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3,374,915

COLLAPSIBLE AND STACKABLE CONTAINER

Filed July 21, 1966

2 Sheets-Sheet 1

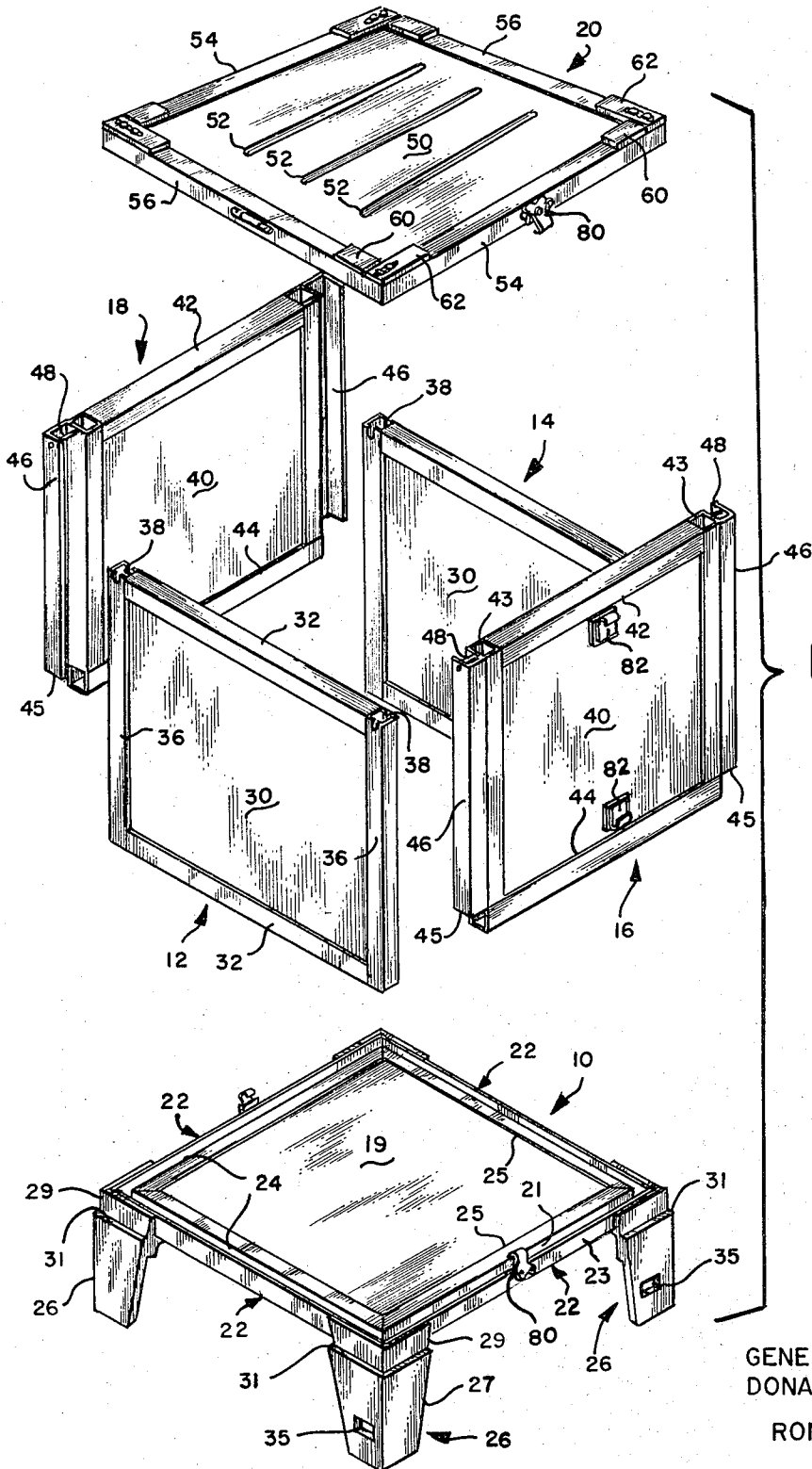


FIG. 1

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FIG. 2

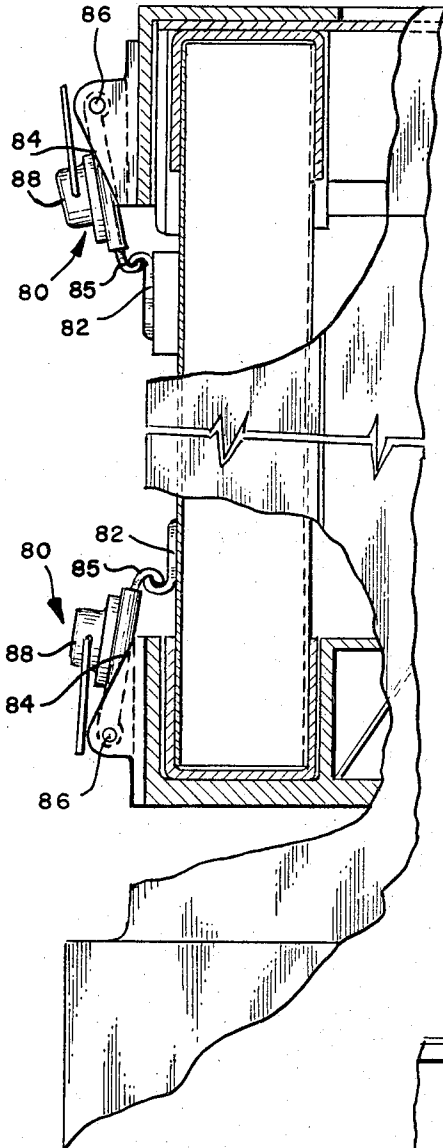
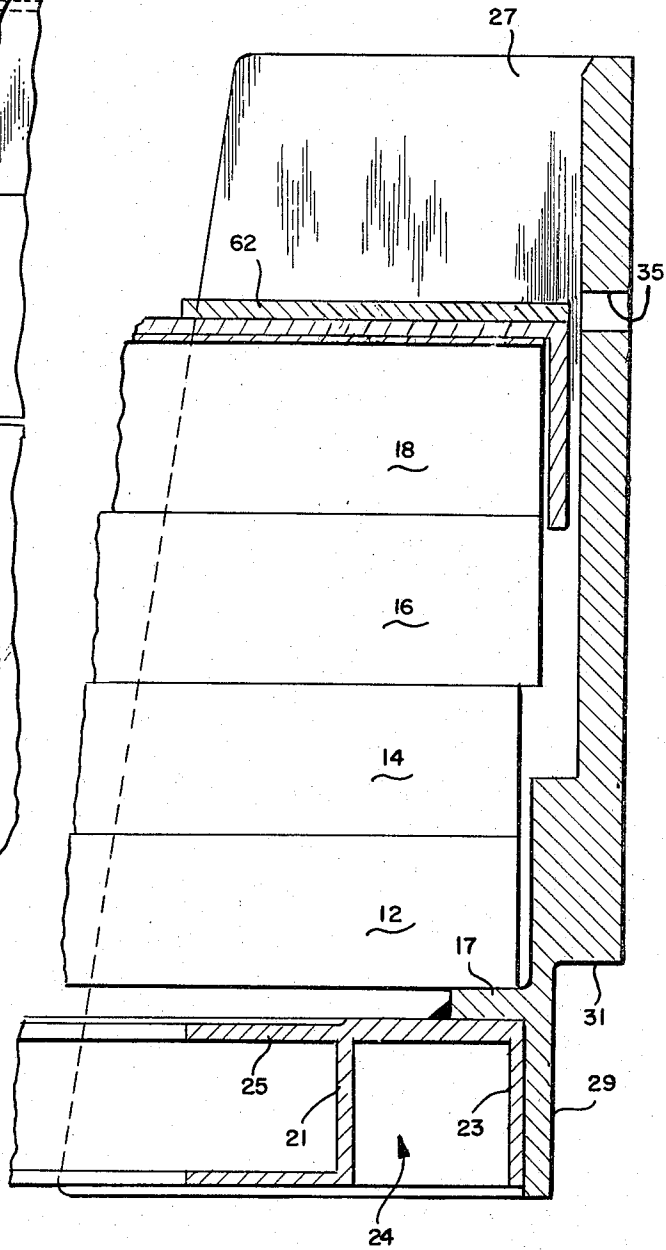


FIG. 3



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COLLAPSIBLE AND STACKABLE CONTAINER
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ABSTRACT OF THE DISCLOSURE

A knock-down or collapsible type container that has the side and end walls seated in a groove around the edge of a base. The end walls engage the side walls on assembly and are connected to the base to form an opened top container. A top is placed on the side and end walls in mating engagement with the top edge of the side and end walls to close the container. The base is formed to provide a storage space for the side and end walls and the top is used to hold the walls in place on the base.

The present invention relates to improvements in metal containers and particularly in metal containers of the knock-down-reusable type.

Transporting products in specially designed containers for one way transportation presents space and cost problems principally in returning the empty container. When shipping large animals the container can be quite large and will occupy a considerable amount of space when the container is returned.

One of the primary objects of the present invention is to provide a rugged metal container that can be readily assembled and easily knocked down for storage.

