

12

EUROPEAN PATENT SPECIFICATION

45 Date of publication of patent specification: **03.01.90**

51 Int. Cl.⁵: **B 65 D 19/18**

21 Application number: **85305500.2**

22 Date of filing: **01.08.85**

54 **Collapsible storage bin.**

30 Priority: **21.06.85 US 747810**

43 Date of publication of application:
25.02.87 Bulletin 87/09

45 Publication of the grant of the patent:
03.01.90 Bulletin 90/01

84 Designated Contracting States:
DE FR GB IT

56 References cited:
EP-A-0 067 323
GB-A-2 149 757
US-A-2 553 607
US-A-3 985 258
US-A-4 062 467

73 Proprietor: **XYTEC PLASTICS INC.**
9350 - 47th Avenue S.W.
Tacoma, WA 98499 (US)

72 Inventor: **Gyenge, Andrew**
106 - 101 Tabor Blvd. N.
Prince George, B.C. V2M641 (CA)
Inventor: **Johnson, Michael D.**
7312 S. "J" Street
Tacoma, WA 98408 (US)
Inventor: **Malmanger, John A.**
Route 5, Box 412
Vashon Island, WA 98070 (US)

7A Representative: **Hartley, David et al**
Withers & Rogers 4 Dyer's Buildings Holborn
London, EC1N 2JT (GB)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

EP 0 211 116 B1

Description

The present invention relates to collapsible containers, particularly those having pallet-type bases with upright container walls pivoted to the base and adapted to be moved to a folded position on the pallet for return transport in the empty condition. Such containers are designed for fork life handling and are adaptable for a wide variety of general utility purposes ranging from the transport or storage of packaged goods to bulk commodities such as produce and the like.

In view of DE—A—3,347,367 which was filed on 29th December 1983 a restricted set of claims is filed in respect of the Federal Republic of Germany.

Collapsible containers having foldable side walls for return shipping are well known in the prior art and are subject to a wide range of uses. Such containers range in size from rather larger capacity cargo container units for rail and ship-board handling to rather small lightweight containers designed for such commodities as bakery goods and farm produce. Examples of the latter type of collapsible containers made from moulded flexible plastic with integral hinge structures and snap fitting joints are contained in the Saunders et al U.S. Patents Nps. 3870185 and 3874546 and the Waller U.S. Patent No. 4320845. The containers may be characterised as being rather lightweight small capacity structures and are designed for carrying lightweight fragile or frangible articles such as loaves of bread or egg cartons.

GB—A—2,149,757 discloses a stacking and nesting container, particularly a bakery tray, with bails on two opposed side wall top edges that are pivotable between a nesting position when the trays may be nested within each other and a stacking position wherein a like tray may have its bottom supported by the bails of a lower tray, and then entire structure is moulded of synthetic resin material, without metal parts of separate hinge components.

Larger bin structures for general utility use, of the type capable of being handled by a fork lift, have also been constructed from moulded rigid plastic materials. This type of container may be characterised as a pallet base container. The Kardell U.S. Patent No. 4057165 is one such device wherein flexible plastic hinge members permit the side walls to be folded onto the pallet base. The Vande Drink U.K. Patent No. 4235345 and the Te-Chi Hsu U.S. Patent No. 4300695 are further examples of injection moulded collapsible containers usable for general utility purposes. The Te-Chi Hsu Patent is exemplary of injection moulded plastic structures utilising metal hinge pins to accomplish the hinging function between plastic panels. The metal hinge pins are designed to withstand lateral loads and are intended to provide the necessary strength to the structure.

U.S. 2,553,607 discloses a collapsible box in which the walls can be folded to a flat overlapping parallel configuration.

U.S. 3,985,258 discloses a knock-down plastic container in which the walls are bolted on and can therefore be disassembled.

Generally speaking, the problem encountered with prior art efforts to design moulded plastic containers for heavy duty purposes has been the difficulty in providing a pallet type base with foldable walls which, when erected, are strong enough to carry extremely heavy loads such as machine parts or heavy metal objects, for instance. Although it is well known in the art that hinge members may be moulded integrally with the side and bottom walls and simply snapped together to form collapsible containers, the resulting structure will not stand up under heavy use. On the other hand, if such devices as metal clips, metal hinge pins or other reinforcing members are added to the collapsible multi-panelled plastic structure the parts usually become separated and lost when the container is collapsed for return shipment. In addition, such designs involving multiple separate parts of diverse materials are extremely expensive to manufacture and usually too cumbersome to be practical. Other considerations such as replacement of worn out parts and the ability to keep the container structure clean have plagued the industry for years.

U.S. 4,062,467 discloses a collapsible container having four wall members hinged to upwardly-extending portions at the edges of a base member. One pair of opposite wall members is provided with outwardly-projecting side flanges which are notches to enable these flanges to fit into eyelets formed at the edges of the other part of opposite wall members, to enable the wall members to be fixed in an upright position.

EP—A—67,323 discloses a collapsible container comprising:

a base forming a bottom wall of the container and carrying upwardly-extending portions at edges thereof;

a pair of opposed side wall members and a pair of opposed end wall members, said wall members being pivotally attached by hinge means to said upwardly-extending portions to enable them to be moved from a collapsed configuration to an erect configuration in which adjacent wall members mutually engage each other at their adjacent side edges, each of said side wall members including at each side edge thereof a flange extending inwardly from the inner face thereof along a substantial length thereof and each of said end wall member including a flange at each side edge thereof which runs along a substantial length thereof; and

recess and/or projection configurations on said flanges, of said side wall members which in the erect configuration of the container engage complementary projection and/or recess configurations of the side wall members to prevent relative longitudinal movement between the mutually engaged side edges of the wall members.

The present invention provides a collapsible container as disclosed in EP—A—67,323 characterised in that in the erect configuration of the

container the flanges mate, at least one flange of each mating pair having a groove parallel thereto in which its mating flange is accommodated, whereby loading on the interior of said wall members tends to enhance the engagement between the flanges.

Such a collapsible pallet type container may be in the form of a heavy duty, strong container which may be formed entirely by injection moulded plastic techniques and which may in preferred embodiment be designed for nesting when stacked either in the erected or collapsed mode. The side and end walls of the container are pivotally connected to the base by means of integrally moulded snap-fitting hinges, for example. There are no special clips or other metal parts required and hence no loose or separate parts used in conjunction with the container at all. The special structural configuration of the mating side and end walls and the base ensure that no lateral loads are placed on the moulded hinge structures, hence extremely high-level loading interior of the container is possible. The novel configuration of side wall and end wall interlocking results in enhancing the engagement between the end and side walls with increased loading within the container. Longitudinal movement in the vertical direction between the end and side walls or side wall shifting is also prevented by the novel connection and interaction between the end and side wall edges. Likewise, in preferred embodiments, special provision is made for absorbing lateral shock forces directed against the outside surface of the erected side walls, thereby protecting the moulded hinge elements connecting the end and side walls to the pallet base. The rigidity of the connection or engagement between the end and side walls is extremely important during lifting of a filled container by such means as a fork lift. There is a normal tendency to skew the ends and side walls during lifting, resulting in hinge damage. This skewing is prevented by means of the novel structure which interconnects end and side wall edges.

Provision is also made, in preferred embodiments, for a slightly domed or upwardly convexed pallet surface which forms the bottom wall of the container. Loads received by the convex bottom wall are thereby transferred into the side and end walls in such a manner as to still further enhance their engagement. Containers having two folding patterns for collapsing the side end walls onto the pallet base are claimed in respective dependent claims, and in both instances nesting type stacking is possible without endangering the hinged joints between the side and end walls and the bottom wall by the added weight of stacking. Additionally, in a preferred embodiment the container is also designed so as to receive a lid structure of appropriate configuration with none of the lateral forces of the loaded side and end walls being transferred to the lid. In preferred embodiments, because of the novel configuration of the integrally moulded hinge elements and the interfacing between the side walls and the end walls with the

base walls of the pallet, it is possible to construct a container with extremely smooth interior surfaces. This feature is of importance with the handling of agricultural produce and the like and may be important in those instances where cleaning of the interior of the container is desirable or necessary. All of these advantages are obtained with preferred embodiments of the present invention while keeping the manufacturing costs of the container at a competitive level. Advantages are also obtained in return shipping, wherein for example the container may be reduced in size in the range of 2.8 to 1, to 3 to 1. This return ratio is considered to be of extreme importance taking into consideration present day shipping rates.

Further preferred embodiments are defined in the dependent claims.

Reference is made to the accompanying drawings illustrating preferred embodiments of the invention by way of example, wherein:

Figure 1 is a perspective view of a first embodiment of the collapsible container of the present invention in its fully assembled or erected condition;

Figure 2 is a perspective view of the embodiment of Figure 1 illustrating the order of folding the side and end walls to obtain the collapsed configuration of the container for return shipment;

Figure 3 is a partially sectioned isometric detail of the area indicated by the broken line circle in Figure 2;

Figure 4 is a transverse sectional view showing the folded position of the end and side walls of the pallet container;

Figure 5 is a transverse cross-section taken above lines 5—5 of Figure 4;

Figure 6 is a partial elevation of the outside wall of the container in its erected condition showing the placement of snap hinge elements acting between the side and end walls of the container and the pallet base wall;

Figure 7 is a cross-sectional view along lines 77 of Figure 6 illustrating a hinge protector structure for absorbing inwardly directed shock loads against the erected side walls of the container;

Figure 8 is an exploded partially sectioned detail of one form of snap hinge indicated by the dotted line circle 8 in Figure 6;

Figure 9 is an exploded partially sectioned detail of a second form of snap hinge indicated by the dotted line circle 9 in Figure 6;

Figure 10 is an elevational detail illustrating a wall latch structure acting between the end and side walls to prevent inward folding of the erected walls prior to filling of the bin;

Figure 10A is a perspective view of the sliding latch element shown in Figure 10;

Figure 11 is a centre line sectional view showing the folded position of the end and side walls of a second embodiment of the collapsible bin; and

Figure 12 is a cross-sectional view taken along lines 12—12 of Figure 11 showing the position of the folded end and side walls.

