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(71) Applicant: **D.W. PLASTICS N.V.**
3740 Bilzen (BE)

(72) Inventor: **Isenborghs, Francis**
1350 Jauche (BE)

(74) Representative: **Beitsma, Gerhard Romano (**
Corinium B.V.
Postbus 69
NL-2650 AB Berkel en Rodenrijs (NL)

(54) Stackable container

(57) A container (1) comprises a base member (2) and support members (3) which are pivotally arranged on the base member, and an optional cover member (4). The support members (3) can be put in either a first position in which they extend above the side walls (6) of the base member, or a second position in which they rest against the bottom (5) of the base member. In the first position, the support members (3) are capable of supporting a further container, thus allowing stacking. A cover member may be received between the support members, in which case the support members extend above the cover member so as to support the weight of any further container. The support members have a substantially L-shaped cross-section.

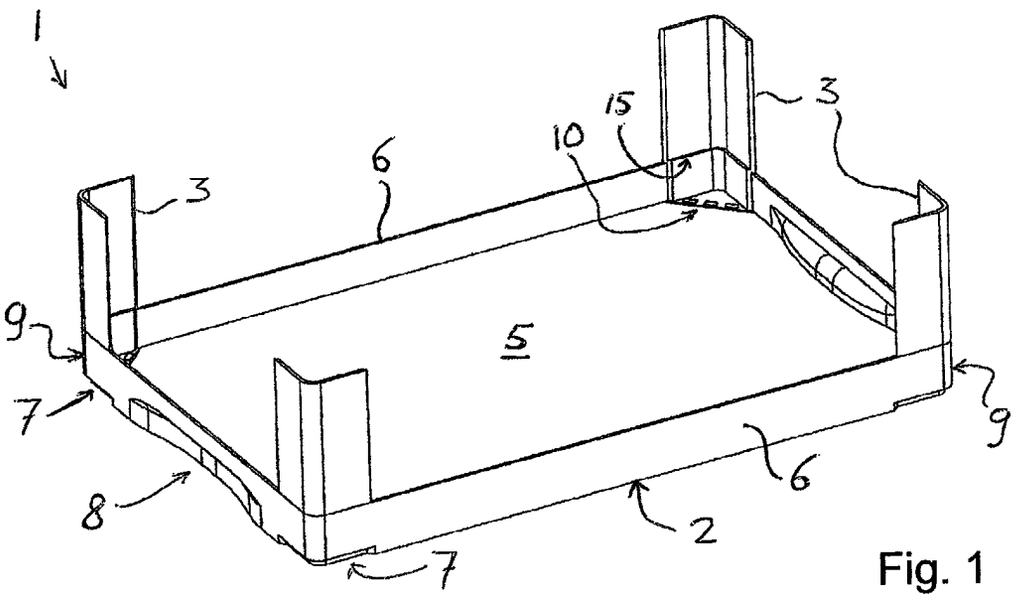


Fig. 1

EP 1 555 215 A1

Description

[0001] The present invention relates to a stackable container. More in particular, the present invention relates to a stackable container comprising a base member and support members, which base member may serve as a tray for displaying objects and which support members allow spaced stacking of the container.

[0002] It is well known to use trays for displaying objects. Such trays typically have relatively low side walls to allow a clear view of the objects. However, these low side walls are a disadvantage in that they do not allow stacking of the trays when there are fragile or soft objects in the trays, as these low side walls do not take up the weight of the stacked trays when they contain objects. In addition, the objects in the trays are relatively exposed and can easily be damaged during transport.

[0003] British Patent Application GB 2 066 775 (Drader) discloses a rectangular plastics tray provided with a pair of metal carrying bails pivotally connected to the tray. The metal bails may be folded down or moved into an upright position so as to provide an alternative stacking arrangement. In the upright position, the bails can take up weight. It has been found, however, that such metal bails give rise to localised stress in the material of the tray. This is at least partly due to the fact that each metal bail extends substantially along the length of one side wall only, as a result of which the support provided is essentially one-dimensional. In addition, the metal bails make recycling the plastics tray more complicated.

[0004] It is an object of the present invention to overcome these and other problems of the Prior Art and to provide a container which can easily be stacked without damaging either its contents or the container itself.

