

Feb. 28, 1967

R. S. GREGOIRE

3,306,487

KNOCKED-DOWN CARGO SHIPPING CONTAINER

Filed Oct. 5, 1964

4 Sheets-Sheet 1

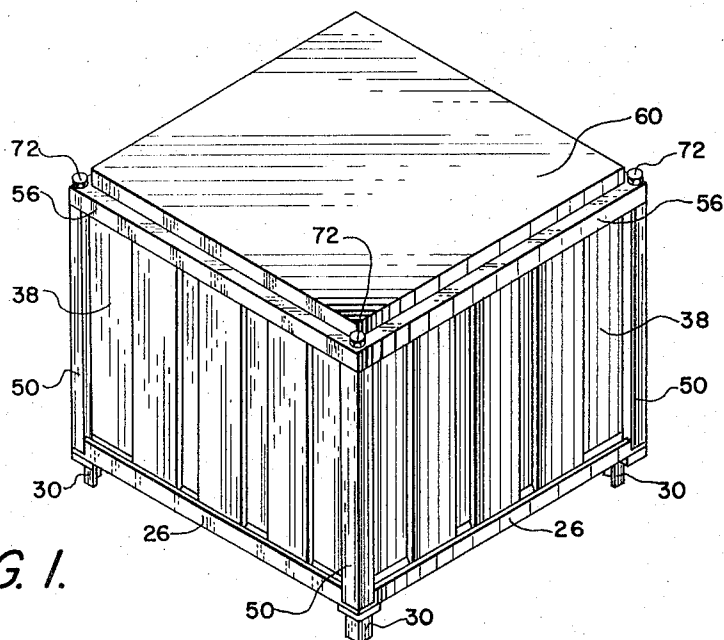


FIG. 1.

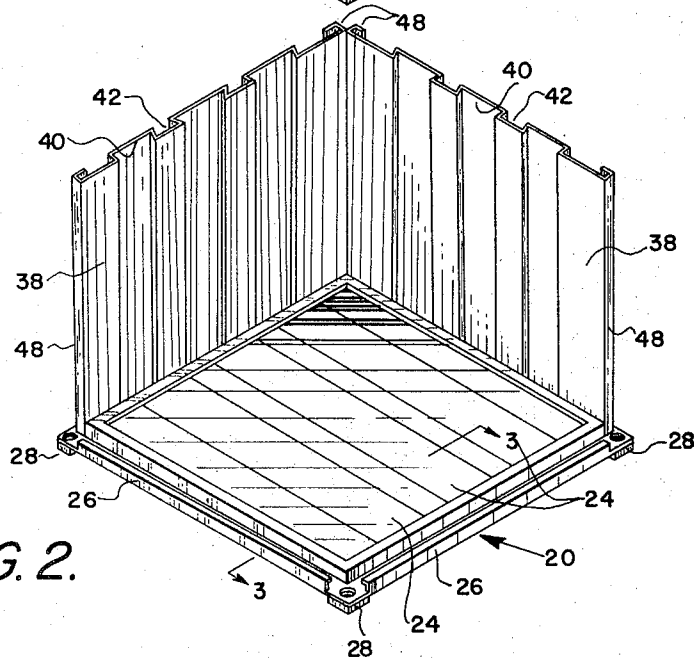


FIG. 2.

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4 Sheets-Sheet 2

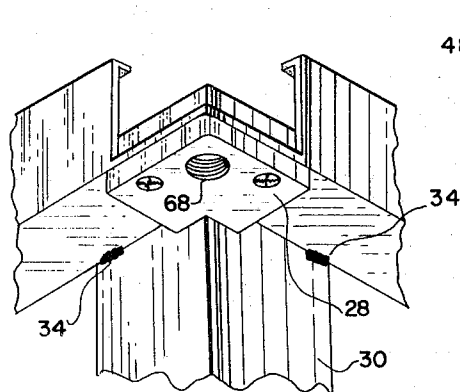


FIG. 6.