Figure 1 illustrates a collapsible container 10 according to the present invention which includes

5

10

15

20

25

30

35

40

45

50

55

60

65

the side walls 11, opposed end walls 12 and a pallet base or bottom wall structure 13. The entire structure of the container is most advantageously formed from a material such as high density polyethylene utilising well known injection moulding processes. The thickness of the side wall, end wall and bottom wall structures may vary and will be determined by the strength and durability requirements for any particular bin or container. It will also be noted that any configuration of ribbing or reinforcing may be provided for the wall members as is well known to prior art. Preferably, however, the inside surfaces of the side walls 11, end walls 12, and the bottom pallet wall 13 are smooth and free of obstructions so as to be easily cleaned. One of the end walls 12, as shown in Figure 1, may also be provided with a hinged door or gate 14 to facilitate unloading of the container under certain conditions, if desired.

Referring to Figures 3—5, the pallet base 13 includes the bottom wall 16 moulded with appropriate strengthening webs 16a integral therewith. The bottom wall 16 is formed in an upwardly convexed curve as seen most clearly in Figures 4 and 5 and extends into the base side and end walls 17 and 18 respectively to which the side wall and end walls 11 and 12 respectively are pivotally attached. As shown most clearly in Figure 3, the base side walls 17 extend to a higher elevation than the base end walls 18 to permit folding as will presently be described in detail. As is customary, the pallet base 13 is formed with a support spaced along its length. The inner face of the flange 28 is provided with a plurality of notches 32 also vertically spaced along its length. The webs 31 and notches 32 are designed to cooperate with the mating webs and notches in the end walls when the walls are in the erected position as will presently be described. The bottom inner edge of each side wall 11 comprises a lip member 33 running the length of the wall. The lip 33 is designed to cooperate and interfit with the groove 21 and shoulder 22 of the adjacent base side wall to provide a bearing surface for absorbing the forces acting against the inner surface of the walls when the container is loaded. As seen most clearly in Figure 3, the lip 33 engages the groove 22 in the base side wall and the bottom surface of the side wall 11 rests vertically on the top edge of the wall 17 when the side wall is erected.

The end walls 12 may be identical in detail and are connected to the base end walls 18 by means of hinge members which are identical to those used for the side walls 11. Also a lip 38 is formed on the bottom edge of each wall 12 and cooperates with the groove 23 and shoulder 24 in the manner described with relation to the lip edge 33 of the side walls 11. As seen in Figure 3, the vertical side edge of each end wall includes a vertically extending flange 34 which is designed to engage the groove 29 in the adjacent side wall flange when both end and side walls are erected. The flange 34 is provided with a plurality of spaced notches 36 which are vertically spaced so

as to receive the webs 31 in the side wall flanges 28. Likewise, the flange 34 is provided with a plurality of spaced webs, such as the web 37, which engage the notches 32 in the side wall flange 28. This structural arrangement prevents the end walls from pivoting or being forced past the vertical when they are raised against the flanges 28 of the erected side walls. Any force applied to the inside wall surfaces will, of course, enhance the engagement between the wall edges. The engagement between the respective notches and webs on the flanges of the end and side walls serves to lock the two walls together against any relative vertical shifting. This shifting or skewing of the side and end walls normally tends to occur during lifting of the loaded container with a fork lift and may result in severe hinge damage.

Referring now to Figures 6 to 9, the hinge structures will be described in detail. The hinge member 26 as well as the hinge 27 are moulded integrally with the side and end wall panels obviating the need for any special hardware or removable parts. The hinge structure 26 shown in detail in Figure 8 includes a rectangular hinge body 39 extending from the bottom edge of the associated side wall with the inner face thereof being flush with the inside surface of the associated wall. Although the detailed configuration of the hinge body may vary somewhat, each of the side walls of the hinge body is provided with an elongated slot 40 which engages a boss or cylindrical protrusion 41 formed on the side walls of a U-shaped opening 42 in the associated base side or end wall. It will be noted that slots 40 are open ended on the inward side thereof to permit insertion into the U-shaped opening into engagement with the bosses 41 in a lateral direction. The hinge body 39 preferably closely conforms to the configuration of the opening 42 so as to substantially close the opening when the side wall is in place. The body 39 also includes a downwardly extending protrusion 43 which engages a shoulder 44 in the bottom of the U-shaped opening 42. The hinge member 26 thus provides a pivot or hinge point about the axis of the bosses 41 when the side wall is folded inwardly. The protrusion 43 and the shoulder 44 prevent the side wall from being pivoted outwardly beyond the vertical and also provide protection for the hinge in the event of any lateral impact on the outside wall of the container.

Figure 9 illustrates the second type of hinge 27 utilized in conjunction with the hinge member 26. The hinge member 27 is substantially more complex in its structure and is characterised as a "snap hinge", having the added function of retaining the end and side walls against removal from the pallet base. As shown in Figure 9, the hinge structure 27 is also moulded integrally with the side or end wall structure with its inside surface flush with the inside face of the wall. The hinge has a two part body comprising the body members 46 and 47. The body member 46 is similar to one side of the body 39 of the hinge

member 26 in that it contains an open ended slot 48 which is designed to receive one of the hinge bosses 49 located in the U-shaped opening 51 in the adjacent base wall. The pivotal axis provided by the bosses 49, of course, coincides with the axis of the bosses 41 of the adjacent hinge structure 26. The hinge body 46 functions in the manner described for the hinge body 39 to provide a hinge point and also includes a protrusion (not shown) for engagement with a shoulder 52 in the opening 51 of the adjacent base wall. This engagement prevents the side wall or end wall from being pivoted beyond the vertical position and also provides impact protection for the associated hinge boss 49. The other body portion 47 has a relatively thin walled shank 53 terminating in a cylindrical hub 54 which is provided with a bore 56 for receiving one of the bosses 49. The body portion 47 also includes a protrusion 57 for cooperating with the shoulder 52 to limit the pivotal movement of the container wall to the vertical position. Since the shank 53 of the hinge body is somewhat flexible, it may be deformed to such an extent as to allow the boss 49 to engage the bore 56 of the hinge member and to snap the remaining part of the hinge into engagement with the oppositely facing boss 49. With the snap hinge 27 in engagement with the bosses 49, the associated container wall is held in removable attachment with the pallet base.

To further protect the pivotally attached side walls from shock loads directed laterally against the outside surfaces thereof, each hinge set 26—27 may be provided with an adjacent wall protector structure 58 shown in detail in Figures 3 and 7. The purpose of the wall protector 58 is, of course, to prevent any such lateral shock loads from damaging the hinge members 26 and 27. Referring to Figure 7, the base side or end wall has a recess formed therein which provides an upwardly and outwardly directed stop or abutment 59 which engages an integrally formed stop 61 on the associated side or end wall. The stop portion 61 is formed with a groove or slot 62 which receives and acts against the terminal end of the abutment 59 on the base wall. Thus, the protrusions 43 and 57 on the hinge members 26 and 27 respectively and the abutment 59 and stop member 61, prevent any lateral shock loads, directed against the outside surfaces of the walls, from being applied to the hinge structures. The protective lips 33 and 38 on the side and end walls 11 and 12 respectively cooperate with the associated shoulders on the base side and end walls to absorb lateral loading on the inside surface of the walls to protect the hinges. The engagement between the interlocking flanges on the mating edges of the ends and side walls serve to absorb the remaining lateral loads applied to the inner faces of the walls as the container is filled thus preventing any loading whatsoever on the hinge members.

In order to hold the end walls in their erected position as shown in Figure 1 prior to filling the container, each end wall may be provided with

slide latch structures 63 mounted on each side edge adjacent the upper ends thereof for engagement with the flanges 28 of the side walls 11. The slide latches may be received in suitable openings 64 in the flanges 28 to hold the end walls from collapsing inwardly until the container is filled. Figures 10 and 10A illustrate the details of a slide latch structure which may be used for this purpose. As seen in Figures 10 and 10A, the slider 66 is held in position against the end wall by means of the guides 67 which engage the tabs 68 on the slider and allow the slider to be moved into engagement with the slot 64 in the side wall flange 28. The slider 66 is held against removal in the unlatched position by means of the latch fingers 69 which engage appropriate the depressions in the end wall surface. The latch is held in the engaged position by means of the latch finger 71 which engages a suitable slot 71a in the end wall. As illustrated in Figure 10A, the latch fingers 69 include a flat surface 72 which limits the movement of the slider toward the unlatched position. The latch finger 71 may be provided with an inclined cam surface (not shown) which will serve to hold the slider in the engaged position but permits withdrawal of the slider by virtue of the cam surface in a well known manner.

As aforementioned, one or both of the end walls 12 may be provided with a suitable door 14 which is connected to the end wall by means of snap hinge connectors 74 which may be identical to the snap hinge 27 shown in Figure 9. It will be understood, of course, that the bottom edge of the hinged door will also be provided with a lip (not shown) for engagement with an appropriate shoulder on the wall 12 to absorb any lateral loads on the door so as to protect the hinge members in a manner previously described. Also the door 14 may be latched to the end wall structure by means of slide latches 76 mounted on the end walls. These latches may be substantially identical in the structure and operation to the slide latch shown in Figures 10 and 10A.

Although no top structure is illustrated, it will be obvious to those skilled in the art that a top structure may be provided for the container with the proper configuration for engaging the top edges of the erected ends and side walls. Since the lateral loads on the ends and side walls are absorbed by their novel interconnections, there will be no loads applied to the cover structure.

