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54 **Plastic crate for receiving objects bundled into groups.**

57 A plastic crate 1 for receiving objects 3 bundled into groups, in particular bottles in carrier cartons or packaged in foil, is provided with columns 2 extending upwardly from the crate bottom and having, viewed in cross section, an open profile composed of flanges whose smallest cross-sectional dimension lies on the line of symmetry 6 between two rows of objects 3 to be placed inside the crate 1. Preferably the columns 2 have an H-shaped cross-section, and the body of the H-shape is directed transversely to the line of symmetry 6 between two rows of objects 3. The edges of the flanges are adapted to come into contact with an object 3. The columns 2 fit into spaces which are each confined by four neighbouring objects 3.

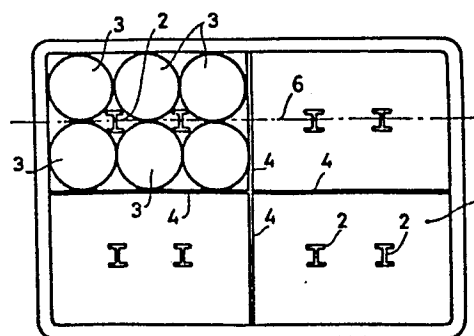


FIG. 1.

Plastic crate for receiving objects bundled into groups.

The invention relates to a plastic crate for receiving objects bundled into groups, in particular bundled bottles, said crate being provided with columns extending upwardly
5 from the crate bottom and fitting into spaces which are each confined by four neighbouring objects, as disclosed by Dutch patent application 7801124.

In these bottle crates, the columns are in the form of hollow bodies, and side walls of these columns are adapted
10 to walls of bottles to be placed next to the columns. Said columns are provided with a flat top side.

The drawback of this known crate is that in the case of groupes of bundled bottles, for example bottles in carrier cartons or packaged in foil, usually six being
15 disposed with respect to one another in two rows of three bottles, relatively large holes are to be provided in the carrier cartons or in the foil in order to allow passage of the columns. This means a substantial weakening of the carrier-carton bottom precisely in the area where
20 a relatively great strength is required. Another drawback is that the flat top side may impede the automatic placing of bundled objects into crates as the packaging carton or packaging foil, usually shrink foil, may get stuck at the flat top side of the column.

The object of the invention is to improve a plastic crate for receiving objects bundled into groups so as to eliminate said drawbacks.

5 Said object is attained according to the invention with a plastic crate of the type described at the beginning which is characterized in that, viewed in cross section, the columns have an open profile composed of flanges whose smallest cross-sectional dimension lies on the line of symmetry between two rows to be placed inside
10 the crate and each having more than two objects.

In a practical embodiment, the plastic crate according to the invention is such that the open profile composed of flanges has an H-shaped cross section and the body of the H-shape is directed transversely to the line of
15 symmetry between two rows of objects to be placed inside a crate.

The advantage is that in case of a carrier carton the portion lying on said line of symmetry has the smallest possible interruption, whereas a sturdy column can be
20 obtained in that the larger portions of the opening are at a certain distance from said line of symmetry. In addition, the upper edges of the flanges are inclined downwardly, the upper edge of the body of the H-shape having its highest point in its central area. This effective-
25 ly results in a bundle of packaged objects being automatically guided around the columns when being placed into the crate.

It is to be noted that the published German Utility Model 76 01 264 discloses a crate having open columns which have an H-shaped cross section. However, these columns are each placed between two neighbouring objects, the upper faces of the flanges of the H-shape being located higher than the body said ^{of} H-shape. The body of the H-shape is considerably larger than the flanges, which not only result in the carrier carton, or foil, being weakened in the area close to its critical portion, but, additionally, in the objects of the bundle having to be pushed apart from one another, which may cause damage to, for instance, a carrier carton. A further drawback is that due to the large number of columns as compared with the number of objects and the higher location of the upper flange faces there can easily be formed a bearing surface which may prevent the bundled objects from dropping fully into the crate.

The invention will now be further explained with reference to a drawing.

In this drawing:

- Fig. 1 is a top view of a plastic crate according to the invention, in the most elementary form thereof;
- Fig. 2 is a top view of columns as used in the crate of Fig. 1;
- Fig. 3 is a front view of the column shown in Fig. 2;
- Fig. 4 is a lateral view of the column of Fig. 2;
- Fig. 5 is a top view of a crate as in Fig. 1 but having a different division of compartments; and
- Fig. 6 is a top view of a crate as in Fig. 1 but not having compartments.