[0005] Accordingly, the present invention provides a container comprising:

- a base member having a bottom and side walls, and
- support members pivotally connected to the base member so as to be pivotable from a first position in which they extend above the side walls to a second position in which they extend along the bottom of the base member,

wherein the support members are located at the comers of the base member and have a substantially L-shaped cross-section so as to extend over part of the length of each side wall when in the first position.

[0006] By locating the support members at the comers of the base members, the supporting forces exerted when the container is stacked are evenly distributed and a stable arrangement is achieved. By providing support members having a substantially L-shaped cross section, it is possible to provide support not only along a first side wall but also along a second side wall, these two side walls typically being arranged at right angles to one another. In this way, the support provided by each support member is not essentially linear, as in the Prior Art mentioned above, but extends in two directions. As a result, a better stress distribution and a more stable support is achieved.

[0007] In a preferred embodiment, the support members have a stepped form defining a lower part and an upper part, the upper part being flush with the side walls when in the first position. This stepped form defines a ridge which may rest on a side wall so as to better distribute the load. By making the upper parts of the support members flush with the side walls, a container is obtained which has a smoother exterior that is less easily damaged.

[0008] In an advantageous embodiment, the support members are connected to the base member via a mechanism defining two distinct positions, in particular, the first and the second positions mentioned above. Such a mechanism assists the user in determining when the support members are correctly pivoted and may also maintain the positions of the support members.

[0009] Advantageously, the base member may be provided at its lower side with stacking recesses for receiving the support members of another, similar container. By providing recesses, the support members of stacked containers may be secured in their positions, thus stabilizing the stack and preventing the support members pivoting from their upright positions into their horizontal positions. The stacking recesses are preferably arranged at the underside of the base member, more preferably at its comers.

[0010] To facilitate the handling of the container, the base member may be provided with at least two gripping recesses, preferably located in any shorter side walls. These recesses are preferably arranged at the underside of the base member. Instead of or in addition to gripping recesses, handles may be provided.

[0011] The container of the present invention may further comprise a cover member. By providing a cover member, the contents of the container may be protected against the environment. This cover member may be received between the support members and is thus positioned and protected by the support members. As the support members are capable of supporting an object placed on top of the container, the contents of the container do not carry the weight of the object, thus avoiding any damage to the contents. Accordingly, it is preferred that the support members, when in the first position, extend above said cover member so as to be capable of supporting an object placed on top of the container. It will be understood that such an object may be another, similar container.

[0012] By providing support members which protrude above the cover member, the weight of any objects (for example other containers) placed on top of the container is carried by the support members, not by the cover member. This avoids the cover member, or the contents of the container, being damaged.

[0013] A preferred embodiment of the container of the present invention is at least partially made of a plastics

material. Accordingly, the base member and/or the support members is/are preferably made of a plastics material, such as HDPE. The cover member is preferably also made of a plastics material, such as HDPE. However, in alternative embodiments the cover member may be made of carton, preferably corrugated carton, or other materials such as polycarbonate, preferably transparent polycarbonate.

[0014] The present invention will further be explained below with reference to exemplary embodiments illustrated in the accompanying drawings, in which:

Fig. 1 schematically shows, in perspective, a container according to the present invention with the support members in a first position.

Fig. 2 schematically shows, in perspective, the container of Fig. 1 with the support member in a second position.

Fig. 3 schematically shows, in perspective, the container of Fig. 1 with a cover member.

Fig. 4 schematically shows, in plan view, a mechanism which may be used in the container of the present invention.

[0015] The container 1 shown merely by way of non-limiting example in Fig. 1 comprises a base member 2 and support members 3. A cover member (4 in Fig. 3) is not shown in Fig. 1.

[0016] The base member 2 is constituted by a tray having a bottom surface 5 and side walls 6. The bottom surface 5 may be open (lattice) or closed. In the exemplary embodiment shown, the base member 2 is substantially rectangular, resulting in two longer and two shorter side walls 6. It will be understood that the container 1, and therefore the base member 2, may also be square, hexagonal, etc., and that all side walls 6 may have equal length. Alternatively, not all side walls could be present, for example two side walls could be omitted.

[0017] In the embodiment shown, the support members 3 are arranged at the four comers 9 of the base member 2 and are pivotally mounted on the bottom 5 of the base member 2. In the first or upright position shown, the support members 3 extend well above the side walls 6 (that is, well beyond the side walls 6 in a direction perpendicular to the bottom 5). In this first position, the container 1 can be stacked, leaving an appreciable space between the bottom of this container and the bottom of another container. This space can advantageously be used to receive objects, in particular objects which are not suitable for supporting weight, such as fruits. In the position shown, and without any cover member, the base member 2 is suitable for displaying objects.

