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B8P PC2X PH1
U1S S1127

(56) Documents Cited
GB 2179027 A GB 2117356 A GB 1304148 A
EP 0211993 A1 US 3900157 A

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INT CL[5] B65D 5/20 5/26 5/28 5/30
Online database:WPI

(54) Container

(57) A box 1 is provided with a main body 2 formed e.g. of corrugated plastic which is folded and joined to form the box with a strong bottom panel. The box is preferably formed with removable joining members 4, handles 5 and frame rail sections 3 which serve to strengthen the box and facilitate stacking. The joint members 4, handles 5 and rail sections 3 are preferably removable so they may be used on another main body if the first main body is damaged or wears out.

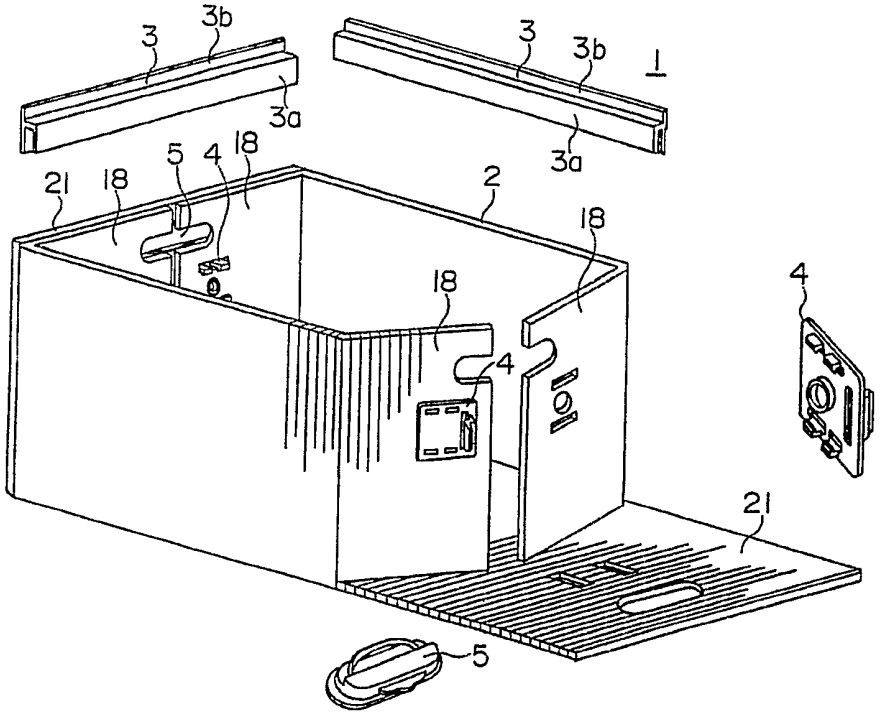

FIG. 1

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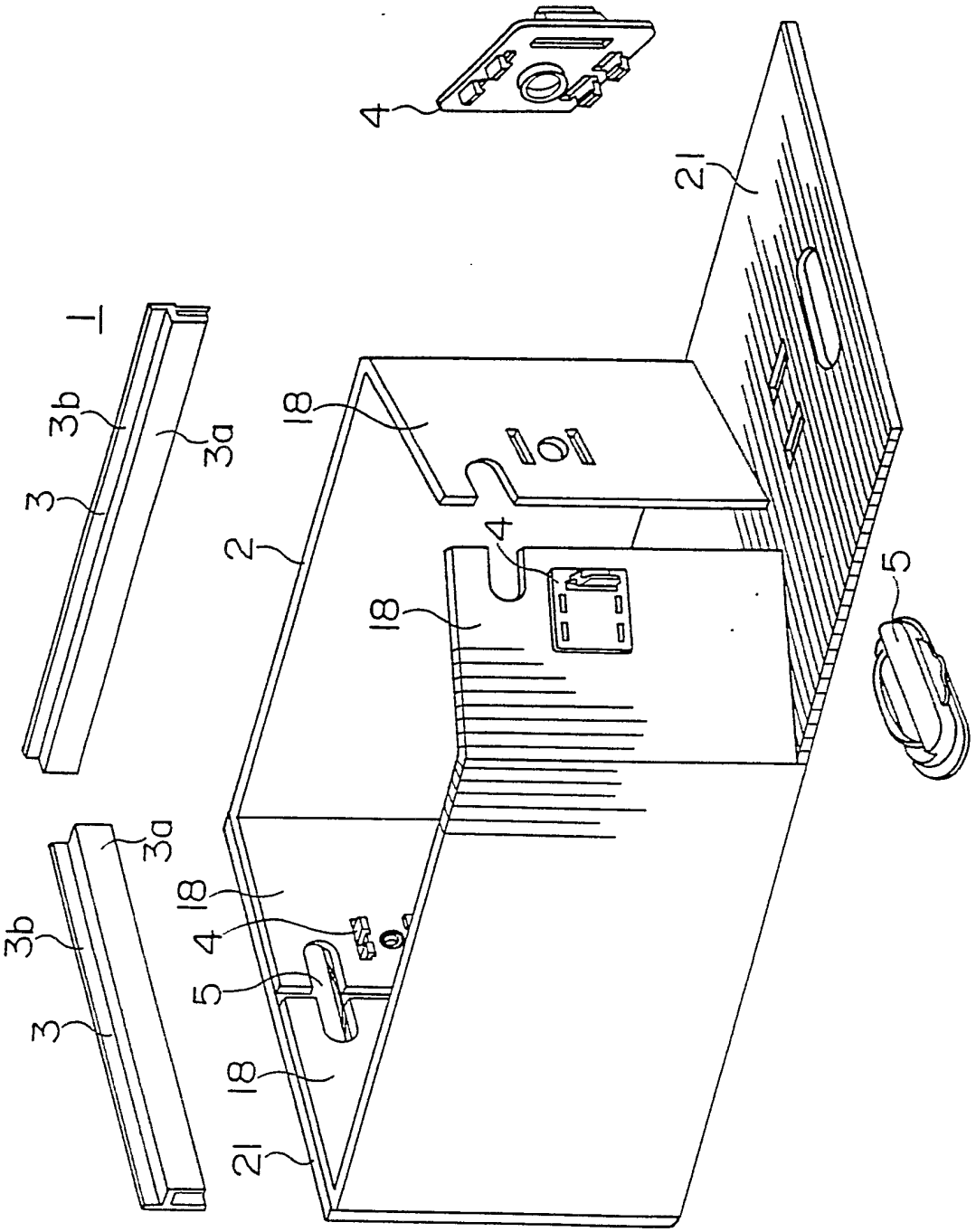

