Dec. 27, 1966 T. MUNROE 3,294,307

COLLAPSIBLE BIN BOX

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Fig. 1

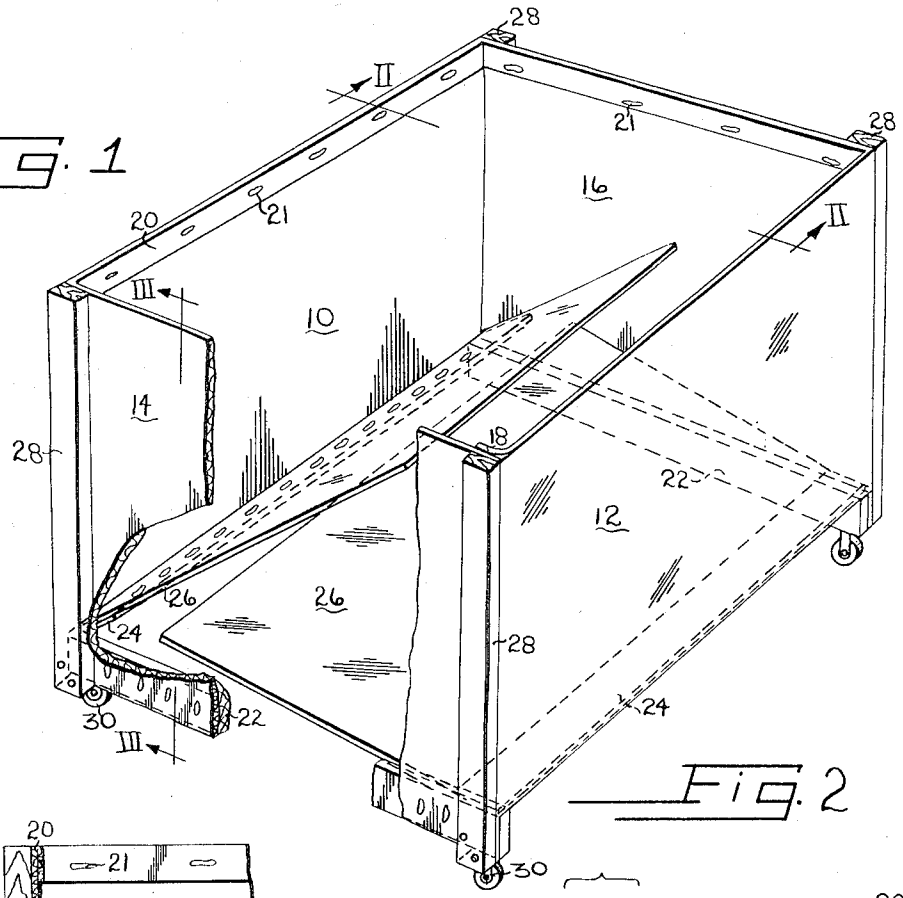


Fig. 2

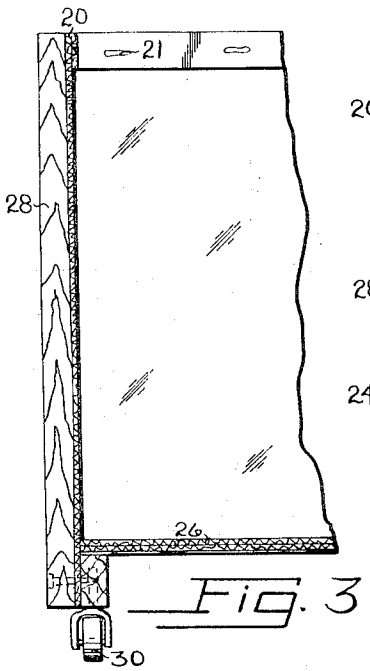
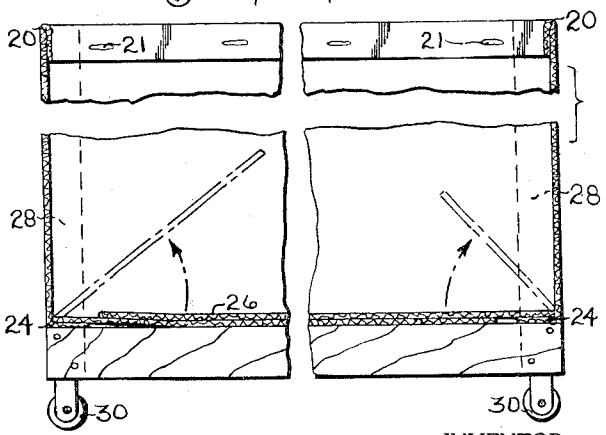
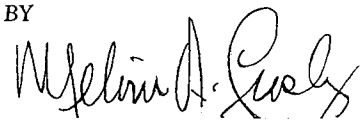