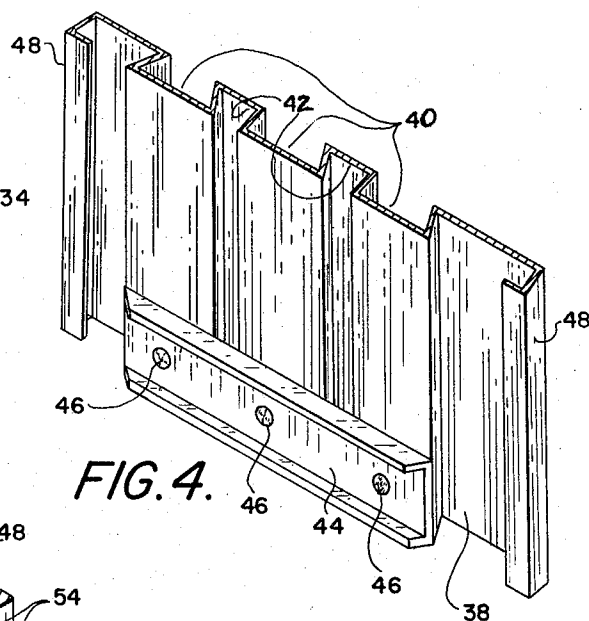


FIG. 4.

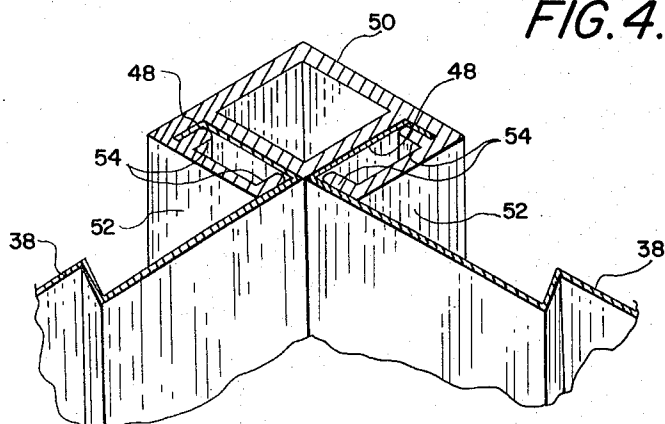


FIG. 5.

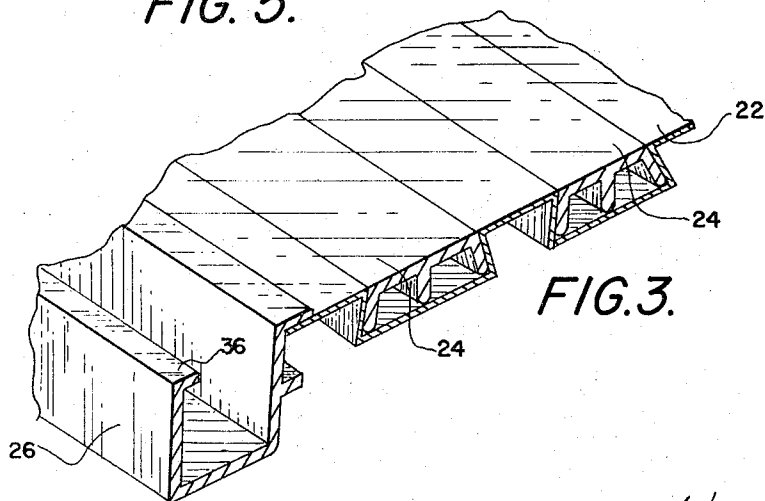


FIG. 3.

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FIG. 8.

