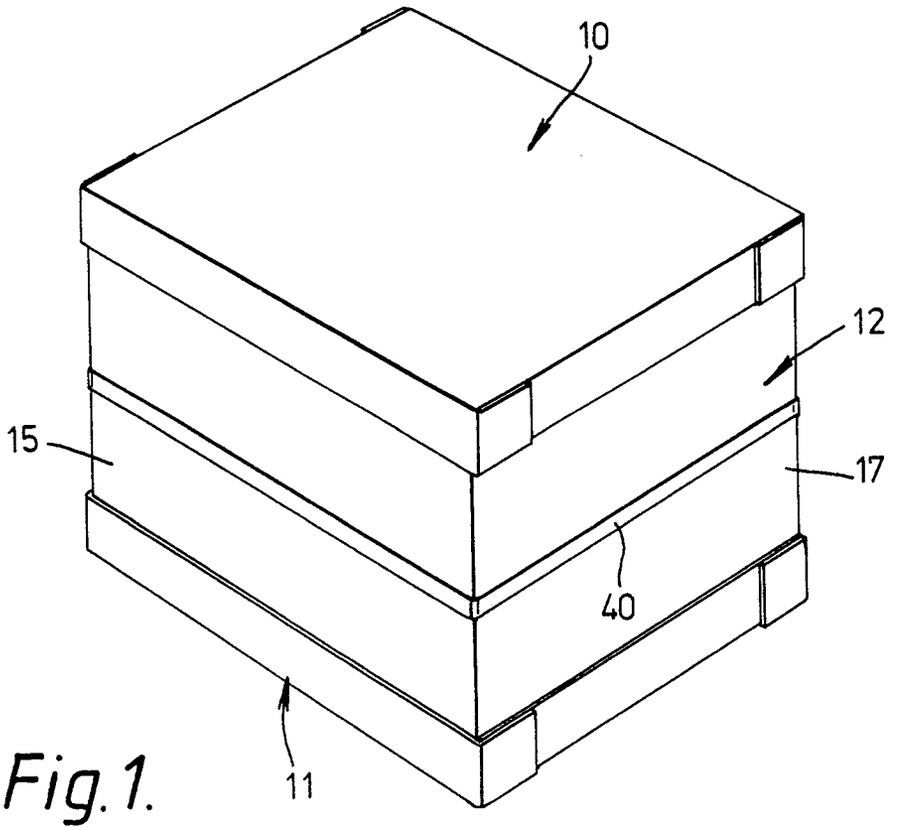

Fig. 1.

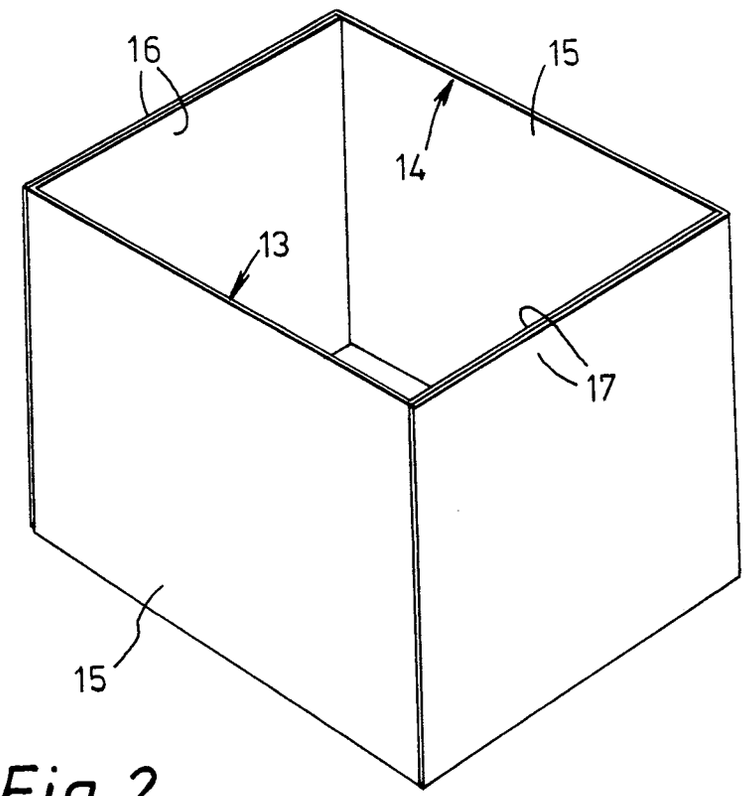

Fig. 2.