Fig. 3



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FIG-4

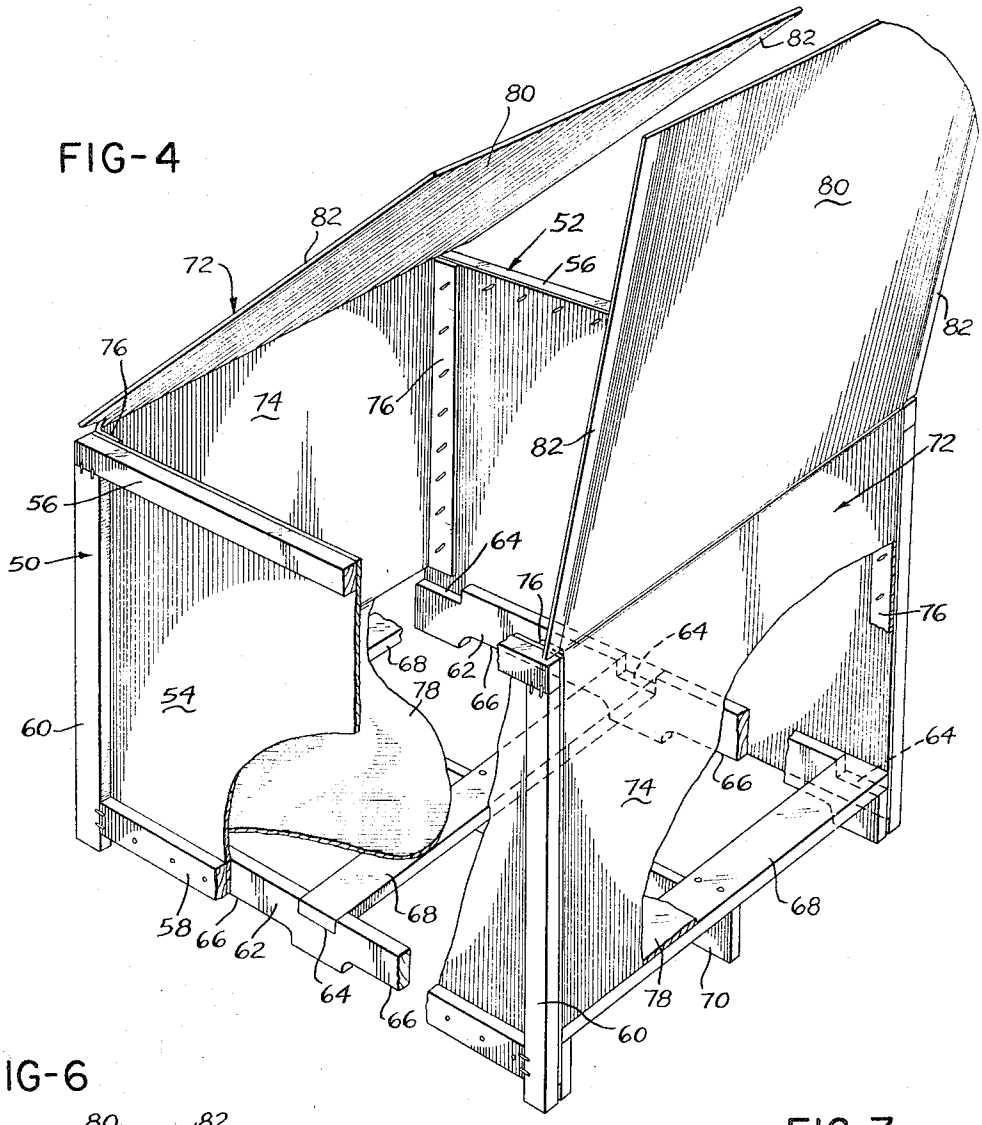


FIG-6

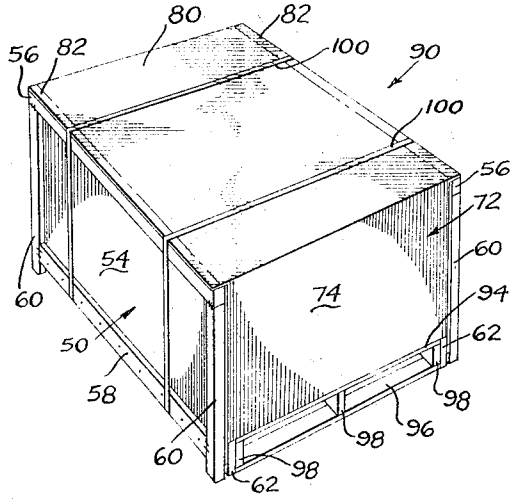
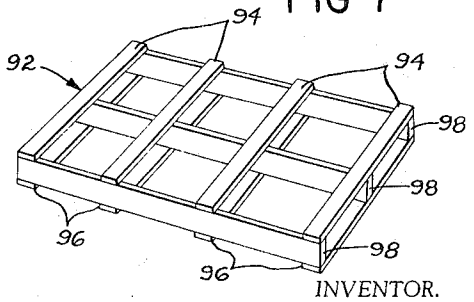