A further object of the present invention is to provide a knock-down type container which can be readily disassembled and stored as a compact unit.

Another object of the present invention is to provide a collapsible type container which can be readily stacked.

A further object of the present invention is to provide a collapsible type container which can be easily loaded and unloaded with conventional equipment.

A still further object of the present invention is to provide a knock-down type container which has no loose parts in either the knock-down or erected position.

These objects are accomplished by designing the walls of the container to interlock with each other on assembly and to be stackable within the base for the container when disassembled and stacked in the base. The base is designed for use with a lift truck having corner legs to hold the base a spaced distance from the floor. The side and end walls of the container are sized to fit within the confines of the four legs and the top interlocks with the legs to hold the walls in position. On assembly, the side walls are placed in grooves or channels along the edges of the base. Channels on the outer edge of the end walls are aligned with the edges of the side walls and are slid downward to seat the end wall in grooves along the edge of the base. Lock pins at the top of the end walls lock in grooves in the side walls to hold the walls together. Cam action locks are provided on the base to secure the end walls to the base. The top wall is then placed on the side and end walls and is also locked in position by cam action locks. When the walls are stacked in the base, the cam action on the top and base are interlocked to hold the entire unit together.

Other objects and advantages of the present invention will become more readily apparent from the following detailed description when read in connection with the accompanying drawings in which:

FIG. 1 is an exploded view of the container prior to assembly.

FIG. 2 is a sectional view showing the interlocking and interengagement of one of the side walls with the base and top.

FIG. 3 is a sectional view partly broken away showing the relationship of the walls when assembled on the base for storage.

Referring to the drawings, particularly FIG. 1, a container is shown which includes a base 10, side walls 12 and 14, end walls 16 and 18 and a top 20. All of the parts of the container are preferably made of aluminum with aluminum extrusions being used for the edges of all parts.

The bottom or base 10 includes a rectangular plate 19 having double channel shaped aluminum extrusions 22 secured to each of its edges. Each extrusion has an inner wall 21 and an outer wall 23 spaced apart to form a groove 24. An inwardly projecting flange 25 is used to secure the channel members to the plate 19.

A leg 26 is secured to each of the corners of the base. Each leg includes a vertical 90° angled section 27 with an offset top section 29 forming a ledge 31. An inwardly directed horizontal flange 25 underlies and is secured to the base extrusions 22. A slot 35 is cut in one of the walls of each of the sections 27 to aid in tying the base down when shipped or stored. The offset section is made with an outer dimension that will fit behind the lower end of leg section 27. The bottom edge of the leg section rests on ledge 31 when the containers are stacked for storage.

The side walls 12 and 14 include aluminum plates 30 having extrusions 32 secured to the top and bottom of the plates. Extrusions 36 are secured to each end wall and project downward and upward into alignment with the ends of the extrusions 32. A notch 38 is cut at the top of each of the extrusions 36 to be used as an interlock as explained hereinafter.

The end walls include a central plate 40 having aluminum extrusions 42 and 44 located at the top and bottom respectively. Double channel extrusions 46 are secured to each edge of the central plate with the top 43 in alignment with the top of extrusion 42. The bottom 45 of the outer channels is stopped at the point of engagement of the double channel extrusion with the bottom extrusion. It should be noted that the bottom extrusion terminates at the end of the first or inner channel of the double extrusion. A pin 48 is located in the top of the outer channels which is engageable with groove 38 in the side wall on extrusions 36.

The top 20 includes a central plate 50 having strengthening ribs 52 across its central portion. Channel shaped aluminum extrusions 54 and 56 are secured to the edges. Wear plates 60 and 62 are mounted on the top of the corners of the top wall to protect the container when it is stacked.

The plates 19, 30, 40 and 50 have been shown and described as being flat, however, where greater strength is required they could be made of corrugated material and if insulation is required a sandwich type plate could be used having a foamed interior to provide the insulation.

If live animals are carried in the container, either or all of the side or end walls should be perforated to allow for the admission of air into the container.

The end wall and base of the container are locked together by cam action type lock assemblies 80 located at the top and bottom of the end walls. Each of these assemblies includes a stationary clip 82 secured to the outer surface of the center plate of the end wall near the top and bottom. A clip housing 84 is pivotally mounted on pins 86 on the outer edge of the bottom and top walls. A clip 85 is slidable within the housing and a rotatable eccentric cam 88 cooperates with a hole in the clip 85 to move into and out of the housing. When the container is assembled, the clips 85 are aligned with clips 82 and on

rotation the cam clip 85 will be drawn into the housing locking the end wall to the base and the top wall to the end wall.