FIG. 1

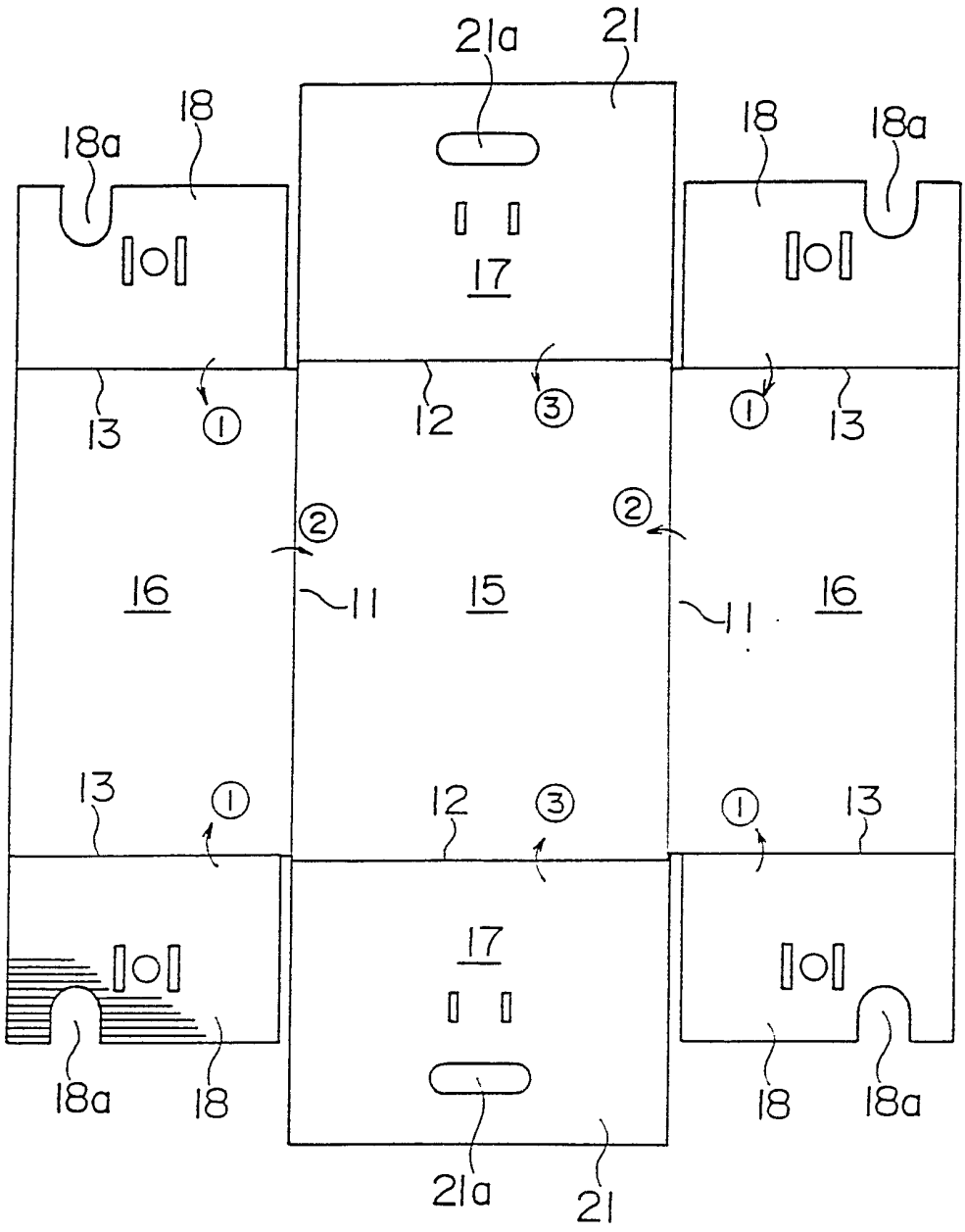
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FIG. 2