[0018] A mechanism 10, which may be a suitable hinging mechanism, connects the support members 3 and the base member 2 so as to allow a pivotal movement. The mechanism 10, an example of which is shown in more detail in Figs. 4a-d, preferably defines at least two distinct positions, such as the first, upright position and the second, folded down position discussed above.

[0019] As can be seen in Figs. 1 and 2, the support members 3 have a stepped form which defines an upper part 3a and a lower part 3b, separated by a ridge or ledge 15. This stepped form allows the lower part 3b to rest against the inside of the side walls 6 while making the upper part 3 a substantially flush with the outside of the side walls 6. In this way, a smooth exterior of the container is achieved. In addition, the ridge 15 can rest on the upper rim of the side walls 6 and thus better distribute the load of any further containers in a stack.

[0020] The support members 3 have a substantially L-shaped cross-section, thus extending in the lengthwise direction of two side walls 6 at each comer 9. In this way, a support is provided that extends in two directions which, in the embodiment shown, are substantially at right angles relative to one another. By providing support members which extend in two substantially orthogonal directions, a very solid support structure is provided. It will be understood that the support members 3 may be made wider than shown in the drawings and may thus extend further in the lengthwise direction of the side walls. It is noted that in the first position, the ridges 15 also extend in the lengthwise direction of the side walls.

[0021] As can be seen, stacking recesses 7 are provided in the base member 2 for receiving the support members 3 of another container. In the embodiment shown, these stacking recesses 7 are arranged at the comers 9 of the base member 2. The stacking recesses 7 assist in the positioning of the containers in a stack. In addition, they prevent the support members leaving their first, upright positions.

[0022] When the base member 2 is empty, the support members 3 can be moved into a second position in which they extend substantially in parallel with the bottom 5 of the base member 2. This second position is shown in Fig. 2 where the support member 3 extend towards the middle of (the bottom 5 of) the base member 2. It will be appreciated that in this second position, in which the support members 3 are folded down and, in the exemplary embodiment shown, do not extend above the side walls 6, the container 1 can also be stacked while requiring very little space. Accordingly, folding down the support members 3 significantly reduces the volume of the container.

[0023] The support members 3 are arranged in such a way that they can receive a cover member between them. This is schematically shown in Fig. 3. As the support members 3 are arranged at the comers 9 of the base member 2, the support members 3 both assist in the positioning and protect the comers of a cover member 4.

[0024] As shown in Fig. 3, the support members 3 extend over a distance D above the cover member 4. This allows the support members 3 to carry all the weight of any further containers or other objects stacked on top of the container 1. As a result, the cover member 4 carries substantially no weight. The distance D is, in the

preferred embodiment shown, at least equal to the height of the stacking recesses 7, but preferably a few millimetres larger.

[0025] The cover member 4 shown in Fig. 3 comprises side walls 11 and lid parts 12. The two lids parts 12 are hingingly attached to the (longer) side walls 11 and together form the lid. A centrally arranged opening 13 may be provided to allow a user of the container to easily open the cover member. It will be understood that the lid may be fixed and that opening the container 1 may be accomplished be removing the cover member 4 from the base member 2. The shorter side walls 11 are advantageously provided with cut-outs (not shown) to accept the gripping recesses 8.

[0026] Various hinge mechanisms can be envisaged for pivotally mounting the support elements 3 on the base member 2. It is preferred that a mechanism is used that defines two distinct positions such that some resistance has to be overcome before a support member can be moved from one position to another. An example of a suitable mechanism 10 is shown in Figs. 4a-d where a support member 3 is connected to an axle 16. A hinge body 18, which is connected to and preferably integral with the bottom (5 in Fig. 1) of the base member 2, is provided with comers 17. When moving from the first position (Fig. 4a) to the second position (Fig. 4d) the support member 3 has to pass the two comers 17. Due to the relative distances of these comers 17 from the axle 16, a certain resistance has to be overcome, resulting in a click action.

[0027] The container of the present invention is preferably made of a plastics material, such as HDPE (High Density PolyEthylene) or polypropylene. Corrugated plastics materials such as Correx® may also be used. Alternatively, at least one part, such as the cover member 4, could be made of carton, preferably corrugated carton, or (transparent) polycarbonate. It is preferred that at least the base member 2 and the support members 3 are made of the same material, for example a plastics material, to facilitate the recycling of the container.