Figures 2, 4 and 5 illustrate the manner in which the side and end walls are folded in order to obtain the stackable collapsed container. Referring to Figure 2, and assuming an empty container, the slide latches 63 are first moved to the retracted position releasing the ends walls 12 from the side walls 11. The end walls are then folded inwardly to rest on the base structure or bottom wall 16 of the pallet as illustrated in Figure 4. Since the end walls 12 have a height which is greater than half the distance across the bottom wall 16, the walls will overlap as shown in Figure 4. The order in which the end walls are folded is,

of course, irrelevant because they are both pivoted at the same height. The next step is to fold each of the side walls 11 inwardly with the inwardly facing surfaces of the flanges 28 on each end of each side wall coming to rest on the upper edges of the base end walls 18. With this configuration, no weight or stress is applied to the overlapped previously folded end walls 12. Also, since the base side walls 17 are higher in elevation, the vertical height of the side walls 11 may be designed to be one half of the length of the bottom wall 16 and pallet base as shown in Figure 5. There is therefore no overlapping of the side walls which form a stable platform on which to stack another collapsed or fully erected container. Referring to Figures 4 and 5, it is to be noted that the base end and side walls 17 and 18 are provided with a plurality of notches or openings 77 and 78 respectfully which are aligned with the reinforcing webs of the outside surfaces of the side walls 11 to permit nesting. Additionally, the peripheral edges of the end and side base walls are inset as at 79 and 81 so as to permit the pallet base to be nested onto the folded side walls of another container. The recessing 79 and 81 also permits a folded or erected container to be nested on top of another erected container.

Figures 11 and 12 illustrate a second embodiment of the invention wherein the side and end walls are hinged to the respective base walls at four different elevations providing for a container of smaller dimensions while preserving the ability to stack the collapsed container with other collapsed or erected containers. It will be understood that the hinge structures and hinge protective features of Figures 1 to 10 embodiment will be utilised in the construction of the container of Figures 11 and 12, the only difference being the manner in which the side and end walls are folded inwardly to collapse the container. As seen in Figures 11 and 12, the pallet base 113 is provided with a first base end wall 114 and a second base end wall 116. The end wall 117 is pivoted to the base wall 116 at the pivot point 118 and the end wall 119 is pivoted to the base end wall 114 at the pivot axis 121. The pivot point 118 is located the approximate thickness of the end walls and webbing above the pivot point 121. With this arrangement, the end wall 119 may be moved to the position shown in Figure 11 lying substantially flat on top of the bottom wall of the pallet. The end wall 117 is then pivoted inwardly so as to rest on top of the end wall 119.

Referring to Figure 12, the base side walls 122 and 123 provide pivotal attachments for the side walls 124 and 126 respectively. The pivotal attachment 127 for the side wall 126 is located the thickness of a side wall and webbing above the pivot point 128 for the side wall 124, permitting the wall 126 to lie flat on top of the side wall 124 and to be supported thereby. As shown in Figure 11, one flange 129 of the side wall 124 engages the top surface of the base end wall

116 for support along its length and the flanges 131 and 132 of the side wall 126 rest on the outside surface of the side wall 124. In order to stack successive erected or collapsed containers on a collapsed container, the base side walls 122 and 123 have corner posts 113 and 134 respectively so as to support the stacked containers without applying any pressure to the folded side walls 124 and 126. For this purpose, the peripheral edge of the pallet base is recessed as at 136 so as to nest between the corner posts 133 and 134.

Claims for the Contracting States: FR BG IT

1. A collapsible container comprising:

a base (13) forming a bottom wall (16) of the container and carrying upwardly-extending portions (17, 18) at edges thereof;

A pair of opposed side wall members (11) and a pair of opposed end wall members (12), said wall members being pivotally attached by hinge means (26/27) to said upwardly-extending portions to enable them to be moved from a collapsed configuration to an erect configuration in which adjacent wall members mutually engage each other at their adjacent side edges, each of said side wall members (11) including at each side edge thereof a flange (28) extending inwardly from the inner face thereof along a substantial length thereof and each of said end wall members (12) including a flange (34) at each side edge thereof which runs along a substantial length thereof;

and

recess and/or projection configurations (31, 32) on said flanges (28) of said side wall members which in the erect configuration of the container engage complementary projection and/or recess configurations (36, 37) of the side wall members (11) to prevent relative longitudinal movement between the mutually engaged side edges of the wall members, characterised in that in the erect configuration of the container the flanges (28, 34) mate, at least one flange (28) of each mating pair having a groove (29) parallel thereto in which its mating flange (34) is accommodated, whereby loading on the interior of said wall members (11, 12) tends to enhance the engagement between the flanges.

2. A collapsible container as claimed in claim 1 wherein said recess and/or projection configurations comprise a series of transverse webs (31) extending across the interior of at least one said groove (29) and a series of notches (36) distributed along the flange (34) that seats within said groove and engaging said webs when the container is in said erect configuration.

3. A collapsible container as claimed in claim 1 or claim 2 including latch means (63) acting between said mating flanges (28, 34) to prevent inward collapsing of said wall members (11, 12) prior to fitting.

4. A collapsible container according to any preceding claim wherein said bottom wall (16) comprises a convex interior surface (16) for receiving vertical load within said container.

5. A collapsible container according to any preceding claim wherein:

said base means (13) includes vertical peripheral support walls extending downwardly from said bottom wall (16);

said support walls having multiple openings (19) which provide access to lifting surfaces beneath said bottom wall (16) to facilitate lifting of said container, said support walls, said bottom wall (12) and said wall members being formed of integrally moulded plastic material.

6. A collapsible container according to any preceding claim wherein in said erect configuration, the bottom edges of said wall members (11, 12) and said upwardly extending portions (17, 18) of said base (13) mutually engage each other at protrusion (43) and shoulder (44) configurations thereof which protect said hinge means (26/27) from forces acting on the faces of the wall members (11, 12).

7. A collapsible container according to any preceding claim wherein said wall members (11, 12) and said upwardly-extending portions (17, 18) of said base (13) have substantially planar inner faces and said inner faces of the wall members (11, 12) are substantially coplanar with said inner faces of said upwardly-extending portions in the erect configuration of the container.

8. A collapsible container according to any preceding claim wherein said upwardly-extending portions (17, 18) of the base (13) comprise two side wall portions (17) of equal height on which said side wall members (11) are pivotally mounted and two end wall portions (18) on which said end wall members are pivotally mounted, the height of the end wall portions (18) being less than the height of the side wall portions (17) and the height of the side wall members (11) being substantially equal to half the spacing between said side wall portions (17) wherein by in said-collapsed configuration the end wall members (12) are covered by the side wall members (11) which are supported by said end wall portions (18) so as to lie flush with each other out of contact with said end wall members (12).

9. A collapsible container according to any of claims 1 to 8 wherein said upwardly-extending portions (17, 18) of the base (13) comprise two side wall portions (17) on which said side wall members (11) are pivotally mounted, said side wall portions differing in height by the approximate thickness of the side wall members (11) and the height of the side wall members (11) being greater than half the spacing between said side wall portions (17) said upwardly-extending portions (17, 18) further comprising two end wall portions (18) on which said end wall members (12) are pivotally mounted, the heights of said end wall portions (18) differing from each other by the approximate thickness of said end wall members (12) and being less than the heights of said side

wall portions (17) the height of said end wall members (12) being greater than half the spacing between said end wall portions (18) whereby in said collapsed configuration the side wall members (11) overlap each other in a parallel configuration over the end wall members (12) which also overlap each other in a parallel configuration.

10. A collapsible container according to any preceding claim wherein said hinge means (26, 27) comprises:

a hinge body (39, 46, 47) extending downwardly from the bottom edge of a said wall member (11, 12) and being moulded integrally therewith, and a mating recess (42, 51) formed in the associated base upwardly-extending portion (17, 18) of the base (13) said recess including coaxial hinge bosses (41; 49) integral with the side wall thereof,

boss receiving means (40; 54) on said hinge body and adapted to provide a pivotal axis for said wall members (11, 12);

shoulder means (44; 52) moulded integrally with and extending upwardly from the bottom of said recess; and

a protrusion (43; 57) on the bottom of said hinge body adapted to contact said shoulder means to limit pivoting of the wall member (11, 12) in the outward direction to a vertical position when the hinge body is engaged.

11. A collapsible container as claimed in claim 10 wherein said hinge body (46, 47) comprises a relatively flexible hinge element (53) which is deformable to snap the hinge body into position on said hinge bosses (49).

Claims for the Contracting State: DE

1. A collapsible container comprising:

a base (13) forming a bottom wall (16) of the container and carrying upwardly extending portions (17, 18) at edges thereof;

a pair of opposed side wall members (11) and a pair of opposed end wall members (12), said wall members being pivotally attached by hinge means (26/27) to said upwardly-extending portions to enable them to be moved from a collapsed configuration to an erect configuration in which adjacent wall members mutually engage each other at their adjacent side edges, each of said side wall members (11) including at each side edge thereof a solid flange (28) extending inwardly from the inner face thereof along a substantial length thereof and each of said end wall members (12) including a solid flange (34) at each side edge thereof which runs along a substantial length thereof; and

recess and/or projection configurations (31, 32) on said flanges (28) of said side wall members which in the erect configuration of the container engage complementary projection and/or recess configurations (36, 37) of the side wall members (11) to prevent relative longitudinal movement between the mutually engaged side edges of the wall members, characterised in that in the erect configuration of the container the flanges (28, 34)

mate, at least one flange (28) of each mating pair having a groove (29) parallel thereto in which its mating flange (34) is accommodated, whereby loading on the interior of said wall members (11, 12) tends to enhance the engagement between the flanges.

2. A collapsible container as claimed in claim 1 wherein said recess and/or projection configurations comprise a series of transverse webs (3) extending across the interior of at least one said groove (29) and a series of notches (36) distributed along the flange (34) that seats within said groove and engaging said webs when the container is in said erect configuration.

3. A collapsible container according to claim 1 or claim 2 including latch means (63) acting between said mating flanges (28, 34) to prevent inward collapsing of said wall members (11, 12) prior to fitting.

4. A collapsible container according to any preceding claim wherein said bottom wall (16) comprises a convex interior surface (16) for receiving vertical load within said container.