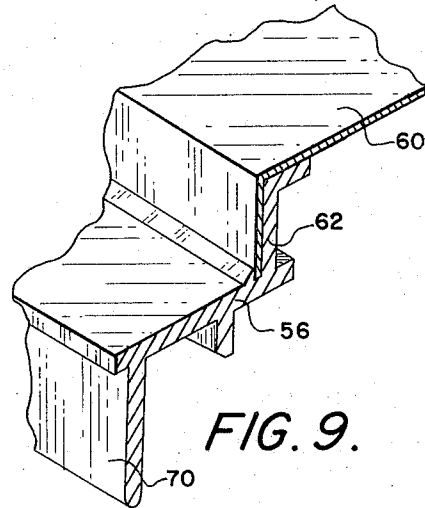
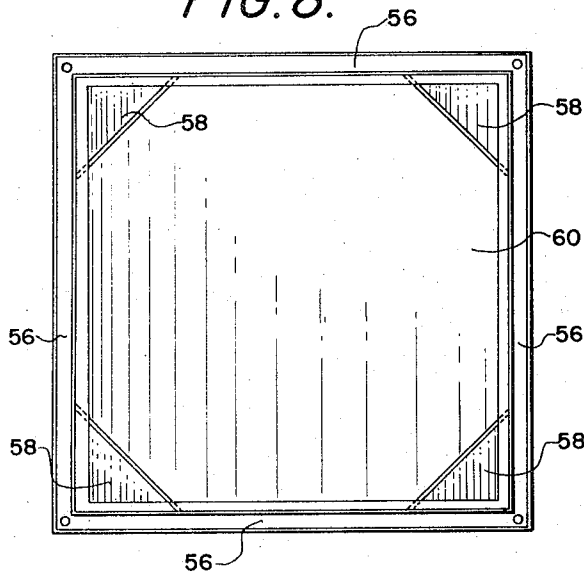


FIG. 9.

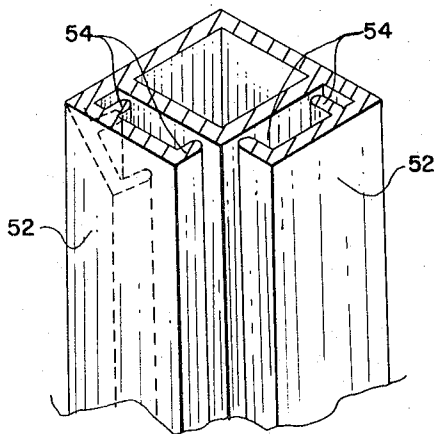


FIG. 7.

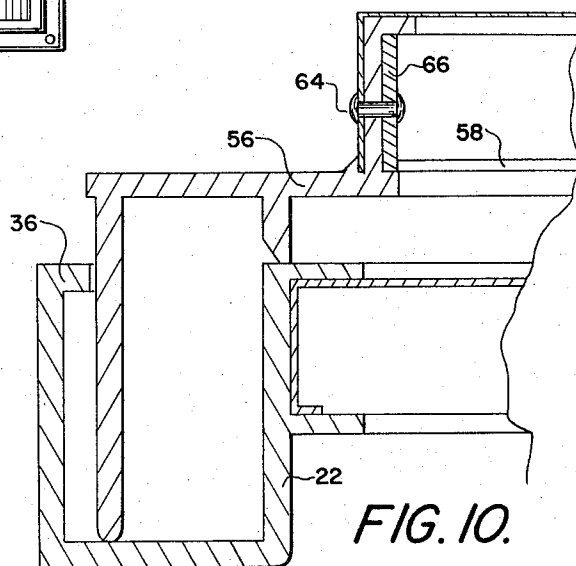


FIG. 10.

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FIG. 12.