[0028] It will be understood by those skilled in the art that the present invention is not limited to the embodiments illustrated above and that many modifications and additions may be made without departing from the scope of the invention as defined in the appending claims.

Claims

1. A container (1) comprising:

- a base member (2) having a bottom (5) and side walls (6), and
- support members (3) pivotally connected to the base member (2) so as to be pivotable from a first position in which they extend above the side walls (6) to a second position in which they extend along the bottom (5) of the base member,

wherein the support members (3) are located at the comers of the base member (2) and have a substantially L-shaped cross-section so as to extend over part of the length of each side wall when in the first position.

2. The container according to claim 1, wherein the support members (3) have a stepped form defining a lower part and an upper part, the upper part being flush with the side walls (6) when in the first position.

3. The container according to claim 1, or 2, wherein the support members (3) are connected to the base member (2) via a mechanism defining two distinct positions.

4. The container according to claim 1, 2 or 3, wherein the base member (2) is provided at its lower side with stacking recesses (7) for receiving the support members (3) of another, similar container.

5. The container according to any of the preceding claims, wherein the base member (2) is provided with at least two gripping recesses (8), preferably located in any shorter side walls.

6. The container according to any of the preceding claims, further comprising a cover member (4), wherein the support members (3), when in the first position, extend above said cover member (4) so as to be capable of supporting an object placed on top of the container.

7. The container according to any of the preceding claims, wherein the base member (2) and/or the support members (3) is/are made of a plastics material, preferably HDPE.

8. The container according to any of the preceding claims, wherein the cover member (4) is made of a plastics material, preferably HDPE.

9. The container according to any of claims 6-8, wherein the cover member (4) is made of carton, preferably corrugated carton.