FIG-7



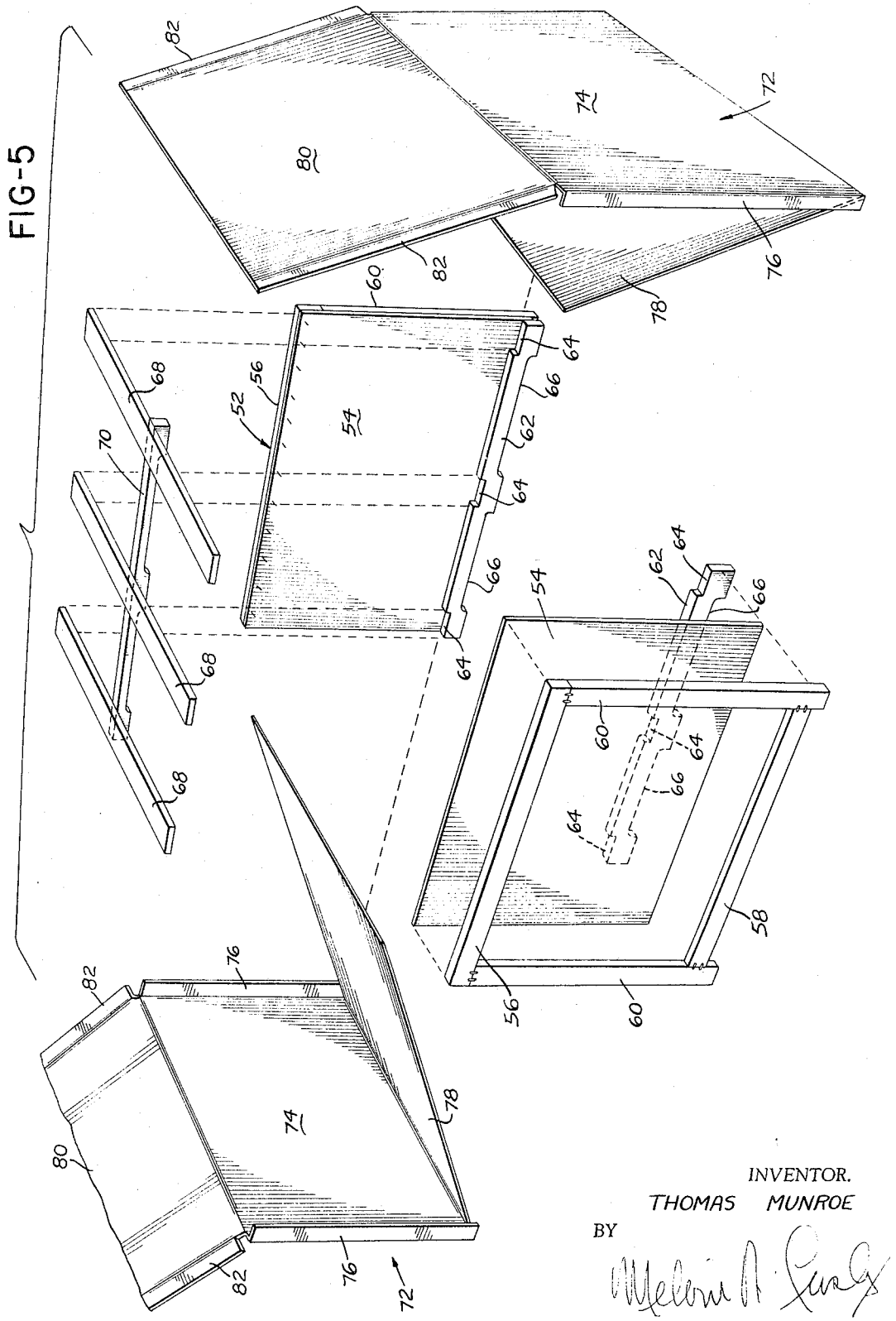
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FIG-5



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3,294,307

COLLAPSIBLE BIN BOX

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Filed Aug. 24, 1965, Ser. No. 482,187
4 Claims. (Cl. 229—23)

This application is a continuation-in-part of my pending application, Serial No. 299,791, filed August 5, 1963, entitled "Collapsible Bin Box," now Patent No. 3,216,604, issued November 9, 1965.

This invention relates to bin boxes and the like, and is particularly concerned with a collapsible bin box.

Bin boxes are widely employed in commercial establishments for storing goods and can be employed as containers for shipping goods also. Heretofore, a number of attempts have been made to construct these devices so that they could be collapsed and re-used, but heretofore collapsible boxes of this nature have been expensive and have not met with any degree of success. With this in mind, a primary object of the present invention is the production of a collapsible bin box that will meet all of the technical requirements for such boxes, while at the same time, the box will be economical to manufacture and convenient to set up and knock down, thus making it a practical commercial item.

Another object of this invention is the provision of a collapsible bin box which can readily be stacked with other like boxes without the danger of any of the boxes collapsing.

A still further object of this invention is the provision of a collapsible bin box which can readily be handled with a fork truck for moving it about.

These and other objects and advantages of this invention will become more apparent upon reference to the following specification taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view showing a box according to the present invention;

FIGURE 2 is a fragmentary cross sectional view indicated by line II—II on FIGURE 1;

FIGURE 3 is a vertical transverse sectional view indicated by line III—III on FIGURE 1;

FIGURE 4 is a fragmentary perspective view of a modification partly in section;

FIGURE 5 is an exploded perspective view of the modification of FIGURE 4;

FIGURE 6 is a perspective view of the FIGURE 4 modification showing the container with a pallet therebeneath; and

FIGURE 7 is a perspective view showing the pallet employed beneath the container in FIGURE 6.

Referring to the drawings more in detail, there is shown an arrangement wherein a tubular corrugated paper member is formed which is made up of front and back or side walls 10 and 12, and end walls 14 and 16. This member may be made up of a single rectangular sheet of corrugated board formed into a tubular configuration and the ends thereof being joined at 18 by staples or cementing.