The plastic crate shown in Fig. 1, and made for instance in an injection mould, is intended to receive objects bundled into groups, in particular bundled bottles, said crate being provided with columns 2 extending upwardly

5 from the crate bottom 1 and fitting into spaces which are each confined by four neighbouring objects 3. In fig. 1, the crate is subdivided into four compartments by means of partitions 4, and each compartment has two

10 columns 2 as each compartment can fittingly contain a bundle of six objects 3, specifically bottles. As is clearly apparent from figs. 1 and 2, viewed in cross section, the columns have an open profile composed of

15 flanges 5 whose smallest cross-sectional dimension lies on the line of symmetry between two rows to be placed inside the crate and each having more than two objects. For clarity, this line of symmetry is indicated in fig. 1

20 by a dot and dash line 6. The edges of the flanges 5 are shaped to come into contact with an object 3. Thus, the flange edges are rounded to prevent damage, for instance to labels on the bottles. The height of the columns ex-

25 tending upwardly from the crate bottom 1 is smaller than the crate height and preferably also smaller than the height of the partitions 4, which partition height may also be smaller than the height of the crate. The cross section of the open profile is formed from a body 7

with flanges 5 outwardly extending therefrom, and this body is at an angle with respect to the line of symmetry 6 between two rows of objects 3 to be placed inside the crate.

As is clearly apparent from the drawing, the open profile composed of flanges has an H-shaped cross section and the body 7 of the H-shape is directed transversely to the line of symmetry 6 between two rows of objects to be placed inside the crate. The upper edges 8 of the flanges 5 are inclined downwardly, as is clearly shown in Fig. 3. Parts of the upper edges 8 of the flanges are lower than parts of the body 7 of the H shape, as is clearly apparent from Figs. 3 and 4. The upper edge 9 of the body 7 of the H-shape has its highest point in its central area (Fig. 4).

Due to its being divided into compartments by means of the partitions 4, the crate drawn in Fig. 1 is particularly suitable for receiving bundles of bottles provided in carrier cartons, in which case such crate can contain four carrier cartons. The bottom of the carrier cartons can be provided with a corresponding H-shaped passage opening, in this case two in each carrier carton, which has the smallest dimension in the area of its weakest point, i.e. on the line of symmetry 6.

It is evident that, instead of objects packaged in carrier cartons, also shrink-foil packaged objects 3 can be placed inside this crate. In the case of a crate according to Fig. 5, only one partition wall 4a is provided and a column 2a can then be used to separate two bundles of objects which fit into one compartment.

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The column 2a is identical with the columns 2, however. In the case of a crate according to Fig. 6, there has been provided no partition at all, and the columns 2b, again identical with the columns 2, here take the place of the partition 4a of Fig. 5. The crate according to Fig. 6 is particularly suitable for accomodating objects 3 packaged in shrink foil since this is shrunk in the area of the columns 2b between two neighbouring objects. Should nevertheless such a crate be used for carrier cartons, the side walls of the latter are to be provided with matching openings to accomodate the columns 2b. This also applies to the end walls of the carrier cartons in order to provide room for the columns 2a. The remarkable feature is that by replacing the partitions 4 with columns 2a and 2b the external dimensions of the crate do not increase, because the columns will always fit into the space confined by four neighbouring objects 3.

Claims:

1. A plastic crate for receiving objects bundled into groups, in particular bundled bottles, said crate being provided with columns extending upwardly from the crate bottom and fitting into spaces which are each confined by four neighbouring objects, characterized in that, viewed in cross section, the columns have an open profile composed of flanges whose smallest cross-sectional dimension lies on the line of symmetry between two rows to be placed inside the crate and each having more than two objects.
2. A plastic crate according to claim 1, characterized in that only the edges of the flanges are adapted to come into contact with an object.
3. A plastic crate according to claims 1 and 2, characterized in that the cross section of the open profile is formed from a body with flanges outwardly extending therefrom, said body being at an angle with respect to the line of symmetry between two rows of objects to be placed inside the crate.
4. A plastic crate according to claims 1-3, characterized in that the open profile composed of flanges has an H-shaped cross section, and the body of the H-shape is directed transversely to the line of symmetry between two rows of objects to be placed inside the crate.