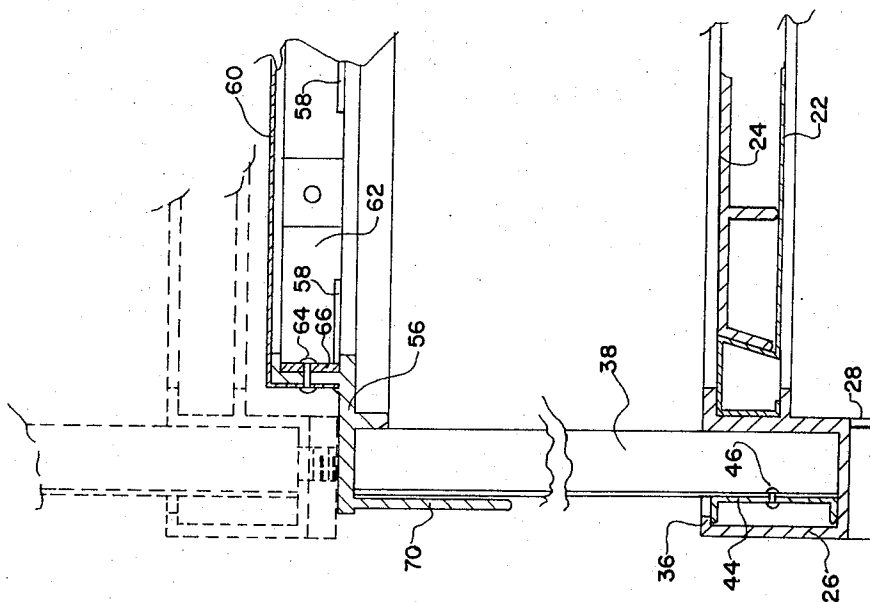
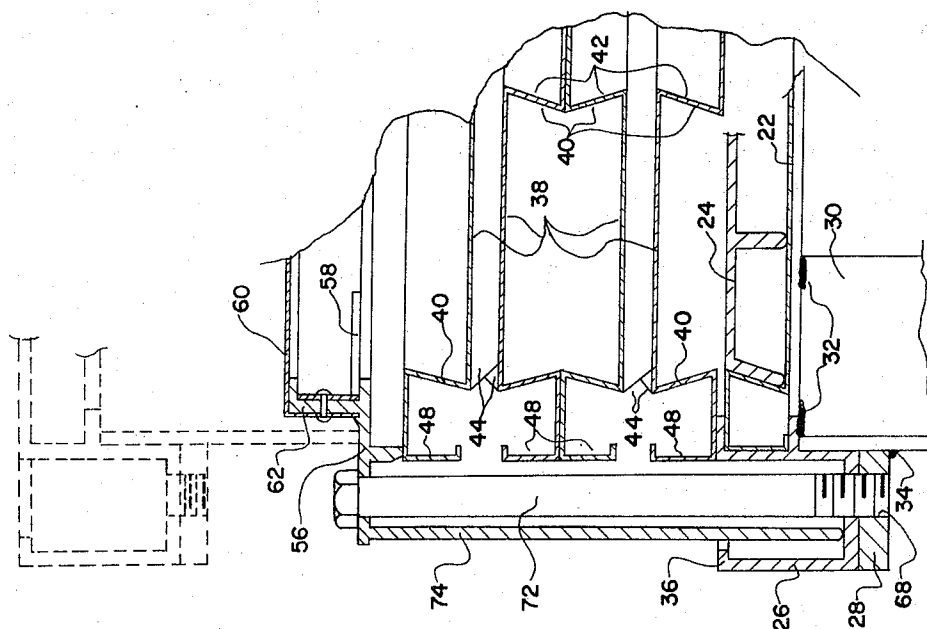


FIG. 11.



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3,306,487 KNOCKED-DOWN CARGO SHIPPING CONTAINER

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Filed Oct. 5, 1964, Ser. No. 401,609

11 Claims. (Cl. 220-1.5)

The present invention relates to knock-down cargo shipping containers of simple and light construction which may be easily and quickly assembled and adapted to be readily reenforced for heavier cargoes and to provide trunnion bearing supports for receiving the shafts of shaft-mounted materials or items.

Various containers of the knock-down type have been presented in the prior art. These containers, however, have not been completely satisfactory for one reason or another. One of the principal reasons is that these containers had to be made of strong and extremely heavy-weight materials, such as steel, so that the containers would be capable of withstanding the stresses to which they were ordinarily subjected.

When heavyweight construction materials are used, the weight of the container itself is increased and this in turn leads to difficulty in handling, as well as a reduction in the payload which can be safely carried when the containers are transported by truck, railway cars, etc. having a maximum safe load capacity.