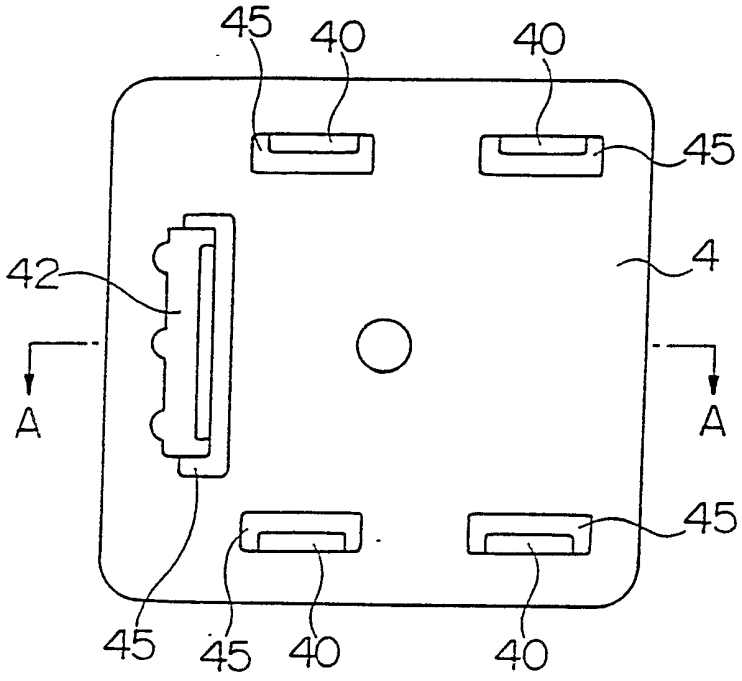

FIG. 3

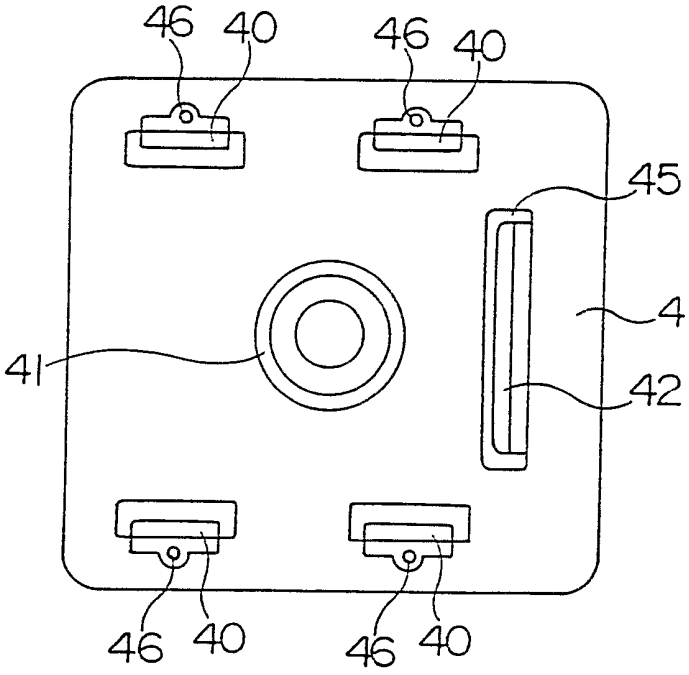

FIG. 4

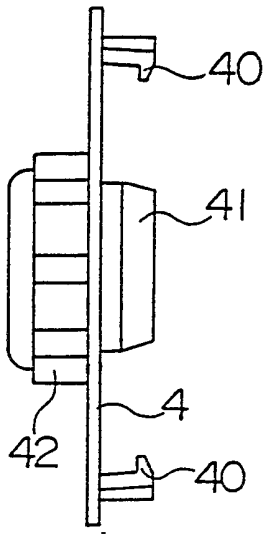

FIG. 5

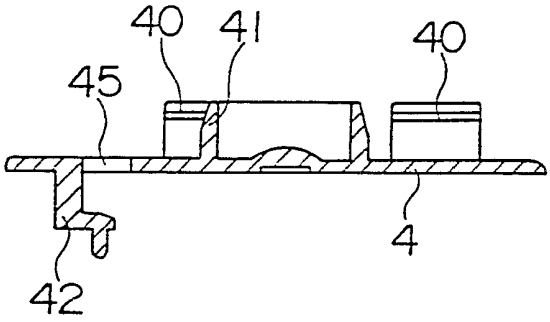

FIG. 6

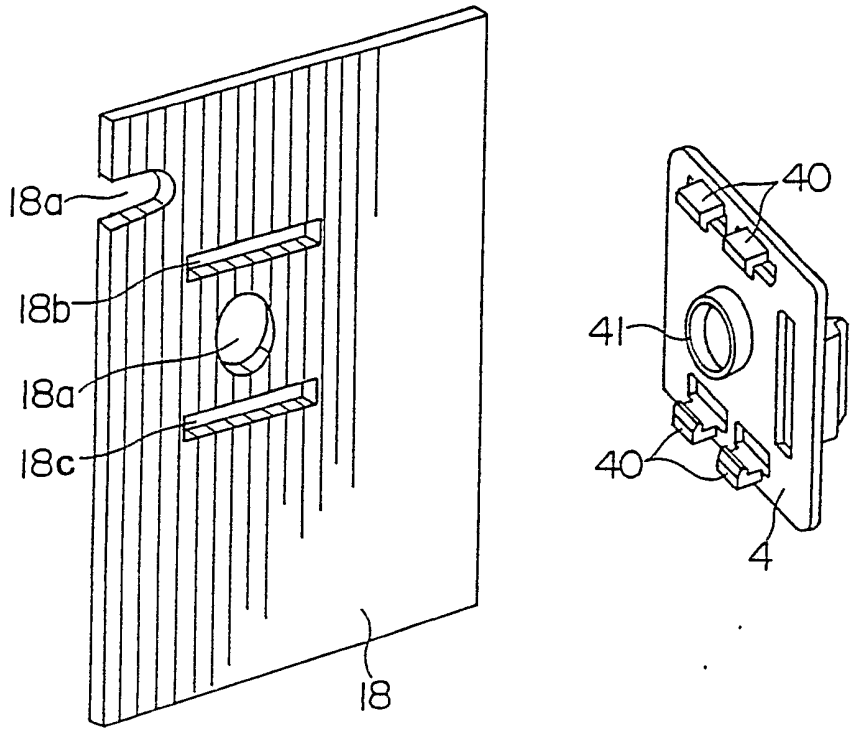

FIG. 7

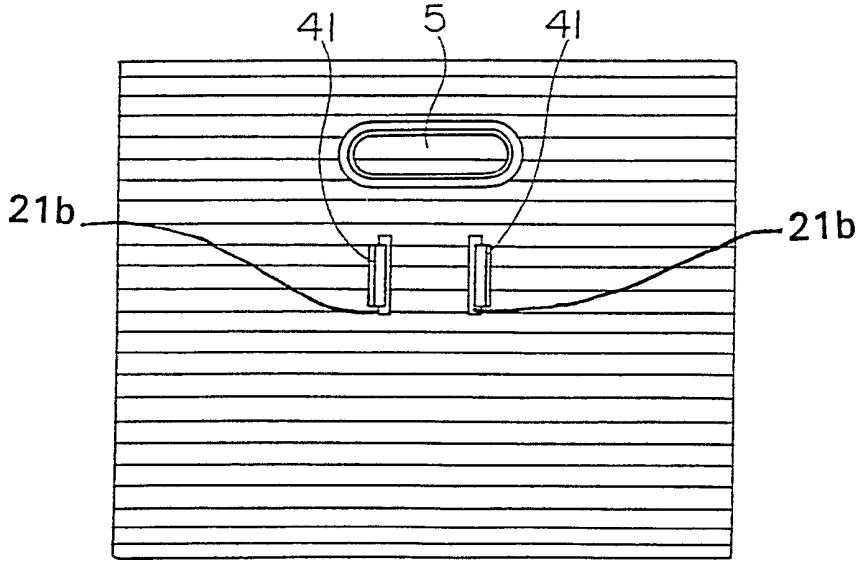

FIG. 8

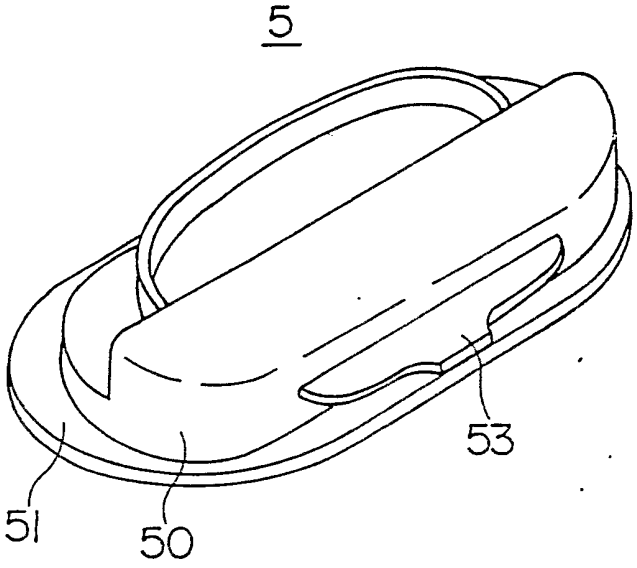

FIG. 9

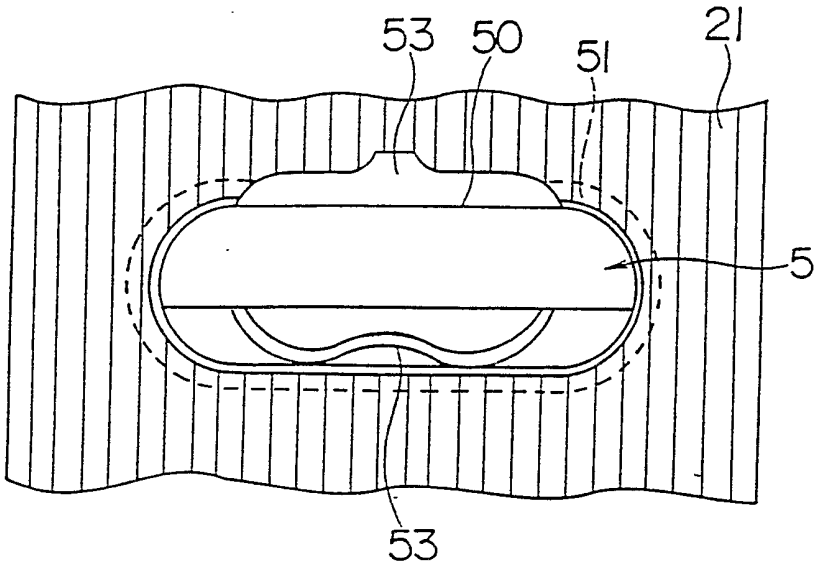

FIG. 10

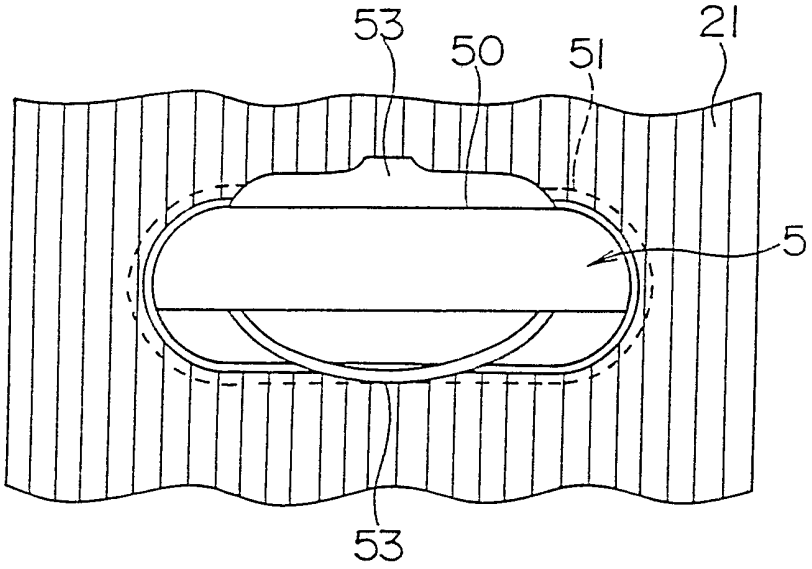

FIG. 11

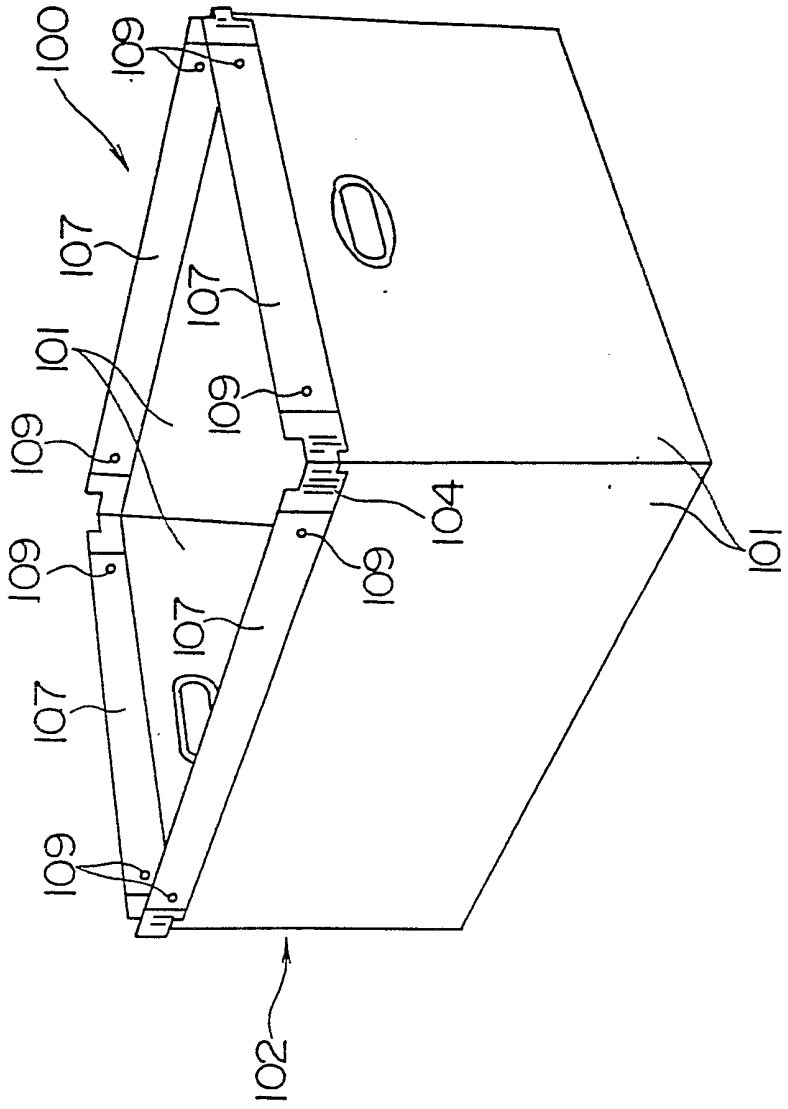

FIG. 12

DESCRIPTION
BUILD-UP TYPE CONTAINER

The present invention relates to a build-up container used for containing, storing and transporting various articles such as industrial products or clothes.

Conventional containers of this type comprise a main body having four side panels contiguous to each other by way of fold lines, and four triangular flaps contiguous to each other by way of fold lines which are provided on the lower edges of the side panels. Hooks formed at the leading