The top edges of each of the walls are preferably bent over as indicated at 20 to form a thickened and thereby stiffened and wear resistant upper edge. The bent over edge is held down as by cementing or by staples 21.

The end walls 14 and 16 have secured to their insides at the bottoms the horizontal wooden rails 22, while the lower edges of the front and back or side walls 10 and 12 are turned inwardly on top of the rails as indicated by reference numeral 24. The inturned edges of the front and back or side walls are availed of for securing the bottom wall flaps 26 to the said front and back or side

walls so that these flaps can be used to close the bottom, or they can be raised upwardly to permit the box to be collapsed. The said inturned edges 24 also stiffen the bottom of the box so that great strength is had in the illustrated box construction.

The box is stiffened by vertical wooden rails 28 extending at the side edges of the end panels and secured thereto as by staples or cementing and also overlapping the bottom rails 22 and secured thereto as by nails. Further, the bottom rails 22 may be availed of for receiving the rollers 30 so that the box is easily movable from place to place.

FIGURES 4 through 7 show a modification of the collapsible bin box and which modification is useful not only as a simple collapsible box but also as a shipping container and the like.

In FIGURES 4 and 5 it will be noted that the box or container comprises end panels 50 and 52. Each end panel is made up of a corrugated paper panel 54 which, toward the outside of the container, has an upper wooden rail 56 and a lower wooden rail 58 and vertical side rails 60 connected thereto. The vertical side rails extend downwardly beyond the lower rails 58 and form foot like projections at the bottom of the box or container.

Each of the end panels 50 and 52 on the inside at the bottom have a rail 62 which is connected directly with the bottom rail of the pertaining end panel and the vertical rails at the ends thereof with the corrugated paper panel pertaining to the end panel therebetween. Each rail 62 has notches 64 on the top and the bottom is also notched as at 66, the said notches at 66 being substantially longer than the notches at 64. Notches 66 will permit the prongs of a lift truck to be inserted beneath the box or container whereas notches 64 are provided for the purpose of receiving the wooden rails or slats 68 of a bottom structure which includes also a single central notched rib 70 extending beneath rails 68 and connected thereto.

The container includes also the corrugated paper panels 72 each of which comprises a major panel portion 74 with side edge portions 76 turned therefrom. The edges 76, as will be seen in FIGURE 4, turn inside the end panels 50 and 52 and are secured thereto. At the bottom edge of each of the main panels 74 is a bottom flap 78. The bottom flaps are each of a size to extend completely across the bottom of the box or container and are, as shown, hingedly connected to the pertaining main panel 74.

Furthermore, at the top of each main panel 74 there is hingedly connected a top or lid flap 80 which may extend across the entire width of the box or container or it may extend only halfway across the container. Each lid flap has hinged to the sides thereof the short projecting portions 82 which extend out over the top of the top rails 56 of the box or container when the lid flaps are closed down. It will be apparent that the corrugated panels 72 are substantially rectangular with only the side edges of the bottom flaps 78 cut off. The utilization of the material of the panel 72 is thus substantially complete and there is a minimum amount of scrap entailed in connection with making the box or container.

Where the box or container is not loaded particularly heavily the support pallet made up rails 68 and 70 can be left out of the box and where a substantial load is to be placed in the box this member can be inserted into the box before the flaps 78 are closed down to support the bottom of the box or container.

The box or container will, of course, collapse substantially completely, as in connection with the first described modification. This can be done by removing the support bottom made up of rails 68 and 70, raising the bottom flaps 78 upwardly to vertical positions and also raising the lid flaps 80 upwardly to vertical position

whereupon the box or container can be collapsed flat. Obviously, the lid flaps can be turned downwardly at the outside of the box or container in order to permit it to take up even less space when collapsed. The box or container, in collapsed condition can be shipped to a point of use and at that point can be set up quickly and put into service. The box or container is amply strong to serve as a shipping container and for this purpose the lid flaps can be nailed or stapled down against top rails **56** or the entire container can be banded with metal straps, if so desired. It will be apparent that the metal straps should run around the end panels **50** and **52** because these are the portions of the box or container that are reinforced with rails.