Furthermore, even though the containers proposed in the prior art were made in such a manner that they could be knocked down for return shipment while occupying a minimum amount of shipping space, the construction did not lend itself to ease of assembly and dismantling. This factor tends to add to shipping costs because of the time element and the labor involved in packing and unpacking the goods carried in the containers. In addition the containers were ordinarily so constructed that special tools were needed to assemble and disassemble the several elements thereof. It was also not easily possible in the case of these containers to adapt the wall panels to provide additional strength for handling heavier materials or to provide bearing supports for shaft supported items without replacing the entire panels by differently constructed heavier panels.

It was also not easily possible in the case of these containers to remove only the top or either of two sides of the container to gain access to the interior of the container from that side without weakening the remaining structure of the container.

Difficulties were also experienced in satisfactorily stacking and handling the containers by a fork lift truck, or the like, and in knocked-down condition it was difficult to fix the sections neatly together and to keep the edges from being damaged in shipment on their return trip. Furthermore difficulties were encountered when attempting to provide a pressure seal for the container to maintain the contents under a desired pressure.

The object of this invention is to avoid all of these deficiencies as much as possible by providing a unique construction that will be most economical from the standpoint of cost, weight, space, time and labor-saving characteristics.

Some of the more specific objects are to make a container that has a smaller weight-strength ratio for any load capacity.

Another object is to provide a container structure of this type that is easily assembled and sealed air-tight, if desired, and disassembled and packaged for return shipment after the cargo has been delivered.

A further object is to provide a simple and strong wall

structure in these containers, which is adaptable to receive reenforcing supports for use in shipping heavier cargo, said supports being adaptable to provide bearings for shaft-supported cargo such as spools or reels of sheet material, cable or wire, motors or machinery parts, etc.

Another object is to provide a construction for these containers which will inherently have nesting features for stacking and inverted pockets under the edges around the cover, and spaces under the bottom to accommodate hoist hooks and lift forks respectively, in the handling of the containers, in loaded or collapsed condition.

Other and more specific objects will appear in the following detailed description of one form of the invention, as illustrated in the accompanying drawings, wherein:

FIG. 1 is an external perspective view of the container,

FIG. 2 is a perspective view of a portion of the assembly, showing only the bottom and two adjacent sides slid into place,

FIG. 3 is an enlarged sectional view in perspective of a portion of the bottom taken on the line 3-3 of FIG. 2,

FIG. 4 is an enlarged sectional perspective view of the lower half of one of the sides,

FIG. 5 is an enlarged sectional perspective view of a vertical corner portion of the assembly,

FIG. 6 is an enlarged perspective view of the lower corner portion of the bottom,

FIG. 7 is an enlarged perspective view of one of the corner post extrusions, showing how it is made,

FIG. 8 is a slightly enlarged bottom view of the top of the container,

FIG. 9 is an enlarged sectional view through a portion of one of the sides of the top,

FIG. 10 is an enlarged elevational view in section through a side portion of a top and bottom nested together for return shipment, when the container is disassembled,

FIG. 11 is an enlarged detail sectional view through a corner portion of a package of a knocked-down container having a top with a longer skirt adapted to enclose the package assembly against injury in transit, and

FIG. 12 is an enlarged detail sectional broken view through a side portion of a container assembly.

The present container comprises a bottom 20, made up of a frame in which the bottom panel 22 and reenforcing supports 24 are fixed as shown, the frame being made of extruded members 26 mitred at the corners and held together by corner nut plates 28 which are riveted to the ends of the adjacent members 26. Corner angle legs 20 may be welded at 32 and 34 to the inside corner of the frame formed by the mitred extruded members 26, if ample spacing for lift forks is desired. The angle legs will also fit around the corners of the raised portion of the top of a container so as to nest around it in lining up one container over another in stacks.