edges of the bottom flaps are engaged with each other to build up the main body to form a box. Plastic right angle corners and frames each having a slender inverted U-shaped section in which the lower side is opened are mounted on the upper edges of the main body. The corners and the frames are fixed on the upper edge portions of the side panels by screws.

However, conventional containers, in which the bottom flaps are connected to each other by hooks, have the following disadvantages: containers in which the bottom flaps are connected to each other by the hooks have the drawback that the bottom may fall off while handling the container when heavy articles are contained therein. In addition, the corners and the frames are fixed on the side panels by the screws such that when the panels of the container are degraded, the container is generally discarded with the components such as the corners and the frames mounted on the container.

It is an object of the present invention to solve the above-described disadvantages by providing a build-up type container capable of eliminating the problem that the bottom may fall off and of making the removal of the components easy.

According to the present invention, there is provided a build-up type container including at least one set of front and back panels provided adjacent to a bottom panel, each of the front and back panels having a folding portion which serve to reinforce and provide attachment for side panels which are attached to the folding portion by means of a planar based joint member interposed therebetween. The joint member comprises: inward extending hooks and an outward extending hook provided on the inside and outside of the joint member, respectively; and joint holes capable of being engaged with the inward extending hooks formed in the folding portion of the back panel, and a joint hole capable of being engaged with the outward extending hook which is formed in the side panel.