5. A collapsible container according to any preceding claim wherein;

said base means (13) includes vertical peripheral support walls extending downwardly from said bottom wall (16);

said support walls having multiple openings (19) which provide access to lifting surfaces beneath said bottom wall (16) to facilitate lifting of said container, said support walls, said bottom wall (12) and said wall members being formed of integrally moulded plastic material.

6. A collapsible container as claimed in any preceding claim wherein in said erect configuration, the bottom edges of said wall members (11, 12) and said upwardly extending portions (17, 18) of said base (13) mutually engage each other at protrusion (43) and shoulder (44) configurations thereof which protect said hinge means (26/27) from forces acting on the faces of the wall members (11, 12).

7. A collapsible container as claimed in any preceding claim wherein said wall members (11, 12) and said upwardly-extending portions (17, 18) of said base (13) have substantially planar inner faces and said inner faces of the wall members (11, 12) are substantially coplanar with said inner faces of said upwardly-extending portions in the erect configuration of the container.

8.- A collapsible container according to any preceding claim wherein said upwardly-extending portions (17, 18) of the base (13) comprise two side wall portions (17) of equal height on which said side wall members (11) are pivotally mounted and two end wall portions (18) on which said end wall members (12) are pivotally mounted, the height of the end wall portions (18) being less than the height of the side wall portions (17) and the height of the side wall members (11) being substantially equal to half the spacing between said side wall portions (17) wherein by in said collapsed configuration the end wall members (12) are covered by the side wall members

(11) which are supported by said end wall portions (18) so as to lie flush with each other out of contact with said end wall members (12).

9. A collapsible container according to any of claims 1 to 8 wherein said upwardly-extending portions (17, 18) of the base (13) comprise two side wall portions (17) on which said side wall members (11) are pivotally mounted, said side wall portions differing in height by the approximate thickness of the side wall members (11) and the height of the side wall members (11) being greater than half the spacing between said side wall portions (17) said upwardly-extending portions (17, 18) further comprising two end wall portions (18) on which said end wall members (12) are pivotally mounted, the heights of said end wall portions (18) differing from each other by the approximate thickness of said end wall members (12) and being less than the heights of said side wall portions (17) the height of said end wall members (12) being greater than half the spacing between said end wall portions (18) whereby in said collapsed configuration the side wall members (11) overlap each other in a parallel configuration over the end wall members (12) which also overlap each other in a parallel configuration.

10. A collapsible container according to any preceding claim wherein said hinge means (26, 27) comprises:

a hinge body (39, 46, 47) extending downwardly from the bottom edge of a said wall member (11, 12) and being molded integrally therewith, and

a mating recess (42, 51) formed in the associated base upwardly-extending portion (17, 18) of the base (13) said recess including coaxial hinge bosses (41; 49) integral with the side wall thereof,

boss receiving means (40; 54) on said hinge body and adapted to provide a pivotal axis for said wall members (11, 12);

shoulder means (44; 52) moulded integrally with and extending upwardly from the bottom of said recess; and

a protrusion (43; 57) on the bottom of said hinge body adapted to contact said sholder means to limit pivoting of the wall member (11, 12) in the outward direction to a vertical position when the hinge body is engaged.

11. A collapsible container according to claim 10 wherein said hinge body (46, 47) comprises a relatively flexible hinge element (53) which is deformable to snap the hinge body into position on said hinge bosses (49).

Patentansprüche für den Vertragsstaaten: FR GB IT

1. Zusammenklappbarer Behälter mit einer Basis (13), die eine Bodenwand (16) des Behälters bildet und sich nach oben erstreckende Abschnitte (17, 18) an ihren Rändern trägt; mit einem Paar von gegenüberliegenden Seitenwandelementen (11) und einem Paar von gegenüberliegenden Stirnwandelementen (12), wobei die Wandelemente in Scharniereinrich-

tungen (26/27) an den sich nach oben erstreckenden Abschnitten schwenkbar befestigt sind, wodurch sie aus einer zusammengeklappten Gestalt in eine aufgerichtete Gestalt bewegbar sind, in welcher aneinandergrenzende Wandelemente wechselseitig an ihren benachbarten Seitenrändern ineinandergreifen, jedes der Seitenwandelemente (11) an jedem Seitenrand einen Flansch (28) aufweist, der sich von seiner Innenfläche längs einer wesentlichen Länge davon nach innen erstreckt, und jedes der Stirnwandelemente (12) einen Flansch (34) an jedem Seitenrand aufweist, der mit einer wesentlichen Längserstreckung davon verläuft, und

mit Aussparungs- und/oder Vorsprungausgestaltungen (31, 32) an den Flanschen (28) der Seitenwandelemente, die in der aufgerichteten Gestalt des Behälters in komplementäre Vorsprungs- und/oder Aussparungsausgestaltungen (36, 37) der Seitenwandelemente (11) eingreifen, um eine relative Längsbewegung zwischen den wechselseitig in Eingriff stehenden Seitenrändern der Wandelemente zu unterbinden, dadurch gekennzeichnet, daß in der aufgerichteten Gestalt des Behälters die Flansche (28, 34) ineinandergreifen, wobei wenigstens ein Flansch (28) eines jeden Eingriffpaars eine dazu parallele Nut (29) aufweist, in welcher ihr eingreifender Flansch (34) aufgenommen ist, wodurch eine Belastung am Inneren der Wandelemente (11, 12) den Eingriff zwischen den Flanschen steigern möchte.

2. Zusammenklappbarer Behälter nach Anspruch 1, bei welchem die Aussparungs- und/oder Vorsprungausgestaltungen eine Reihe von Querstegen (31), die sich quer über den Innenraum von wenigstens einer Nut (29) erstrecken, und eine Reihe von Einkerbungen (36) aufweisen, die längs des Flansches (34), der in der Nut sitzt, verteilt sind, und die in die Stege eingreifen, wenn sich der Behälter in der aufgerichteten Gestalt befindet.

3. Zusammenklappbarer Behälter nach Anspruch 1 oder Anspruch 2 mit Verriegelungseinrichtungen (63), die zwischen den ineinandergreifenden Flanschen (28, 34) wirken, um ein Nach-Innen-Klappen der Wandelemente (11, 12) vor der Montage zu unterbinden.

4. Zusammenklappbarer Behälter nach einem vorgehenden Anspruch, bei welchem die Bodenwand (16) eine konvexe Innenfläche (16) für die Aufnahme einer vertikalen Last in dem Behälter aufweist.

5. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die Basiseinrichtung (13) vertikale Umfangshaltewände aufweist, die sich von der Bodenwand (16) nach unten erstrecken;

die Haltewände Mehrfachöffnungen (19) aufweisen, die einen Zugang zu Hubflächen unter der Bodenwand (16) gewähren, um das Heben des Behälters zu erleichtern, wobei die Haltewände, die Bodenwand (12) und die Wandelemente aus einstückig geformtem Kunststoffmaterial hergestellt sind.

6. Zusammenklappbarer Behälter nach einem

vorhergehenden Anspruch, bei welchem in der aufgerichteten Gestalt die Bodenränder der Wandelemente (11, 12) und die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) an Vorsprungs (43)- und Schulter (44)-Gestaltungen davon gegenseitig ineinandergreifen, welche die Scharniereinrichtungen (26/27) vor Kräften schützen, die auf die Flächen der Wandelemente (11, 12) einwirken.

7. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die Wandelemente (11, 12) und die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) im wesentlichen planare Innenflächen aufweisen und die Innenflächen der Wandelemente (11, 12) im wesentlichen koplanar zu den Innenflächen der sich nach oben erstreckenden Abschnitte in der aufgerichteten Gestalt des Behälters sind.

8. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) zwei Seitenwandabschnitte (17) gleicher Höhe, an denen die Seitenwandelemente (11) schwenkbar angebracht sind, und zwei Stirnwandabschnitte (18) aufweisen, an denen die Stirnwandelemente (12) schwenkbar angebracht sind, wobei die Höhe der Stirnwandabschnitte (18) geringer ist als die Höhe der Seitenwandabschnitte (17) und die Höhe der Seitenwandelemente (11) im wesentlichen gleich der Hälfte des Abstands zwischen den Seitenwandabschnitten (17) ist, wodurch in der zusammengeklappten Gestalt die Stirnwandelemente (12) von den Seitenwandelementen (11) abgedeckt sind, die von den Stirnwandabschnitten (18) so gehalten werden, daß sie bündig zueinander ohne Kontakt mit den Stirnwandelementen (12) liegen.

9. Zusammenklappbarer Behälter nach einem der Ansprüche 1 bis 8, bei welchem die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) zwei Seitenwandabschnitte (17) aufweisen, an denen die Seitenwandelemente (11) schwenkbar angebracht sind, wobei sich die Seitenwandabschnitte in der Höhe durch die annähernde Dicke der Seitenwandelemente (11) unterscheiden, und die Höhe der Seitenwandelemente (11) größer als der halbe Abstand zwischen den Seitenwandabschnitten (17) ist, und die sich nach oben erstreckenden Abschnitte (17, 18) weiterhin zwei Stirnwandabschnitte (18) aufweisen, an denen die Stirnwandelemente (12) schwenkbar angebracht sind, wobei sich die Höhen der Stirnwandabschnitte (18) voneinander durch die annähernde Dicke der Stirnwandelemente (12) unterscheiden und kleiner sind als die Höhen der Seitenwandabschnitte (17), und die Höhe der Stirnwandelemente (12) größer ist als der halbe Abstand zwischen den Stirnwandabschnitten (18), wodurch bei zusammengeklappter Gestalt die Seitenwandelemente (11) einander in einer parallel Form über den Stirnwandelementen (12) überlappen, die einander ebenfalls in einer parallel Form überlappen.