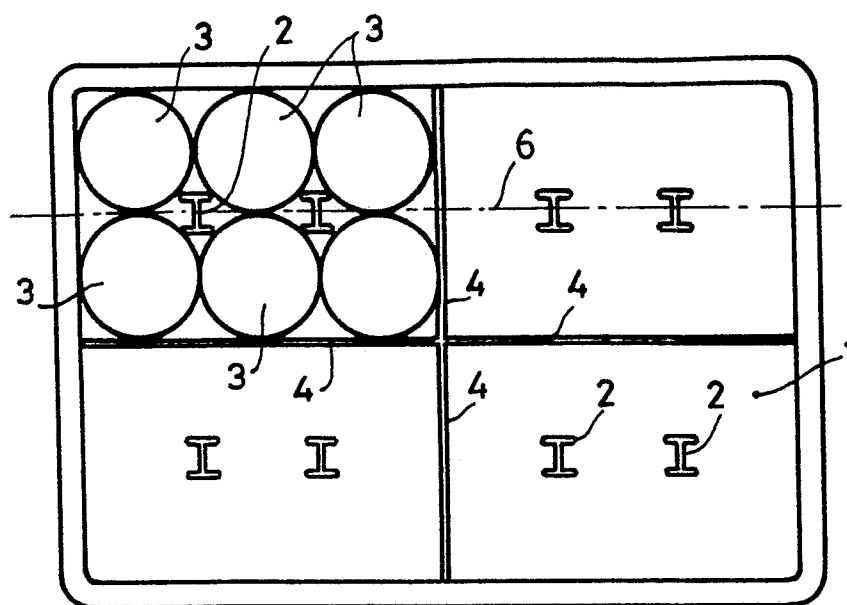
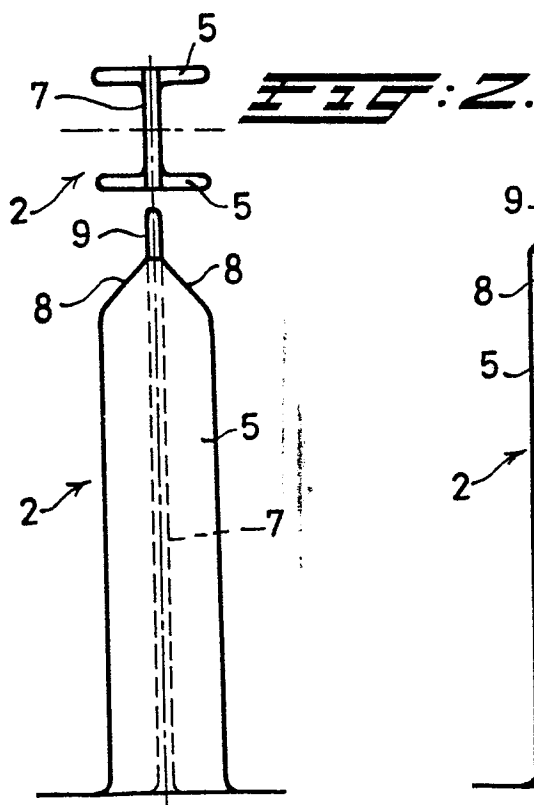
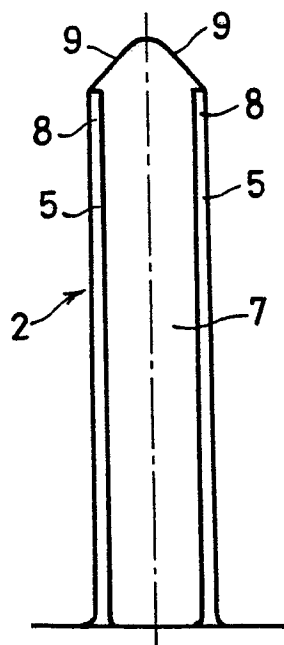
5. A plastic crate according to claims 1-4, characterized in that the lateral edges of the flanges are rounded.

5 6. A plastic crate according to claims 1-4, characterized in that the upper edges of flanges are inclined downwardly.