By use of the present invention, a rugged container may be built up which may be easily stripped of it's component parts.

The invention will now be further described by way of example with reference to and as illustrated in the accompanying drawings, in which:-

Fig. 1 is an exploded view in perspective of a build-up type container according to an embodiment of the present invention.

Fig. 2 is a plan view of a main body or (or blank) of the build-up container of Fig. 1.

Fig. 3 is a front view of a joint member.

Fig. 4 is a rear view of the joint member.

Fig. 5 is a right side view of the joint member.

Fig. 6 is a sectional view taken along the line A-A of the joint member of Fig. 3.

Fig. 7 is a perspective view showing the engagement relationship between the back panel and the joint member.

Fig. 8 is a front view showing the state where the frame of the build-up container is mounted.

Fig. 9 is a perspective view of a handle seen from the rear surface.

Fig. 10 is a view showing the process of mounting the handle.

Fig. 11 is a view showing the process of mounting the handle.

Fig. 12 is a perspective view showing the conventional build-up container.

Hereinafter, the present invention will be described by way of an embodiment with reference to the drawings.

Fig. 1 is a view showing the appearance of a build-up type container to which the present invention is applied. A container 1 includes a main body 2 intended to be built-up into a box with a bottom and the upper side being opened, frames 3 mounted on the upper edges of the build-up main body 2 so as to cover them, joint members 4 used for build-up of the main body 2, and handles 5 mounted on side panels 21.

The frame 3 is composed of a plastic member formed by, for example, extrusion molding. As shown in Figs. 1-2, the frames 3 have two types for the long side panel 16 and for the short side panel 17; however, since both types are different only in length and width, they will be described collectively hereinafter. A

lower half portion 3a of the frame 3 is formed in a substantially U-shaped section to cross the upper edge of the main body 2. An upper half portion 3b is formed as a trimming portion for preventing the lateral deviation of the container 1 when the containers 1 are stacked. When the containers 1 are not required to be stacked, the trimming portion may be eliminated.

The main body 2 is composed of a plastic corrugated panel integrally formed by for example extrusion molding (extruded in the lateral direction in Fig. 2). It is cut in a shape shown in Fig. 2 by a suitable means and is formed with fold lines 11 to 13. It is partitioned into a rectangular bottom panel 15 at the central portion and four side panels adjacent to respective sides of the bottom panel by means of the fold lines 11 and 12. Hereinafter, of the four side panels, those adjacent to the long sides of the bottom panel 15 by the fold lines 11 are referred to as long side panels 16, and those adjacent to the short sides of the bottom panel 15 by the fold lines 12 are referred to as short side panels 17. Reinforcing folding portions of the back panels 18 are provided at both side ends of each long side panel 16 by way of the fold lines 13 so as to extend over the whole lengths of the long side ends. The fold line 12 is located outward from the fold line 13 by the thickness of the folding portion 18. An elliptical handling hole 21a is provided on each short side panel 21, and a semi-elliptical handling cut-out 18a is provided on each folding portion 18.

With this construction, the main body 2 is folded inward along

the fold lines to be build-up and the container 1 shaped into a box with a bottom and the upper end being opened. Concurrently, the folding portion 18 of each long side panel 16 is folded in toward the opposite end of long side panel 16 substantially at right angles along the fold line 13 (step 1 in Fig. 2). Similarly, each long side panel 16 is folded inward to the bottom panel 15 along the fold line 11 (step 2 in Fig. 2). Each short side panel 17 is then folded toward the bottom panel 15 along the fold line 12 (step 3 in Fig. 2) so as to abut on the folding portion 18 of the long side panel 16, thus completing the build-up of the main body 2.

In the build-up of the main body 2, plastic joint members 4 are used, as shown in Fig. 3 (front view), Fig. 4 (rear view), Fig. 5 (right side view), Fig. 6 (sectional view taken along the line A-A of Fig. 3) and Fig. 7 (perspective view). In the joint member 4, four inwardly extending hooks 40 are additionally provided on the inner surface (two on the upper portion, and two on the lower portion), and a short cylindrical positioning portion 41 is additionally provided at the central portion of the inner surface. Meanwhile, one outward extending hook 42 is additionally provided on the outer surface of the joint member 4. The joint member 4 is mounted on the outer surface of the folding portion of the backing panel 18 by a method wherein the positioning portion 41 is fitted in a circular hole 18c provided on the folding portion of the longer side backing panel 18 while the outward extending hook 42 is positioned on the side of the joint member proximate the edge of the folding portion, and simultaneously two opposing sets of two

inward extending hooks 40 provided on the upper and lower portions of the inner surface of the joint member 4 are respectively fitted in lateral band-like joint holes 18b and 18b provided on the folding portion of the longer side backing panel 18. The outward extending hook 42 on the outer surface of the joint member 4 is then fitted in a vertical joint hole 21b of the side panel 21, so that the side panel 21 is fixed. In addition, reference numeral 45 in Figs. 3, 4 and 6 designates a hole for cutting-off, and numeral 46 in Fig. 4 designates a hole for reducing the weight.