10. Zusammenklappbarer Behälter nach einem

vorhergehenden Anspruch, bei welchem die Scharniereinrichtungen (26, 27)

einen Scharnierkörper (39, 46, 47), der sich von dem Bodenrand des Wandelements (11, 12) nach unten erstreckt und in einem Stück damit ausgeformt ist,

eine Eingriffsaussparung (42, 51), die in dem zugeordneten sich nach oben erstreckenden Basisabschnitt (17, 18) der Basis (13) ausgebildet ist, wobei die Aussparung koaxiale Scharnierzapfen (41, 49) aufweist, die ein Stück mit der Seitenwand davon bilden,

Zapfenaufnahmeeinrichtungen (40; 54) an dem Scharnierkörper, die zur Bildung einer Schwenkachse für die Wandelemente (11, 12) geeignet sind,

Schultereinrichtungen (44; 52), die einstückig mit dem Boden der Ausnehmung ausgeformt sind und sich vom Boden der Ausnehmung nach oben erstrecken, und

einen Vorsprung (43, 57) am Boden des Scharnierkörpers aufweisen, der für den Kontakt mit den Schultereinrichtungen geeignet ist, um das Verschwenken des Wandelements (11, 12) in die Auswärtsrichtung zu einer vertikalen Position zu begrenzen, wenn der Scharnierkörper in Eingriff steht.

11. Zusammenklappbarer Behälter nach Anspruch 10, bei welchem der Scharnierkörper (46, 47) ein relativ flexibles Scharnierelement (53) aufweist, das so verformbar ist, daß der Scharnierkörper in Lage an den Scharnierzapfen (49) schnappen kann.

Patentansprüche für den Vertragsstaat: DE

1. Zusammenklappbarer Behälter

mit einer Basis (13), die eine Bodenwand (16) des Behälters bildet und sich nach oben erstreckende Abschnitte (17, 18) an ihren Rändern trägt;

mit einem Paar von gegenüberliegenden Seitenwandelementen (11) und einem Paar von gegenüberliegenden Stirnwandelementen (12), wobei die Wandelemente in Scharniereinrichtungen (26/27) an den sich nach oben erstreckenden Abschnitten schwenkbar befestigt sind, wodurch sie aus einer zusammengeklappten Gestalt in eine aufgerichtete Gestalt bewegbar sind, in welcher aneinandergrenzende Wandelemente wechselseitig an ihren benachbarten Seitenrändern ineinandergreifen, jedes der Seitenwandelemente (11) an jedem Seitenrand einen massiven Flansch (28) aufweist, der sich von seiner Innenfläche längs einer wesentlichen Länge davon nach innen erstreckt, und jedes der Stirnwandelemente (12) einen massiven Flansch (34) an jedem Seitenrand aufweist, der mit einer wesentlichen Längserstreckung davon verläuft, und

mit Aussparungs- und/oder Vorsprungsausgestaltungen (31, 32) an den Flanschen (28) der Seitenwandelemente, die in der aufgerichteten Gestalt des Behälters in komplementäre Vorsprungs- und/oder Aussparungsausgestaltungen (36, 37) der Seitenwandelemente (11) eingreifen,

um eine relative Längsbewegung zwischen den wechselseitig in Eingriff stehenden Seitenrändern der Wandelemente zu unterbinden, dadurch gekennzeichnet, daß in der aufgerichteten Gestalt des Behälters die Flansche (28, 34) ineinandergreifen, wobei wenigstens ein Flansch (28) eines jeden Eingriffspaares eine dazu parallele Nut (29) aufweist, in welcher ihr eingreifender Flansch (34) aufgenommen ist, wodurch eine Belastung am Inneren der Wandelemente (11, 12) den Eingriff zwischen den Flanschen steigern möchte.

2. Zusammenklappbarer Behälter nach Anspruch 1, bei welchem die Aussparungs- und/oder Vorsprungsausgestaltungen eine Reihe von Querstegen (3), die sich quer über den Innenraum von wenigstens einer Nut (29) erstrecken, und eine Reihe von Einkerbungen (36) aufweisen, die längs des Flansches (34), der in der Nut sitzt, verteilt sind, und die in die Stege eingreifen, wenn sich der Behälter in der aufgerichteten Gestalt befindet.

3. Zusammenklappbarer Behälter nach Anspruch 1 oder Anspruch 2 mit Verriegelungseinrichtungen (63), die zwischen den ineinandergreifenden Flanschen (28, 34) wirken, um ein Nach-Innen-Klappen der Wandelemente (11, 12) vor der Montage zu unterbinden.

4. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die Bodenwand (16) eine konvexe Innenfläche (16) für die Aufnahme einer vertikalen Last in dem Behälter aufweist.

5. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die Basiseinrichtung (13) vertikale Umfangshaltewände aufweist, die sich von der Bodenwand (16) nach unten erstrecken;

die Haltewände Mehrfachöffnungen (19) aufweisen, die einen Zugang zu Hubflächen unter der Bodenwand (16) gewähren, um das Heben des Behälters zu erleichtern, wobei die Haltewände, die Bodenwand (12) und die Wandelemente aus einstückig geformtem Kunststoffmaterial hergestellt sind.

6. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem in der aufgerichteten Gestalt die Bodenränder der Wandelemente (11, 12) und die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) an Vorsprungs (43)- und Schulter (44)-Gestaltungen davon gegenseitig ineinandergreifen, welche die Scharniereinrichtungen (26/27) vor Kräften schützen, die auf die Flächen der Wandelemente (11, 12) einwirken.

7. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die Wandelemente (11, 12) und die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) im wesentlichen planare Innenflächen aufweisen und die Innenflächen der Wandelemente (11, 12) im wesentlichen koplanar zu den Innenflächen der sich nach oben erstreckenden Abschnitte in der aufgerichteten Gestalt des Behälters sind.

8. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die sich

nach oben erstreckenden Abschnitte (17, 18) der Basis (13) zwei Seitenwandabschnitte (17) gleicher Höhe, an denen die Seitenwandelemente (11) schwenkbar angebracht sind, und zwei Stirnwandabschnitte (18) aufweisen, an denen die Stirnwandelemente (12) schwenkbar angebracht sind, wobei die Höhe der Stirnwandabschnitte (18) geringer ist als die Höhe der Seitenwandabschnitte (17) und die Höhe der Seitenwandelemente (11) im wesentlichen gleich der Hälfte des Abstands zwischen den Seitenwandabschnitten (17) ist, wodurch in der zusammengeklappten Gestalt die Stirnwandelemente (12) von den Seitenwandelementen (11) abgedeckt sind, die von den Stirnwandabschnitten (18) so gehalten werden, daß sie bündig zueinander ohne Kontakt mit den Stirnwandelementen (12) liegen.

9. Zusammenklappbarer Behälter nach einem der Ansprüche 1 bis 8, bei welchem die sich nach oben erstreckenden Abschnitte (17, 18) der Basis (13) zwei Seitenwandabschnitte (17) aufweisen, an denen die Seitenwandelemente (11) schwenkbar angebracht sind, wobei sich die Seitenwandabschnitte in der Höhe durch die annähernde Dicke der Seitenwandelemente (11) unterscheiden, und die Höhe der Seitenwandelemente (11) größer als der halbe Abstand zwischen den Seitenwandabschnitten (17) ist, und die sich nach oben erstreckenden Abschnitte (17, 18) weiterhin zwei Stirnwandabschnitte (18) aufweisen, an denen die Stirnwandelemente (12) schwenkbar angebracht sind, wobei sich die Höhen der Stirnwandabschnitte (18) voneinander durch die annähernde Dicke der Stirnwandelemente (12) unterscheiden und kleiner sind als die Höhen der Seitenwandabschnitte (17), und die Höhe der Stirnwandelemente (12) größer ist als der halbe Abstand zwischen den Stirnwandabschnitten (18), wodurch bei zusammengeklappter Gestalt die Seitenwandelemente (11) einander in einer parallel Form über den Stirnwandelementen (12) überlappen, die einander ebenfalls in einer parallel Form überlappen.

10. Zusammenklappbarer Behälter nach einem vorhergehenden Anspruch, bei welchem die Scharniereinrichtungen (26, 27)

einen Scharnierkörper (39, 46, 47), der sich von dem Bodenrand des Wandelements (11, 12) nach unten erstreckt und in einem Stück damit ausgeformt ist,

eine Eingriffsaussparung (42, 51), die in dem zugeordneten sich nach oben erstreckenden Basisabschnitt (17, 18) der Basis (13) ausgebildet ist, wobei die Aussparung koaxiale Scharnierzapfen (41, 49) aufweist, die ein Stück mit der Seitenwand davon bilden,

Zapfenaufnahmeeinrichtungen (40; 54) an dem Scharnierkörper, die zur Bildung einer Schwenkachse für die Wandelemente (11, 12) geeignet sind,

Schultereinrichtungen (44; 52), die einstückig mit dem Boden der Ausnehmung ausgeformt sind und sich vom Boden der Ausnehmung nach oben erstrecken, und

einen Vorsprung (43, 57) am Boden des Scharnierkörpers aufweisen, der für den Kontakt mit den Schultereinrichtungen geeignet ist, um das Verschwenken des Wandelements (11, 12) in die Auswärtsrichtung zu einer vertikalen Position zu begrenzen, wenn der Scharnierkörper in Eingriff steht.

11. Zusammenklappbarer Behälter nach Anspruch 10, bei welchem der Scharnierkörper (46, 47) ein relativ flexibles Scharnierelement (53) aufweist, das so verformbar ist, daß der Scharnierkörper in Lage an den Scharnierzapfen (49) schnappen kann.