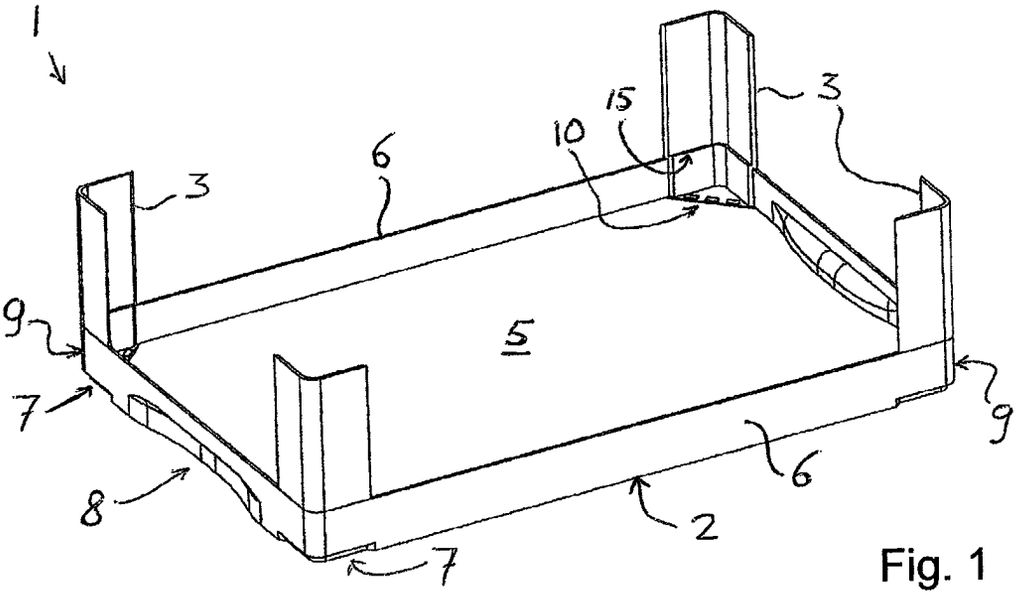


Fig. 1

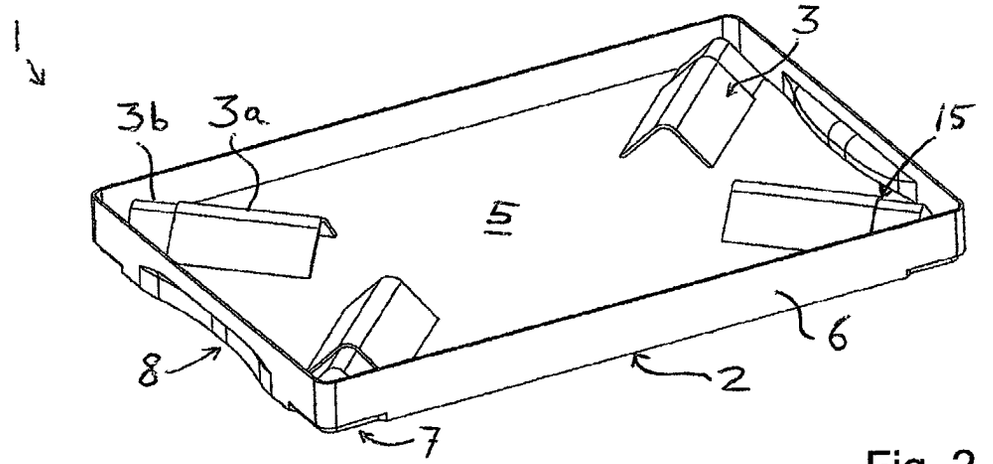


Fig. 2

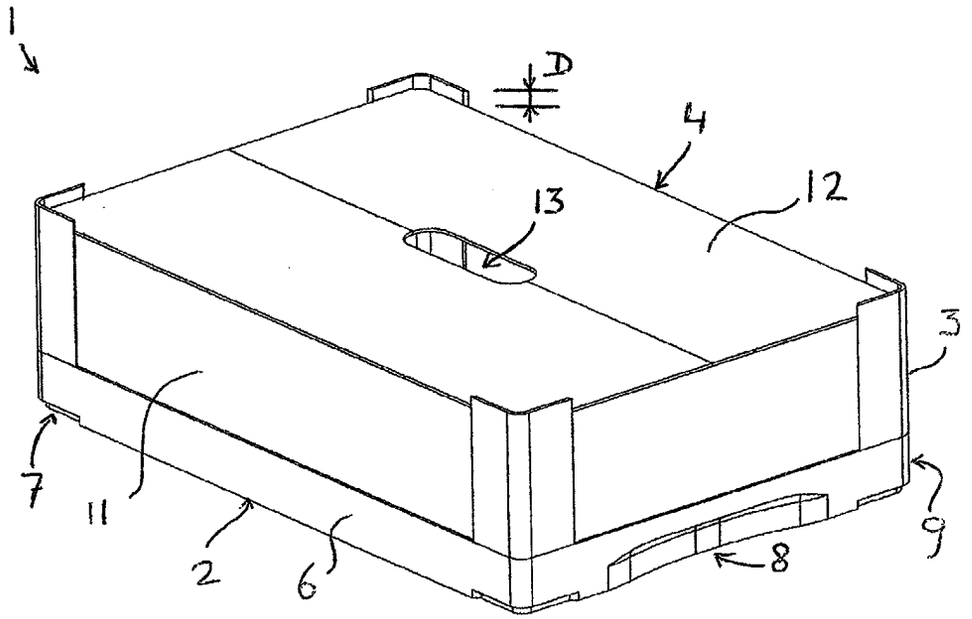


Fig. 3

Fig. 4a

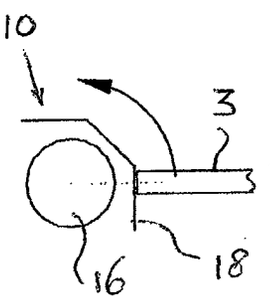
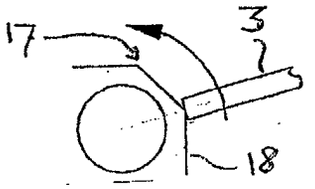


Fig. 4b



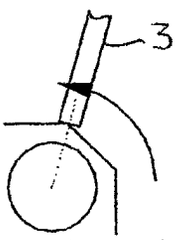


Fig. 4c

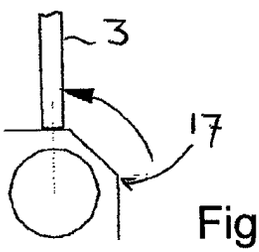


Fig. 4d

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 07 9208

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.7)
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A	US 5 083 666 A (LAM DAVID C S) 28 January 1992 (1992-01-28) * column 3, line 19 - column 4, line 54; figures 3,4,6A * ---	1	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	4 May 2004	Jervelund, N

CATEGORY OF CITED DOCUMENTS

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