Figs. 8, 9, 10 and 11 show a handle which may be used to reinforce the hole formed by openings 21a and 18a. The handle 5 has a depth two times the thickness of the side panel 21. A flange portion 51 is additionally provided at the front edge of the barrel portion 50 of the handle 5. As shown in Fig. 9, the front side of barrel portion 50 is formed into an elliptical shape, and the rear side of barrel portion 50 is formed only at the upper half into a semi-elliptical shape. An elliptical locking band 52 extending downward in an arching manner is formed on the stepped portion of a back wall of the handle 5. Moreover, a locking piece 53 is formed on the upper side of the barrel portion 50 so as to be spaced apart from the flange portion 51 by a specified interval. The barrel portion 50 of the handle 5 is inserted in the handling hole 21a of the side panel 21 while the elastic locking band 52 is compressed upward as shown in Fig. 10, so that the side panel 18 is held between the flange portion 51 and the locking piece 53. After that, by release of the elastic locking band 52, the handle 5 is

self-engaged with the side panel 21 (see Fig. 8) by the effect of the elasticity of the elastic locking band 52 as shown in Fig. 11. In addition, the removal of the handle 5 is accomplished by reversing the above mounting procedure.

The build-up container 1 constructed as described above has the following advantages.

The container 1 is built-up by engaging the inward extending hooks 40 of the joint member 4 with the joint holes 18b on the back panel 18 and the outward extending hook 41 with the joint hole 21b on the side panel 21; accordingly, the bottom panel 15 can be formed of one panel. This makes it possible to increase the strength of the bottom panel 15, and hence to eliminate the possibility that the bottom of the container 1 will fall off due to the weight of the contents. Moreover, even when the container 1 is formed, the removal of the joint members 4 is made easy. In this case, the joint members 4 may be mounted on either the folding portion of the longer sized backing panel 18 or the side panel 21 as needed.

The present invention is not limited to the above embodiment; and may be embodied in various forms.

CLAIMS

1. A flat body for use in a build-up type box comprising:

a rectangular bottom panel;

a first set of side panels contiguous to opposing sides of said bottom panel;

folding panels contiguous to the side panels positioned at each lateral end of the side panels, each of the folding panels comprising first means for attaching a joining member and an opening to provide for a handle; and

a second set of side panels contiguous to opposing sides of said bottom panel, each of the second set of side panels comprising second means for attaching a joining member and an opening to provide for a handle.

2. A flat body for use in a build-up type box as claimed in claim 1, wherein the first means for attaching joining members comprises:

an alignment hole associated with at least one means for attaching a joining member.

3. A flat body for use in a build-up type box as

claimed in claim 1 or 2, wherein the body is formed of plastic.

4. A flat body for use in a build-up type box as claimed in any one of the preceding claims, wherein the body is formed of corrugated plastic.

5. A flat body for use in a build-up type box substantially as hereinbefore described with reference to and as illustrated in an of Figs. 1 to 11 of the accompanying drawings.

6. A build -up type box comprising a flat body as claimed in any one of claims 1 to 5 together with a plurality of joining members connecting each folding panel to an associated second side panel.

7. A build-up type box comprising:

a rectangular bottom panel;

a first set of side panels contiguous to opposing sides of said bottom panel;

four folding panels contiguous to the side panels positioned at each lateral end of the side panels, each of the folding panels comprising a first means for attaching a joining member and an opening to provide for handle;

a second set of side panels contiguous to opposing sides of said bottom panel each of the

second set of side panels comprising a second means for attaching the joining members of the associated folding member and an opening to provide for a handle; and

a plurality of joining members for connecting each folding panel to its associated second side panel.

8. A build-up type box as claimed in claim 7, first means for attaching joining members comprises:

an alignment hole associated with at least one means for attaching a joining members.

9. A build-up type box as claimed in claim 7 or 8, wherein the means for attaching the joining members comprise:

a pair of parallel rectilinear slots cut through each of the folding panels to receive a portion of the joining member.

10. A build-up type box as claimed in any one of claims 7 to 9, wherein the joining member comprise:

a planar base section having first and second sides; and

a first hook means, located on the first side of the base section, for attachment to the following panels for hooking with the first means for attaching a joining member.

11. A build-up type box as claimed in any one of claims 7 to 10, wherein the joining member comprises:

a planar base section having first and second sides; and

second hook means, located on the second side of the base section, for attachment to the second side panels for hooking with the second means for attaching a joining member.

12. A build-up type box as claimed in any one of claims 7 to 11, wherein the joining member comprises:

a planar base section having first and second sides;

first hook means, located on the first side of the base section, for attachment to the folding panels for hooking with the first means for attaching a joining member; and

second hook means, located on the second side of the base section, for attachment to the second side panels for hooking with the second means for attaching a joining member.

13. A build-up type box as claimed in claim 10 or 12, wherein said first hook means of the joining member comprises:

two pairs of inwardly directed hooks.

14. A build-up type box as claimed in any one of claims 7 to 13, wherein the openings to provide for a handle are reinforced by handle members secured on the outside of the box and extending through the side panel opening and the folding panel opening and releasably secured to the inside of the box.

15. A build-up type box as claimed in claim 14, wherein the handle members comprise:

a barrel portion which extends through the side panel

opening and the folding panel opening;

a flange around the periphery of the front edge of the barrel portion; and

means for releasably securing the flange and barrel to the inside of the box.

16. A build-up type box according to claim 13 wherein the means for releasably securing the flange and barrel comprises:

a locking piece which is spaced apart from the flange on one side of the barrel portion so as to secure the handle to the side panel; and

an elastic locking band opposite the locking piece on the barrel portion so as to secure the handle to the side panel.

17. A build-up type box as claimed in any one of claims 7 to 16, wherein the upper edges of the box are reinforced by rail sections.

18. A build-up type box as claimed in claim 17, wherein the reinforcing rail sections comprise:

a lower U-shaped section to receive the upper edge of the side panels.

19. A build-up type box as claimed in claim 17 or 18, wherein the reinforcing rail sections comprise:

an upper trimming portion to facilitate alignment when the boxes are stacked.