Revendications pour les Etats contractants: FR GB IT

1. Récipient de stockage pliable comprenant:

une base (13) formant une paroi de fond (16) du récipient et portant des parties s'étendant vers le haut (17, 18) sur ses bords;

une paire d'éléments (11) opposés formant paroi latérale et une paire d'éléments opposés (12) formant paroi d'extrémité, lesdits éléments formant paroi étant fixés de façon pivotante par des moyens formant charnière (26/27) auxdites parties s'étendant vers le haut pour leur permettre de se déplacer d'une configuration dépliée à une configuration dépliée dans laquelle des éléments formant paroi adjacents coopèrent mutuellement les uns avec les autres selon leurs bords latéraux adjacents, chacun desdits éléments de paroi latérale (11) comportant sur chacun de leurs bords latéraux une bride (28) s'étendant vers l'intérieur à partir de la face interne de celui-ci selon une longueur substantielle de ce dernier et chacun desdits éléments de paroi d'extrémité (12) comportant une bride (34) selon chacun de ses bords latéraux qui s'étend sur une longueur substantielle de celui-ci et

des configurations (31, 32) en creux et/ou en relief sur lesdites brides (28) desdits éléments formant paroi latérale qui dans la configuration dépliée du récipient coopèrent en complémentarité avec les configurations en relief et/ou en creux (36, 37) des éléments formant paroi latérale (11) pour empêcher le mouvement longitudinal relatif entre les bords latéraux qui coopèrent mutuellement des éléments formant paroi, caractérisé en ce que dans la configuration dépliée du récipient les brides (28, 34) coopèrent, au moins une bride (28) de chaque paire en coopération comportant une rainure (29) qui lui est parallèle dans laquelle sa bride de coopération (34) vient s'engager de telle sorte que le chargement de l'intérieur desdits éléments formant paroi (11, 12) a tendance à empêcher la coopération entre les brides.

2. Récipient de stockage pliable tel que revendiqué dans la revendication 1 dans lequel lesdites configurations en creux et/ou en relief comportent une série de pattes transversales (31) s'étendant à travers l'intérieur d'au moins une desdites rainures (29) et une série d'encoches (36) réparties le long de la bride (34) qui viennent reposer à

l'intérieur de ladite gorge et coopèrent avec lesdites pattes lorsque le récipient se trouve dans sa configuration dépliée.

3. Récipient de stockage pliable selon la revendication 1 ou la revendication 2 comportant des moyens formant verrou (63) agissant entre lesdites brides coopérantes (28, 34) pour empêcher le pliage vers l'intérieur desdits éléments formant paroi (11, 12) avant leur installation.

4. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel ladite paroi formant fond (16) comporte une surface intérieure convexe (16) destinée à recevoir une charge verticale à l'intérieur dudit récipient.

5. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel:

lesdits moyens formant base (13) comportent des parois support verticales périphériques s'étendant vers le bas à partir de ladite paroi formant fond (16);

lesdites parois formant support comportant des ouvertures multiples (19) qui permettent l'accès à des surfaces de levage situées en dessous de ladite paroi formant fond (16) pour faciliter le levage dudit récipient, lesdites paroi formant support, ladite paroi de fond (12) et lesdits éléments formant paroi étant constitués par un matériau plastique moulé monobloc.

6. Récipient de stockage pliable tel que revendiqué dans l'une quelconque des revendications précédentes dans lequel dans ladite configuration dépliée, les bords du fond desdits éléments de paroi (11, 12) et lesdites parties s'étendant vers le haut (17, 18) de ladite base (13) coopèrent mutuellement les unes avec les autres avec des configurations comportant une saillie (43) et un épaulement (44) qui assurent la protection desdits moyens formant charnière (26/27) contre des forces agissant sur les faces des éléments de paroi (11, 12).

7. Récipient de stockage pliable tel que revendiqué dans l'une quelconque des revendications précédentes dans lequel lesdits éléments formant paroi (11, 12) et lesdites parties s'étendant vers le haut (17, 18) de ladite base (13) ont des faces internes sensiblement planes et lesdites faces internes des éléments de paroi (11, 12) sont sensiblement dans la même plan que les faces internes desdites parties s'étendant vers le haut dans la configuration dépliée du récipient.

8. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel lesdites parties s'étendant vers le haut (17, 18) de la base (13) comportent deux parties de parois latérales (17) de même hauteur sur lesquelles lesdits éléments de paroi latérale (11) sont montés pivotant et deux parties de paroi d'extrémité (18) sur lesquelles lesdits éléments de paroi d'extrémité (12) sont montés pivotant, la hauteur des parties de paroi d'extrémité (18) étant inférieure à la hauteur des parties de paroi latérale (17) et la hauteur des éléments de paroi latérale (11) étant sensiblement égale à la moitié de

l'espace existant entre lesdites parties formant paroi latérale (17) de sorte que dans ladite configuration pliée les éléments de paroi d'extrémité (12) sont recouverts par les éléments de paroi latérale (11) qui sont supportés par lesdites parties de paroi d'extrémité (18) de façon à se trouver au même niveau les unes par rapport aux autres sans être en contact avec lesdits éléments de paroi d'extrémité (12).

9. Récipient de stockage pliable selon l'une quelconque des revendications 1 à 8 dans lequel lesdites parties s'étendant vers le haut (17, 18) de la base (13) comportent des parties de paroi latérales (17) sur lesquelles lesdits éléments de paroi latérales (11) sont montés en pivotement, lesdites parties de paroi latérale ayant une hauteur qui diffère de l'épaisseur approximative des éléments de paroi latérale (11) et le hauteur des éléments de paroi latérale (11) étant plus grande que la moitié de l'espace existant entre lesdites parties de paroi latérale (17), lesdites parties s'étendant vers le haut (17, 18) comportant en outre deux parties de paroi d'extrémité (18) sur lesquelles lesdits éléments de paroi d'extrémité (12) sont montés en pivotement, les hauteurs desdites parties de paroi d'extrémité (18) différant l'une de l'autre d'environ l'épaisseur desdits éléments de paroi d'extrémité (12) et étant inférieures aux hauteurs desdites parties de paroi latérale (17), la hauteur desdits éléments de paroi d'extrémité (12) étant plus grande que la moitié de l'espace existant entre lesdites parties de paroi d'extrémité (18) de telle sorte que dans la configuration pliée les éléments de paroi latérale (11) viennent se recouvrir les uns les autres dans une configuration parallèle, sur les éléments de paroi d'extrémité (12) qui eux aussi se recouvrent les uns les autres dans une configuration parallèle.

10. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel lesdits moyens formant charnière (26, 27) comportent:

un corps de charnière (39, 46, 47) s'étendant vers le bas à partir du bord de fond dudit élément de paroi (11, 12) et qui est moulé en une seule pièce avec celui-ci, et

une cavité correspondante (42, 51) formée dans la partie associée à la base s'étendant vers le haut (17, 18) de la base (13), ladite cavité comportant des bossages de charnière coaxiaux (41; 49) solidaires de sa paroi latérale,

des moyens pour recevoir le bossage (40; 54) étant prévus sur le corps de charnière étant susceptible de constituer un axe de pivotement pour lesdits éléments formant paroi (11, 12);

des moyens formant épaulement (44; 52) moulés en un seul bloc avec et s'étendant vers le haut à partir du fond de ladite cavité; et

une saillie (43; 57) sur le fond dudit corps de charnière susceptible de venir en contact avec lesdits moyens formant épaulement pour limiter le pivotement de l'élément de paroi (11, 12) dans la direction vers l'extérieur pour venir dans une position verticale dans laquelle le corps de charnière vient coopérer.

11. Récipient de stockage pliable selon la revendication 10 dans lequel ledit corps de charnière (46, 47) comporte un élément de charnière relativement souple (53) qui est susceptible d'être déformé pour amener le corps de charnière en position sur lesdits bossages de charnière (49).

Revendications pour l'Etat contractant: DE

1. Récipient de stockage pliable comprenant:
une base (13) formant une paroi de fond (16) du récipient et portant des parties s'étendant vers le haut (17, 18) sur ses bords;

une paire d'éléments (11) opposés formant paroi latérale et une paire d'éléments opposés (12) formant paroi d'extrémité, lesdits éléments formant paroi étant fixés de façon pivotante par des moyens formant charnière (26/27) auxdites parties s'étendant vers le haut pour leur permettre de se déplacer d'une configuration dépliée à une configuration dépliée dans laquelle des éléments formant paroi adjacents coopèrent mutuellement les uns avec les autres selon leurs bords latéraux adjacents, chacun desdits éléments de paroi latérale (11) comportant sur chacun de leurs bords latéraux une bride rigide (28) s'étendant vers l'intérieur à partir de la face interne de celui-ci selon une longueur substantielle de ce dernier et chacun desdits éléments de paroi d'extrémité (12) comportant une bride rigide (34) selon chacun de ses bords latéraux qui s'étend sur une longueur substantielle de celui-ci et

des configurations (31, 32) en creux et/ou en relief sur lesdites brides (28) desdits éléments formant paroi latérale qui dans la configuration dépliée du récipient coopèrent en complémentarité avec les configurations en relief et/ou en creux (36, 37) des éléments formant paroi latérale (11) pour empêcher le mouvement longitudinal relatif entre les bords latéraux qui coopèrent mutuellement des éléments formant paroi, caractérisé en ce que dans la configuration dépliée du récipient les brides (28, 34) coopèrent, au moins une bride (28) de chaque paire en coopération comportant une rainure (29) qui lui est parallèle dans laquelle sa bride de coopération (34) vient s'engager de telle sorte que le chargement de l'intérieur desdits éléments formant paroi (11, 12) a tendance à empêcher la coopération entre les brides.

2. Récipient de stockage pliable tel que revendiqué dans la revendication 1 dans lequel lesdites configurations en creux et/ou en relief comportent une série de pattes transversales (31) s'étendant à travers l'intérieur d'au moins une desdites rainures (29) et une série d'encoches (36) réparties le long de la bride (34) qui viennent reposer à l'intérieur de ladite gorge et coopèrent avec lesdites pattes lorsque le récipient se trouve dans sa configuration dépliée.

3. Récipient de stockage pliable selon la revendication 1 ou la revendication 2 comportant des moyens formant verrou (63) agissant entre lesdites brides coopérantes (28, 34) pour empêcher le pliage vers l'intérieur desdits éléments formant paroi (11, 12) avant leur installation.

4. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel ladite paroi formant fond (16) comporte une surface intérieure convexe (16) destinée à recevoir une charge verticale à l'intérieur dudit récipient.

5. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel:

lesdits moyens formant base (13) comportent des parois support verticales périphériques s'étendant vers le bas à partir de ladite paroi formant fond (16);

lesdites parois formant support comportant des ouvertures multiples (19) qui permettent l'accès à des surfaces de levage situées en dessous de ladite paroi formant fond (16) pour faciliter le levage dudit récipient, lesdites paroi formant support, ladite paroi de fond (12) et lesdits éléments formant paroi étant constitués par un matériau plastique moulé monobloc.

6. Récipient de stockage pliable tel que revendiqué dans l'une quelconque des revendications précédentes dans lequel dans ladite configuration dépliée, les bords du fond desdits éléments de paroi (11, 12) et lesdites parties s'étendant vers le haut (17, 18) de ladite base (13) coopèrent mutuellement les uns avec les autres avec des configurations comportant une saillie (43) et un épaulement (44) qui assurent la protection desdits moyens formant charnière (26/27) contre des forces agissant sur les faces des éléments de paroi (11, 12).

7. Récipient de stockage pliable tel que revendiqué dans l'une quelconque des revendications précédentes dans lequel lesdits éléments formant paroi (11, 12) et lesdites parties s'étendant vers le haut (17, 18) de ladite base (13) ont des faces internes sensiblement planes et lesdites faces internes des éléments de paroi (11, 12) sont sensiblement dans la même plan que les faces internes desdites parties s'étendant vers le haut dans la configuration dépliée du récipient.

8. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel lesdites parties s'étendant vers le haut (17, 18) de la base (13) comportent deux parties de parois latérales (17) de même hauteur sur lesquelles lesdits éléments de paroi latérale (11) sont montés pivotant et deux parties de paroi d'extrémité (18) sur lesquelles lesdits éléments de paroi d'extrémité (12) sont montés pivotant, la hauteur des parties de paroi d'extrémité (18) étant inférieure à la hauteur des parties de paroi latérale (17) et la hauteur des éléments de paroi latérale (11) étant sensiblement égale à la moitié de l'espace existant entre lesdites parties formant paroi latérale (17) de sorte que dans ladite configuration pliée les éléments de paroi d'extrémité (12) sont recouverts par les éléments de paroi latérale (11) qui sont supportés par lesdites parties de paroi d'extrémité (18) de façon à se trouver au même niveau les unes par rapport aux autres sans être en contact avec lesdits éléments de paroi d'extrémité (12).

9. Récipient de stockage pliable selon l'une quelconque des revendications 1 à 8 dans lequel

lesdites parties s'étendant vers le haut (17, 18) de la base (13) comportent des parties de paroi latérales (17) sur lesquelles lesdits éléments de paroi latérales (11) sont montés en pivotement, lesdites parties de paroi latérale ayant une hauteur qui diffère de l'épaisseur approximative des éléments de paroi latérale (11) et le hauteur des éléments de paroi latérale (11) étant plus grande que la moitié de l'espace existant entre lesdites parties de paroi latérale (17), lesdites parties s'étendant vers le haut (17, 18) comportant en outre deux parties de paroi d'extrémité (18) sur lesquelles lesdits éléments de paroi d'extrémité (12) sont montés en pivotement, les hauteurs desdites parties de paroi d'extrémité (18) différant l'une de l'autre d'environ l'épaisseur desdits éléments de paroi d'extrémité (12) et étant inférieures aux hauteurs desdites parties de paroi latérale (17), la hauteur desdits éléments de paroi d'extrémité (12) étant plus grande que la moitié de l'espace existant entre lesdites parties de paroi d'extrémité (18) de telle sorte que dans la configuration pliée les éléments de paroi latérale (11) viennent se recouvrir les uns les autres dans une configuration parallèle, sur les éléments de paroi d'extrémité (12) qui eux aussi se recouvrent les uns les autres dans une configuration parallèle.

10. Récipient de stockage pliable selon l'une quelconque des revendications précédentes dans lequel lesdits moyens formant charnière (26, 27) comportent:

un corps de charnière (39, 46, 47) s'étendant vers le bas à partir du bord de fond dudit élément de paroi (11, 12) et qui est moulé en une seule pièce avec celui-ci, et

5 une cavité correspondante (42, 51) formée dans la partie associée à la base s'étendant vers le haut (17, 18) de la base (13), ladite cavité comportant des bossages de charnière coaxiaux (41; 49) solidaires de sa paroi latérale,

10 des moyens pour recevoir le bossage (40; 54) étant prévus sur le corps de charnière étant susceptible de constituer un axe de pivotement pour lesdits éléments formant paroi (11, 12);

15 des moyens formant épaulement (44; 52) moulés en un seul bloc avec et s'étendant vers le haut à partir du fond de ladite cavité; et

20 une saillie (43; 57) sur le fond dudit corps de charnière susceptible de venir en contact avec lesdits moyens formant épaulement pour limiter le pivotement de l'élément de paroi (11, 12) dans la direction vers l'extérieur pour venir dans une position verticale dans laquelle le corps de charnière vient coopérer.

25 11. Récipient de stockage pliable selon la revendication 10 dans lequel ledit corps de charnière (46, 47) comporte un élément de charnière relativement souple (53) qui est susceptible d'être déformé pour amener le corps de charnière en position sur lesdits bossages de charnière (49).