The arrangement of the present invention lends itself well to the addition of a small supporting pallet therebeneath when so desired. This is shown in FIGURES 6 and 7 wherein the container or box according to the present invention, constructed as described above, is indicated generally at **90**.

The box or container does not include the inserted bottom made up rails **68** and **70** but, instead, has positioned therebeneath a separate pallet structure **92** which is fitted in between the rails **62** at the bottom edges of the end panels of the box. This pallet comprises a slatted upper deck **94** and a slatted bottom deck **96** and vertical rails **98** extending therebetween. The entire carton is banded as by bands **100** for shipping purposes and forms and extremely strong carton which, after the bands have been cut and the carton opened and the contents removed therefrom, is still a serviceable collapsible box or container.

The arrangement of FIGURE 4, it will be noted, permits the fork of a lift truck to be introduced under the box or container from any side which is, as is known, a distinct advantage in connection with shipping boxes or containers without loss of time.

The boxes or containers shown are quite inexpensive and are easily collapsed or set up. and can be utilized, in the case of the wheeled box, for example, as a wheel-out carrier for markets and the like to prevent loss of the more expensive shopping carriages used inside the stores.

The boxes shown are of unitary construction and can be folded flat for shipping or storage and can quickly be opened up for use.

A particular feature of the present invention, of merit in the highly competitive field of containers, is that all parts of the boxes are of the simplest shape and there is a minimum of cutting and machine work and substantially no scrap. The corrugated paper portions are substantially simple rectangles while the rails employed are simple straight pieces of wood with, at the most, simple cutting operations performed thereon.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions; and accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

What is claimed is:

1. A collapsible box or container comprising; end wall members each comprising a rectangular panel of corrugated paper, horizontal top and bottom rails outside each panel, vertical side rails outside each panel and extending beyond the pertaining bottom rails, an additional horizontal rail inside each end wall member at the bottom extending to the bottom of the pertaining vertical rails and notched on the bottom between the ends for receiving a lift truck fork, other notches on top of said additional rails for receiving the rails or slats of a support platform, a pair of other corrugated paper panels each comprising a main portion forming a side wall member of the box, a first flap hinged to the top of each main portion to form a top closure member and a second flap hinged to the bottom of each main portion to form a bottom closure member, each said main portion having side edge portions turned in and secured to the insides of the end wall members, each said first flap having side edge portions overlying the top rails of the end wall member, and each said second flap extending transversely of the box above said additional rails for being supported by said additional rails while being foldable up against the pertaining main portions for collapsing of the box.

2. A collapsible box or container according to claim **1** which includes a support platform beneath said second flaps, said support platform comprising slats extending between said additional horizontal rails and having their ends disposed in the said notches on the tops of said additional rails, and at least one central rail extending beneath said slats in a direction parallel to said additional horizontal rails and secured to said slats.

3. A collapsible box or container according to claim **1** which includes a support platform beneath said second flaps, said support platform comprising slats extending between said additional horizontal rails and having their ends disposed in the said notches on the tops of said additional rails, and at least one central rail extending beneath said slats in a direction parallel to said additional horizontal rails and secured to said slats, said single rail being notched on the bottom between its end for receiving the forks of a lift truck introduced beneath the container from either end thereof.

4. A collapsible box or container according to claim **1** which includes a pallet structure disposed beneath the container under said second flaps and in the space between said additional horizontal rails, said pallet structure comprising an upper deck and a lower deck and rails disposed therebetween and connected thereto and being adapted for being connected with said box or container by banding for shipping purposes, the said rails of the pallet structure extending in a direction parallel to said additional horizontal rails of the box or container so as to provide openings at the sides of said container for receiving the fork of a lift truck.

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