The extruded members 26 are channel-sectioned providing a groove at the four sides of the bottom, having a vertical outer side with an inturned flange 36 at its upper edge to slidably receive the lower end of each side of the container. The sides are formed sheet panels 38 having dove-tail-formed vertical channels 40 and 42 alternately opening inwardly and outwardly of the side, and the inwardly opening channels 40 being preferably wider than those opening outwardly at 42. A cleat 44 which may be channel formed for lightness, is fixed as by rivets 45 to the lower end of the outer face of each panel 38, to slidably engage under the inturned flanges 36 when the sides are assembled or disassembled. The outer flanged side of the groove channel is cut off at the corners to permit sliding the lower ends of the sides into and out of their respective grooves. Each side panel 38 has a rectangular angle flange 48 formed along

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its side edges, the inner corners of which line up with the outer corners of the inner sides of the bottom groove, when the sides are in place, so that corner posts 50 may be slid over the adjacent angle flanges 48 at each corner of the container to lock the adjacent side panels 38 together. These corner posts 50 are hollow and may be square in section, with angle flanges 52 extending inwardly from opposite corners to receive the angle flanges 48, a pair of ridges 54 extending inwardly to engage the inside of the angle flanges 48. When the corner posts 50 are extruded, the angle flanges 52 are spread out to a more open position as shown in dotted lines in FIG. 7, to provide ample space for the extrusion dies. They are then rolled corrected to the proper clearance dimensions.

The top of the container is a frame made of extruded sides 56 mitred and fixed together at the corners as by welding and/or bracing with angle plates 58, and a cover sheet member 60 formed over the raised portion 62 of the frame and fixed thereto as by rivets 64, the lower edge of the member 60 fitting into a groove provided around the raised portion to keep it from peeling away at the edges. Reenforcing plates 66 may be used inside the frame for the rivet joints.

The top and bottom frames are bored at the corners in line with the threaded bore 68, in the nut plates 26, over which the hollow corner posts are mounted, so that after the top is placed over the container with the outer flanges 70 fitting around the outside of the panels 38 and the corner posts, bolts 72 may be passed through the corner bores in the top and bottom frames and the hollow corner posts 50 and screwed into the threaded nut plates 26 to draw the assembly firmly together.

The lower edge of the outer flanges 70 inherently provides an inverted pocket in the side of the container at each point where it passes over an outwardly opening channel 42 of the panels 38, which will readily accommodate a hoist hook.

Where lift forks are used in handling containers, the angle legs will provide ample room for the forks even when the containers are stacked.

The outer flanges may be made longer as shown in FIG. 11, which shows a container in knocked-down condition packaged for the return trip after the delivery of its cargo. This longer skirt flange 74 provides complete protection against any possible damage to the external edges of the parts in the package during transit.

Where the top and bottom are nested together in a package separate from the other parts, the shorter flange 70 is preferable because it permits closer nesting of the two frame extrusions, which may be stacked without bolting.

The container without the angle legs 30 has enough clearance in the bottom for the raised portion of the top in stacking, so that the containers may be stacked as shown in FIG. 12, but lift forks cannot be used in the handling operation, which is therefore limited to hoisting methods.

The containers with the angle legs, on the other hand, are not limited to hoisting methods in their handling operations, but may also be handled by lift forks and the legs will nest around the corners of the raised portion of the top of the lower container in a stack.

The bottom of the groove in the extruded frame member 26 may have spaced bores in it for drainage purposes and ventilation if desired. These bores may be easily plugged up in the event it is desired to provide the container with an air-tight seal. Gaskets may be used between the upper and lower edges of the side panels and their respective grooves, and resilient sealing strips may be provided between the angle flanges 48 and 52 to complete the sealing of the container.

In the collapsed condition, the corner posts 50 and bolts 72 could be packed in the middle of the package shown in FIG. 11, in the channel spaces between the

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panels 38, or they could be packed separately since they do not occupy much space.

If the height of the side panels is kept less than the distance between the outer flanges 70 of the top across its narrower dimension, the parts can be assembled in a knock-down package such as shown in FIG. 12, regardless of the horizontal dimensions of the container, so that containers of any size may be built with this height restriction to enable enclosing the sides in this knock-down package form. For higher containers, up to the height equivalent to the longer dimension of the top, only the two narrower sides would fit inside this package. Thus the taller sides would have to be handled separately, but would still save space in the return shipments of the knocked-down containers. There is therefore no essential restriction in the size or shape of this container structure to get the space saving benefits, even though in some cases it may be necessary to handle the knocked-down sides separately in return shipments of the containers.