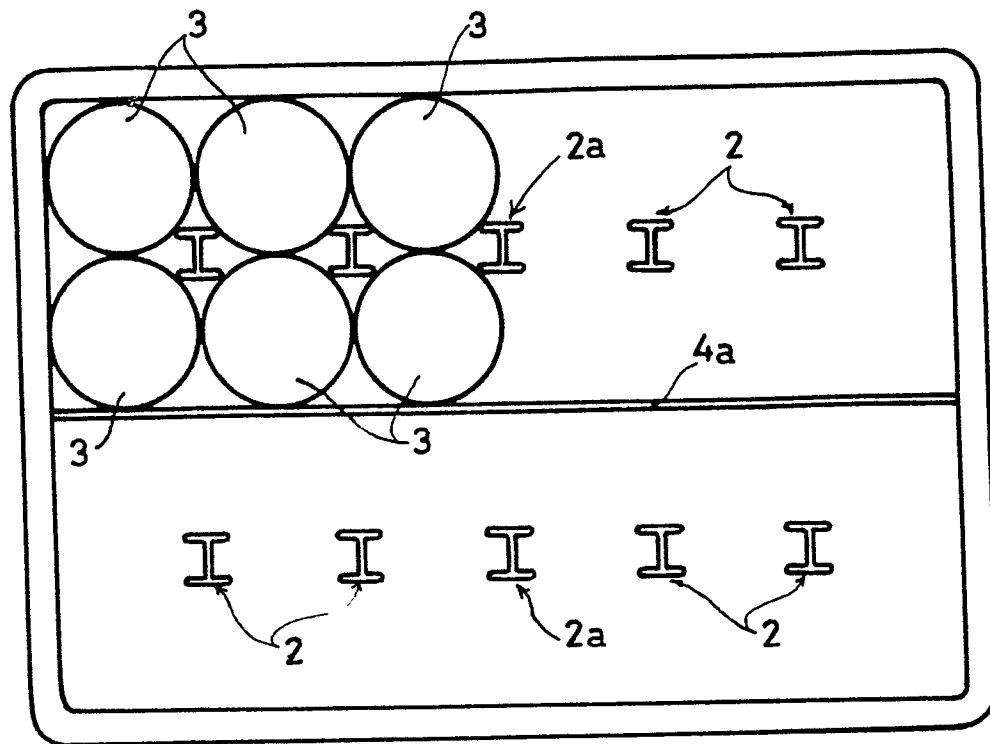
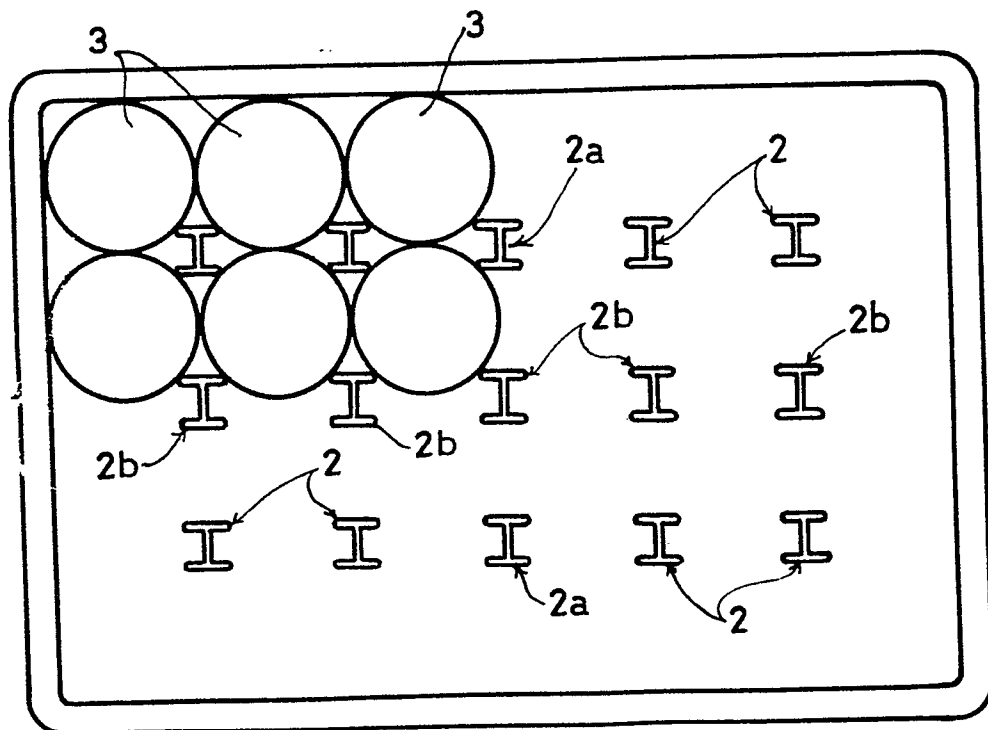
7. A plastic crate according to claim 1-4, characterized in that parts of the upper edges of the flanges are located lower than parts of the body of the H-shape.

10 8. A plastic crate according to claim 7, characterized in that the upper edge of the body of the H-shape has its highest point in its central area.

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**FIG: 1.****FIG: 2.****FIG: 3.****FIG: 4.**

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**FIG. 5.****FIG. 6.**



European Patent
Office

EUROPEAN SEARCH REPORT

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Application number

EP 85 20 0258

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	DE-A-2 556 449 (STUCKI) * Whole document *	1-8	B 65 D 1/38
A	GB-A-1 567 775 (GPG) * Page 4, lines 1-21 *	1-4	
A	NL-A-7 703 213 (WAVIN) * Page 8, line 8 - page 10, line 24 * & GB - A - 1 578 455	1-3, 5-8	
A	DE-U-7 610 267 (ANM)		
A	DE-U-8 104 866 (ANM)		
A	DE-U-1 987 660 (WICKÜLER)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25-04-1985	Examiner KNOPS J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	