In assembly, the base is placed in an upright position on its legs 26. The bottom extrusion 32 on the side wall is positioned in grooves 24 in the edges of the base. Extrusions 36 should extend the side wall across the entire side of the bottom wall. The end walls are then aligned with the side walls with extrusions 36 positioned in the channels outside of extrusions 46. The end walls are slid downward until the bottom extrusion 44 seat in groove 24 in the base and pin 48 seats in notch 38. The cam action lock assemblies 80 on the bottom of the end walls are then interengaged to hold the end and side walls in position on the base. The top wall is placed on the top of the side and end walls with the top extrusions on the side and end walls fitting into the channel member in the top wall. The cam action lock assemblies 80 on the top of the end walls are then snapped together holding the entire carton together.

The carton is disassembled or knocked down by merely reversing the above assembly procedure. The container is assembled for storage by turning the base upside down and placing the side walls 12 and 14 in the bottom of the base with the corners within the legs 26. End walls 16 and 18 are then positioned on top of the side walls also within the legs. The top wall 20 is positioned on top of the end walls with the outer edge of the top wall overlapping the sides of the end wall. The clip housing on the base is rotated 180° about pin 86. Clip 85 on the assembly will then face outward. The clip on the cam action lock on the top wall will then be in position to interlock with the clip on the base. When interlocked the walls will be locked within the base. Each collapsed container can be stacked on the next container by placing the offset section 29 within legs 27.

Although only one embodiment of the present invention has been shown and described it should be apparent that various changes and modifications can be made herein without departing from the scope of the appended claims.

What is claimed is:

1. A collapsible, stackable container comprising a base having:

an upwardly facing channel around its outer edge, a pair of side walls seated in the channel on opposite sides of the base,

a pair of end walls having their bottom edges seated in the channel on the other two sides of the base, the side edges of said end walls having side channel members that matingly engage the edges of the side wall,

interengaging means for connecting the side edges of said end walls to the side edges of said side walls, latch means on said base engageable with said end walls,

a top having a depending flange around its outer edge to matingly engage the outer periphery of the side walls and end walls,

latch means on the top wall engageable with the end walls.

2. A collapsible, stackable container according to claim 1 wherein said interengaging means comprises a groove in the top edge of said side walls and a horizontal pin in the top of the end walls which seats in the groove when the end walls are seated in the base.

3. A collapsible, stackable container according to claim 1 wherein said base includes depending legs in each of its corners, the end walls and side walls fit within the legs and the top wall fits in the legs and overlies the end walls and side walls, said top wall including lock

means for engagement with said legs for holding the side walls, end walls and top wall in position.

4. A collapsible stackable container according to claim 1 wherein the legs on said base are offset at the top for interfitting engagement with similar container when stacked for storage.

5. A collapsible, stackable container comprising:

a base having an upwardly facing channel around its outer edge and depending legs in each of its corners, said legs being offset at the top for interfitting engagement with the bottom of legs of containers stacked above,

a pair of sidewalls each having a bottom edge that matingly fits in the channel on two sides of the base, the side edges of the sidewall having a locking groove at their upper ends,

a pair of end walls each having a bottom edge that matingly fits in the channel on the other two sides of the base,

the side edges of each of the end walls having channels for matingly engaging the side edges of the sidewalls,

a lock pin at the upper end of the channels on the end walls for interlocking engagement in the locking grooves of the sidewalls,

lock means on the base for locking the end walls to the base,

a top having a depending flange around its outer periphery for overlapping the outside edge of the top of the side and end walls,

lock means on the top for securing the top in position, and sliding wear plates on the top of each corner of the top for sliding engagement with the legs when the container is collapsed and stacked.

6. A collapsible, stackable container comprising a base having:

an upwardly facing channel around its outer edge and depending legs in each of its corners, each of said legs being offset for stacking said container,

a first pair of walls seated in the channel on opposite sides of the base,

a second pair of walls seated in the channel on the other two sides of the base,

the side edges of one of said pairs of walls overlapping the side edges of the other pair of walls, connecting means for connecting said one of said pairs

of walls to the other of said pairs of walls,

first latch means for connecting said one of said pairs of walls to the other of said pairs of walls,

first latch means for connecting said one of said pairs of walls to said base,

a top having an outer periphery shaped to engage the top of said walls,

second latch means for connecting said top to said one of said pairs of walls.

References Cited

UNITED STATES PATENTS

2,643,788	6/1953	Burrows	220—4
2,756,894	7/1956	Phillips	220—97 X
2,815,880	12/1957	Blatz	220—4
2,869,750	1/1959	Doerr	220—4
3,306,487	2/1967	Gregoire	220—1.5

FOREIGN PATENTS

932,974	4/1948	France.
234,033	6/1964	Austria.

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