Reenforcing supports 24 may also be used in any or all of the channels 40 of the side panels for reenforcement if desired and those supports in the middle of opposite sides may have a bore in their center providing a bearing support for the shaft of shaft mounted cargo, such as spools or reels of sheet metal, cables or wire, machine parts, or motors, etc. In order to facilitate mounting such cargo in these bearings, the bearing supports may be split across the bearing bore, and the upper half of this support may be removed until the cargo is lowered onto the lower half of the bearing and then slid into the channel to provide the upper half of the bearing over the top of the shaft.

Other forms of internal cargo attachments may be mounted on these supports 24 to provide special braces or ties for cargo items, when required.

Many obvious modifications may be made in the dimensions and details of parts without departing from the spirit and scope of the present invention, as defined in the appended claims.

What is claimed is:

1. A rectangular knock-down cargo container comprising

a bottom having grooves along its side edges, said grooves having a flange extending inwardly from one side thereof,

four sides having cleated bottoms adapted for a sliding fit in said grooves with the top of the cleats slidably engaging said flanges extending from the sides of the grooves,

corner posts having angle grooves for slidably engaging angle flanges on adjacent side edges of said sides to lock them together at the corners,

a top having a groove to fit over the upper edges of said sides and corner posts, and

corner tie bolts between the top and bottom for closing the top tightly over the sides to form a weather-tight container.

2. A container as defined in claim 1, said flange extending inwardly from the top of the outer side of said bottom groove.

3. A container as defined in claim 1, said corner posts being hollow and said tie bolts extending through said hollow corner posts.

4. A container as defined in claim 3, said bottom having frame sides made of extrusions having a channel form to provide the groove and flange along the side edges of the bottom, and a channel form with sides extending inwardly from the upper portion of the inner side of said groove, and a floor panel formed by said inwardly extending channel form sides.

5. A container as defined in claim 4, said frame sides being mitred at the corners of the frame and a nut plate riveted to the bottom of said groove across each of said corners to hold said frame together around said floor panel, said nut plates having a threaded bore to re-

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ceive the threaded ends of said tie bolts through a bore in the bottom of the groove channel corner.

6. A container as defined in claim 5, said top comprising a frame made of extrusions having a channel form providing said groove fitting over the upper edges of the sides and corner posts, and an angle web extending inwardly from the base of said channel form and upwardly to form a raised rim around the inside of said frame, and

a sheet covering the opening formed by said raised rim having edges extending over the outer sides of said rim and into a peripheral groove at the bottom of said rim, said edges being riveted to said rim, and

corner brace plates for reenforcing the corners of said top frame.

7. A container as defined in claim 6, said sides and floor panel being formed of sheet metal to provide dovetail channels opening alternately inwardly and outwardly, the inwardly opening channels being wider than those opening outwardly, and reenforcing supports slidably fitting in said wider channels in said floor panel, said cleats at the lower end of the sides being of channel form for lightness and being riveted to bottoms of said wider channels of the side panels.

8. A container as defined in claim 7, the under side of said bottom having a depression

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formed by the channel form of the frame extrusion extending below said floor panel, said depression being large enough to accommodate the raised portion of the top, for nesting purposes of the top and bottom of adjacent containers in stacks of such containers.

9. A container as defined in claim 8, said bottom having angle legs welded inside the corner of said depression in the underside of said bottom, to provide lift fork clearance under said container.

10. A container as defined in claim 2,

said top having an outer skirt fitting inside said flange to nest into said bottom groove for compact stacking of the tops and bottoms in return shipments of knocked-down containers.

11. A container as defined in claim 10, said skirt being long enough to enclose the disassembled sides stacked in between the top and bottom, against damages to the edges of the sides in shipment of such knocked-down stack package, and

corner tie bolts for tightening the top and bottom over said stack packaged for return shipment.

No references cited.

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