35

40

45

50

55

60

65

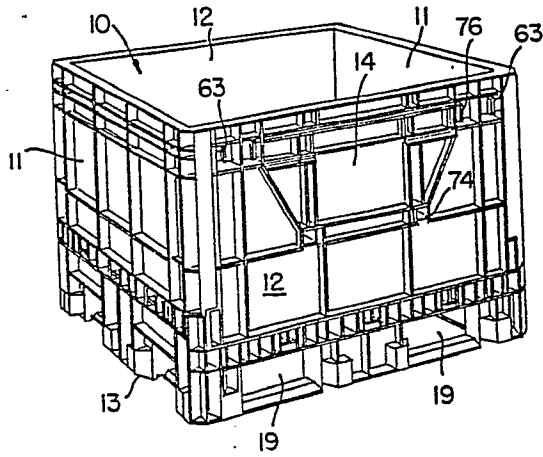


FIG. 1

FIG. 2

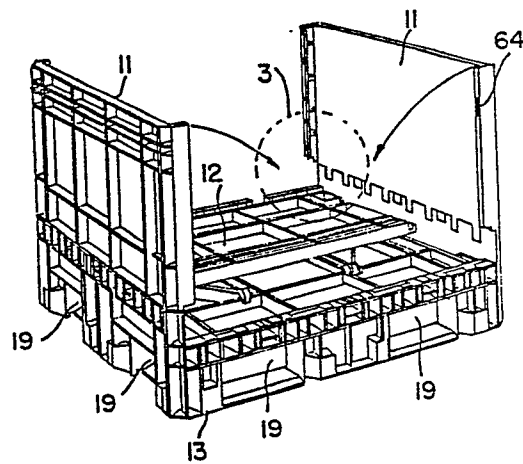


FIG. 3

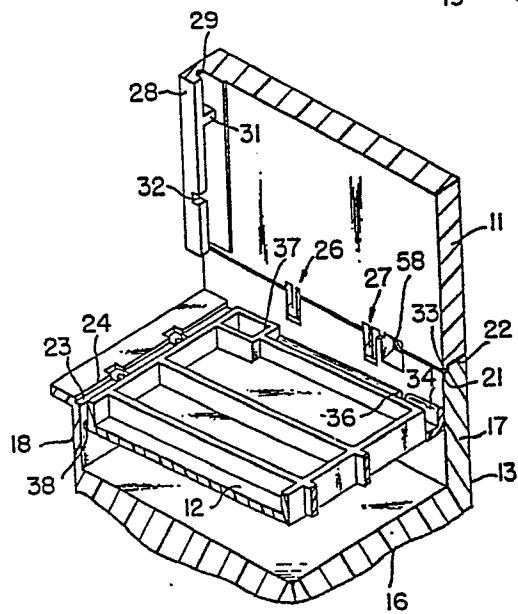


FIG. 4

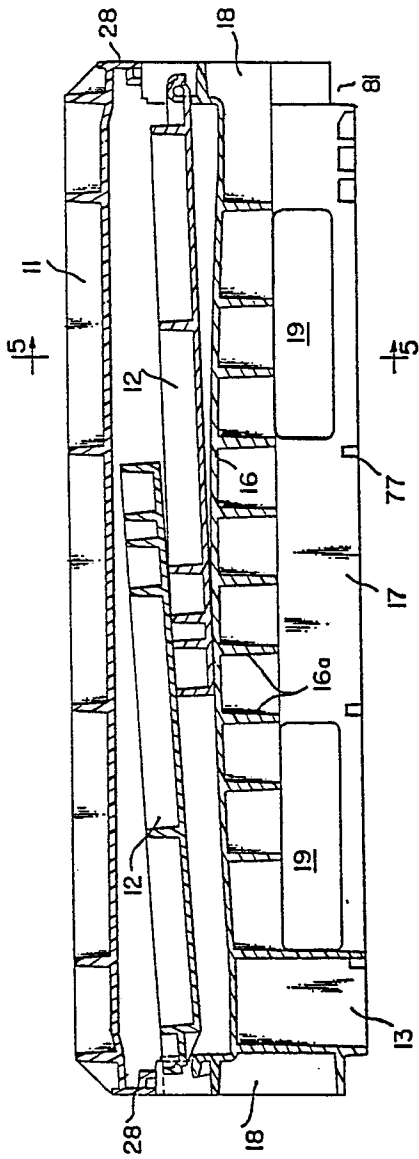


FIG. 5

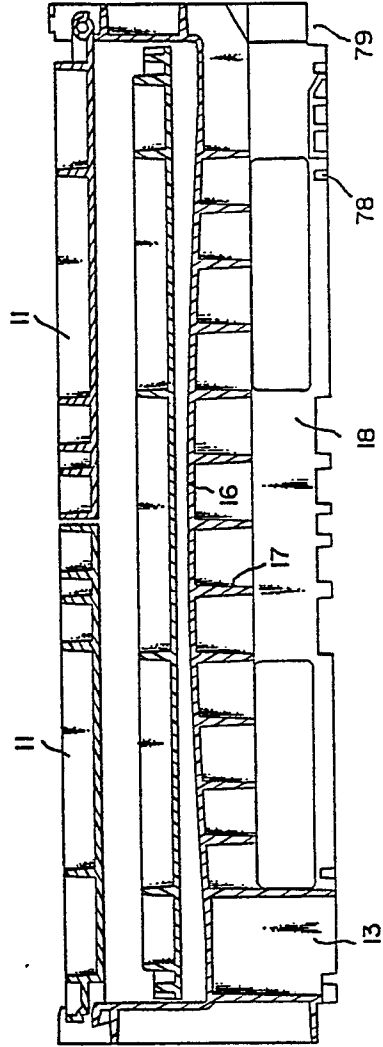


FIG. 6

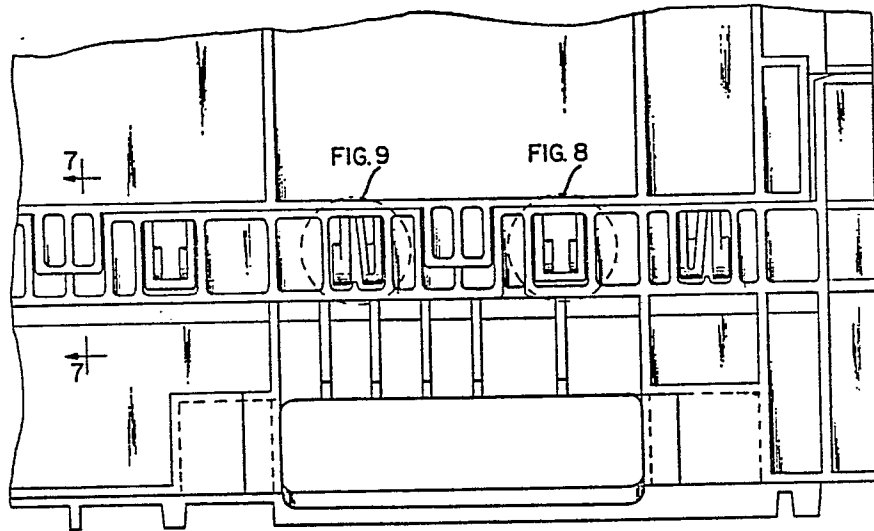


FIG. 7

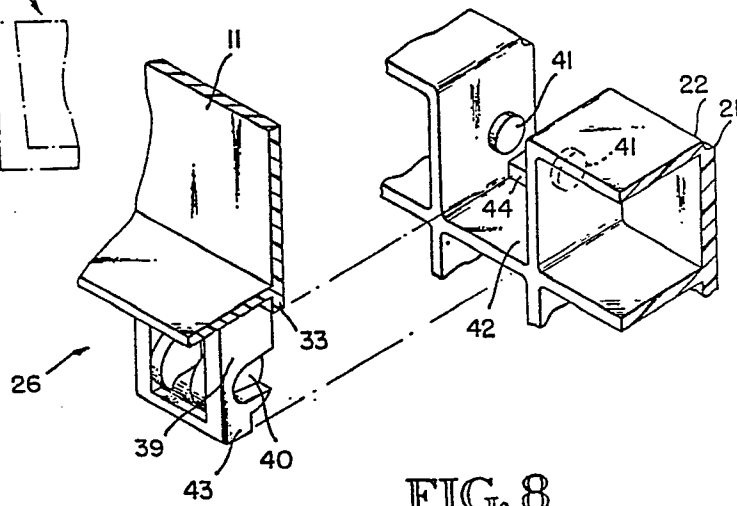
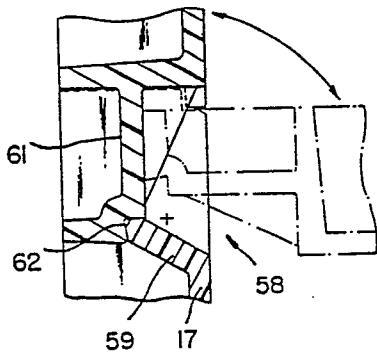


FIG. 8

FIG. 9

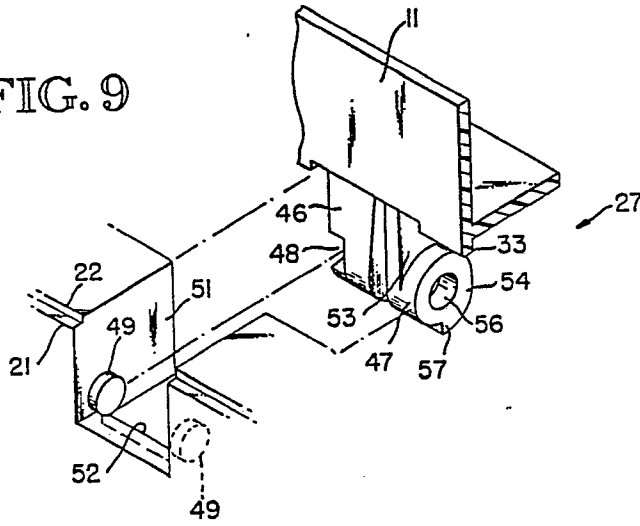


FIG. 10A

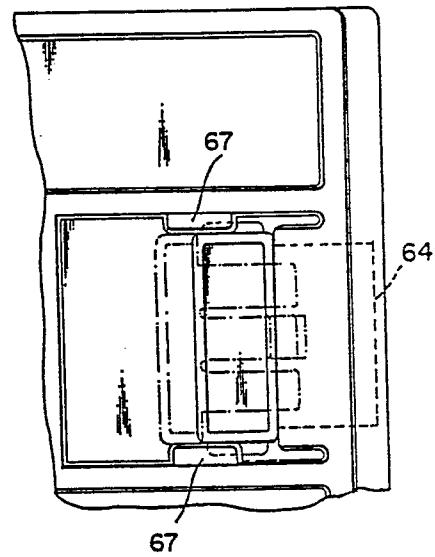
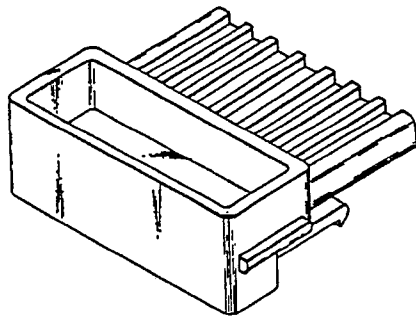


FIG. 10

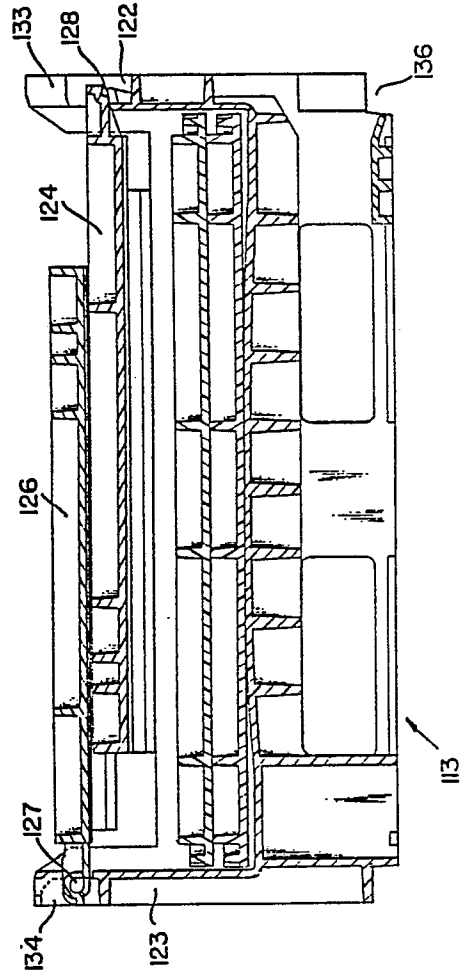
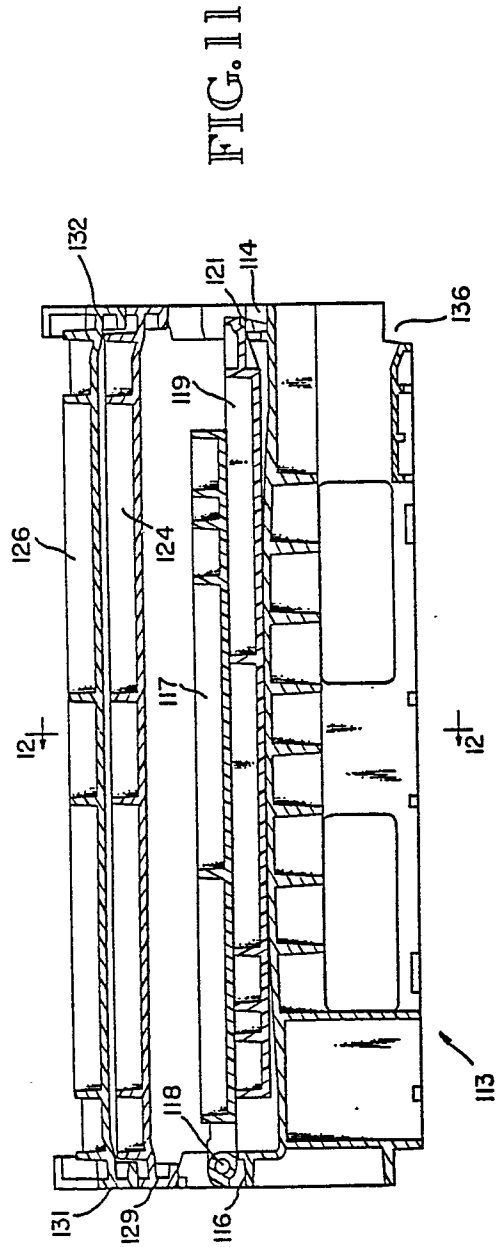


FIG. 12