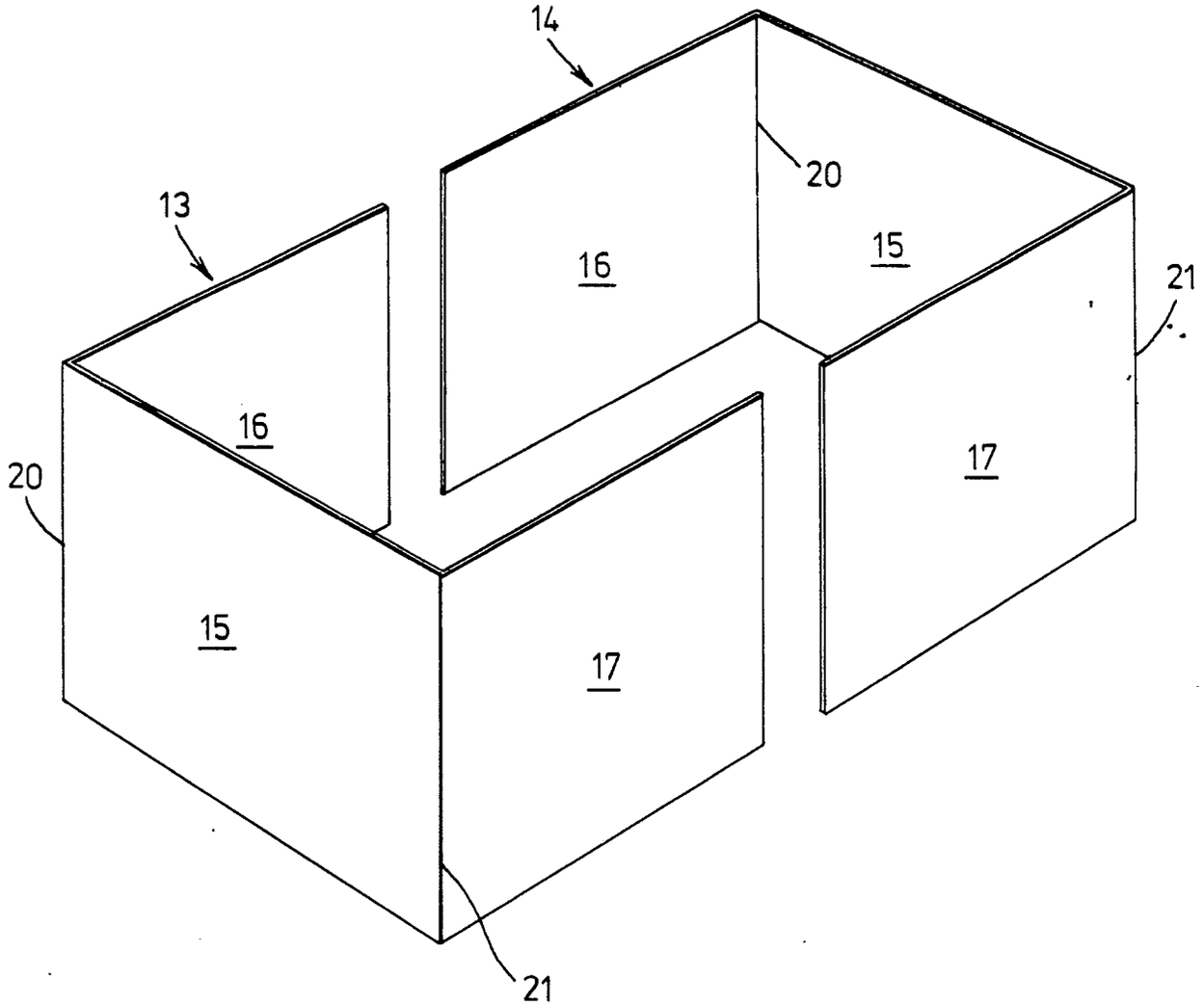

Fig. 3.

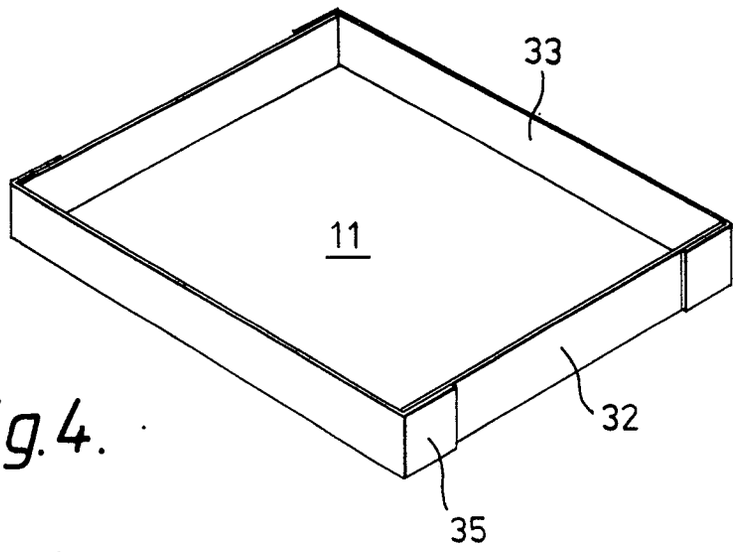
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Fig.4.