20. A build-up type box as claimed in any one of claims 17 to 19, wherein the reinforcing rail sections are formed of an extruded polymer.

21. A build-up type box as claimed in any one of claims 7 to 20, wherein the bottom, side and folding portions are formed of a polymer.

22. A build-up type box as claimed in claim 21, wherein the polymer is corrugated plastic.

23. A build-up type box as hereinbefore described with reference to and as illustrated in any one of Figs 1 to 11 of the accompanying drawings.

Amendments to the claims have been filed as follows

1. A flat body for use in a build-up type box comprising:

a rectangular bottom panel;

a first set of side panels contiguous to opposing sides of said bottom panel;

folding panels contiguous to the side panels positioned at each lateral end of the side panels, each of the folding panels comprising first means comprising at least two parallel oblong slots for attaching a joining member and an opening to provide for a handle; and

a second set of side panels contiguous to opposing sides of said bottom panel, each of the second set of side panels comprising second means comprising at least two parallel rectilinear slots, positioned such that when the flat body is built up the first and second set of slots are perpendicular, said second means being for attaching a joining member and an opening to provide for a handle.

2. A flat body for use in a build-up type box as claimed in claim 1, wherein the first means for attaching joining members comprises:

an alignment hole associated with at least one means for attaching a joining member.

3. A flat body for use in a build-up type box as

second set of side panels comprising a second means for attaching the joining members of the associated folding member and an opening to provide for a handle;

a plurality of joining members for connecting each folding panel to its associated second side panel; and wherein the joining member comprise:

a planar base section having first and second sides; and

a first hook means, located on the first side of the base section, for attachment to the following panels for hooking with the first means for attaching a joining member.

8. A build-up type box as claimed in claim 7, first means for attaching joining members comprises:

an alignment hole associated with at least one means for attaching a joining members.

9. A build-up type box as claimed in claim 7 or 8, wherein the means for attaching the joining members comprise:

a pair of parallel rectilinear slots cut through each of the folding panels to receive a portion of the joining member.

10. A build-up type box as claimed in any one of claims 7 to 9, wherein the joining member comprises:

a planar base section having first and second sides; and

second hook means, located on the second side of the base section, for attachment to the second side panels for hooking with the second means for attaching a joining member.

11. A build-up type box as claimed in any one of claims 7 to 10, wherein the joining member comprises:

a planar base section having first and second sides;

first hook means, located on the first side of the base section, for attachment to the folding panels for hooking with the first means for attaching a joining member; and

second hook means, located on the second side of the base section, for attachment to the second side panels for hooking with the second means for attaching a joining member.

12. A build-up type box as claimed in any one of claims 7 to 11, wherein said first hook means of the joining member comprises:

two pairs of inwardly directed hooks.

13. A build-up type box as claimed in any one of claims 7 to 12, wherein the openings to provide for a handle are reinforced by handle members secured on the outside of the box and extending through the side panel opening and the folding panel opening and releasably secured to the inside of the box.

14. A build-up type box as claimed in claim 13, wherein the handle members comprise:

a barrel portion which extends through the side panel

opening and the folding panel opening;

a flange around the periphery of the front edge of the barrel portion; and

means for releasably securing the flange and barrel to the inside of the box.

15. A build-up type box according to claim 14, wherein the means for releasably securing the flange and barrel comprises:

a locking piece which is spaced apart from the flange on one side of the barrel portion so as to secure the handle to the side panel; and

an elastic locking band opposite the locking piece on the barrel portion so as to secure the handle to the side panel.

16. A build-up type box as claimed in any one of claims 7 to 15, wherein the upper edges of the box are reinforced by rail sections.

17. A build-up type box as claimed in claim 16, wherein the reinforcing rail sections comprise:

a lower U-shaped section to receive the upper edge of the side panels.

18. A build-up type box as claimed in claim 16 or 17, wherein the reinforcing rail sections comprise:

an upper trimming portion to facilitate alignment when the boxes are stacked.

19. A build-up type box as claimed in any one of claims 16 to 18, wherein the reinforcing rail sections are formed of an extruded polymer.

20. A build-up type box as claimed in any one of claims 7 to 19, wherein the bottom, side and folding portions are formed of a polymer.

21. A build-up type box as claimed in claim 20, wherein the polymer is corrugated plastic.

22. A build-up type box as hereinbefore described with reference to and as illustrated in any one of Figs 1 to 11 of the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report) -19-

Application number
GB 9405949.0

Relevant Technical Fields

(i) UK Cl (Ed.M) B8P (PB2, PC2A, PC2B, PC2C, PC2D, PC2E, PC2F, PC2X, PEX, PH1, PH2, PJ, PK3, PR)

(ii) Int Cl (Ed.5) B65D 5/20, 5/26, 5/28, 5/30

Search Examiner
MIKE HENDERSON

Date of completion of Search
4 MAY 1994

Databases (see below)
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASE: WPI

Documents considered relevant following a search in respect of Claims :-
1-23

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

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P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
Y	GB 2179027 A	(BLUE BOAR MARKETING AND MANUFACTURING LTD) whole specification relevant	17-19
X Y	GB 2117356 A	(TUNGUM HYDRAULICS LTD) whole specification relevant	X: Claims 1-4, 6-9, 21, 22 Y: Claims 14-19
Y	GB 1304148	(CONTAINER CORP OF AMERICA) whole specification relevant	17, 18
Y	EP 0211993 A1	(LEIFHEIT AG) whole specification relevant	14-16
X	US 3900157	(ROTH) whole specification relevant	1-3,6-9,21

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).