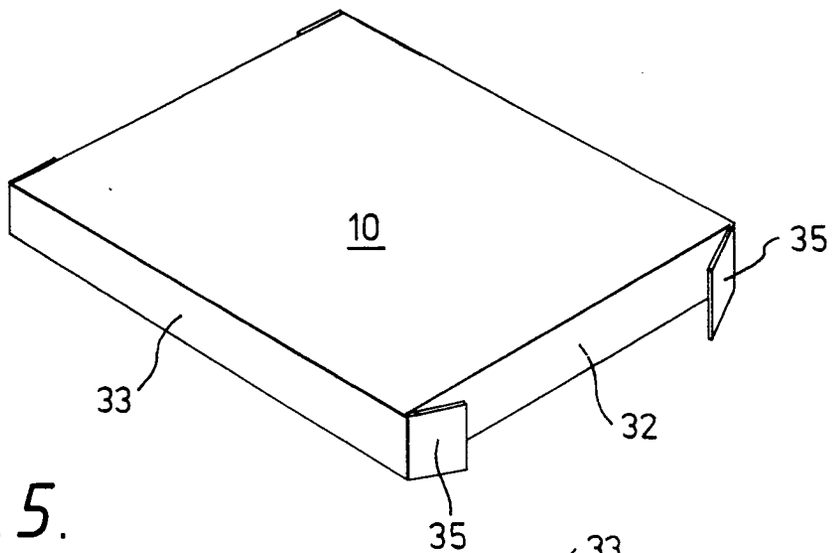
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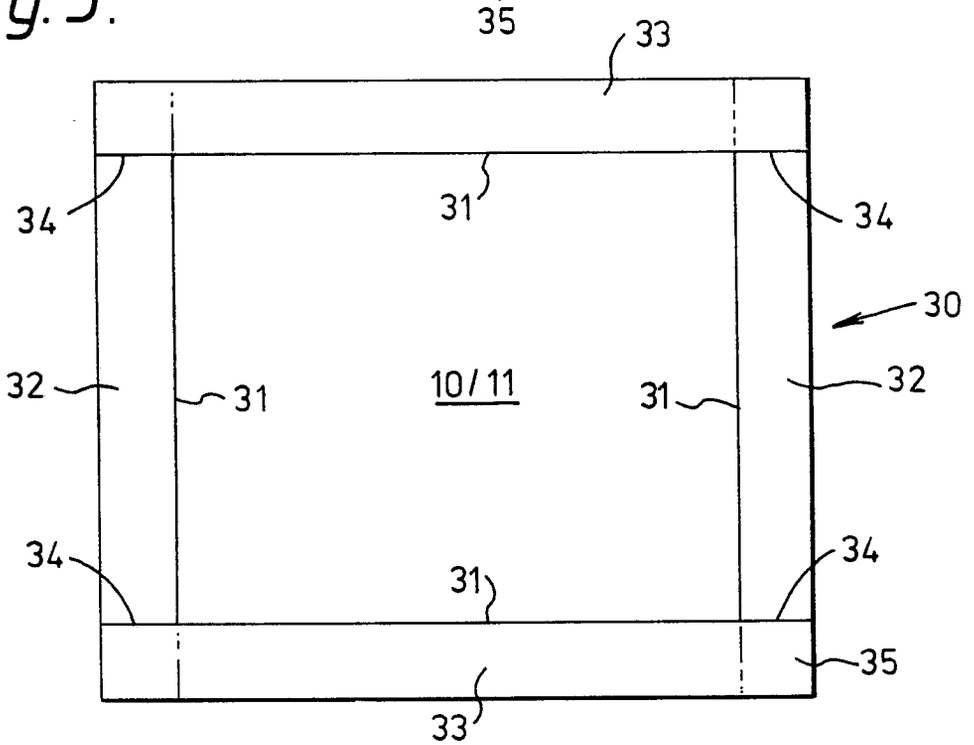
Fig.5.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European Patent Office

EUROPEAN SEARCH REPORT

Application number
0020171
EP 80 30 1931

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	GB - A - 377 669 (CRAWFORD) * Page 2, lines 73-89, 91-93; figures * --	1,4,5, 10
A	FR - A - 612 183 (TROLLIARD) * The whole document * --	1,4,5
	US - A - 2 208 268 (SNIJDER) * Page 2, left-hand column, lines 47-75; right-hand column, lines 1-2; figures 1,3 * --	1,3
	US - A - 3 184 140 (PETERSON) * Column 3, lines 70-75; column 4, lines 1-13; figure 6 * --	1,3
	US - A - 3 954 219 (GLENCO REFRIGERATION CORP.) * Column 3, lines 10-16 * --	6
	FR - A - 1 430 441 (ZELLSTOFFFABRIK WALDHOF) * page 2, right-hand column, lines 15-18, 20-25 * ----	7

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

B 65 D 5/32

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

B 65 D

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	08.09.1980	BAERT

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