

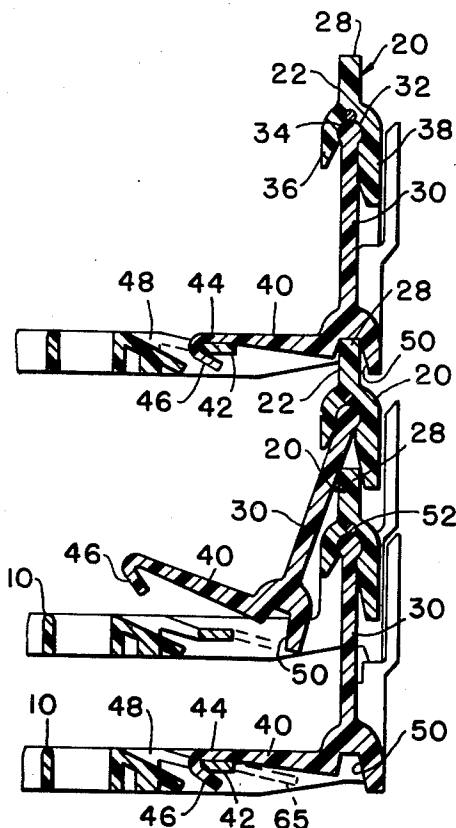
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[54] **NEST AND STACK CONTAINERS**
12 Claims, 10 Drawing Figs.

[52] U.S. Cl. 220/97,
 211/126
 [51] Int. Cl. B65d 21/04,
 B65d 21/06, A47f 3/14
 [50] Field of Search 220/97 (D),
 97 (E); 211/126

ABSTRACT: The disclosure is of a container adapted either to nest or to stack with other containers of the same construction. Each of two opposite sidewalls has means providing a seat spaced above the bottom wall, and also has a side panel provided with a foot. The seats of the container are adapted to support the feet of an upper container of identical construction in stacked relation when the panels are vertical. The panels can be moved to a different position such that the feet clear the seats of a lower container for nesting.



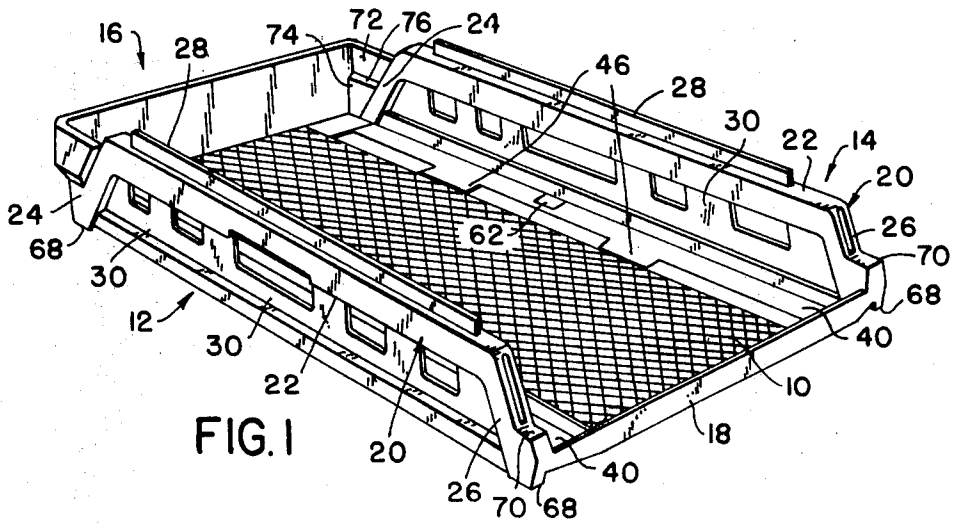


FIG. 1

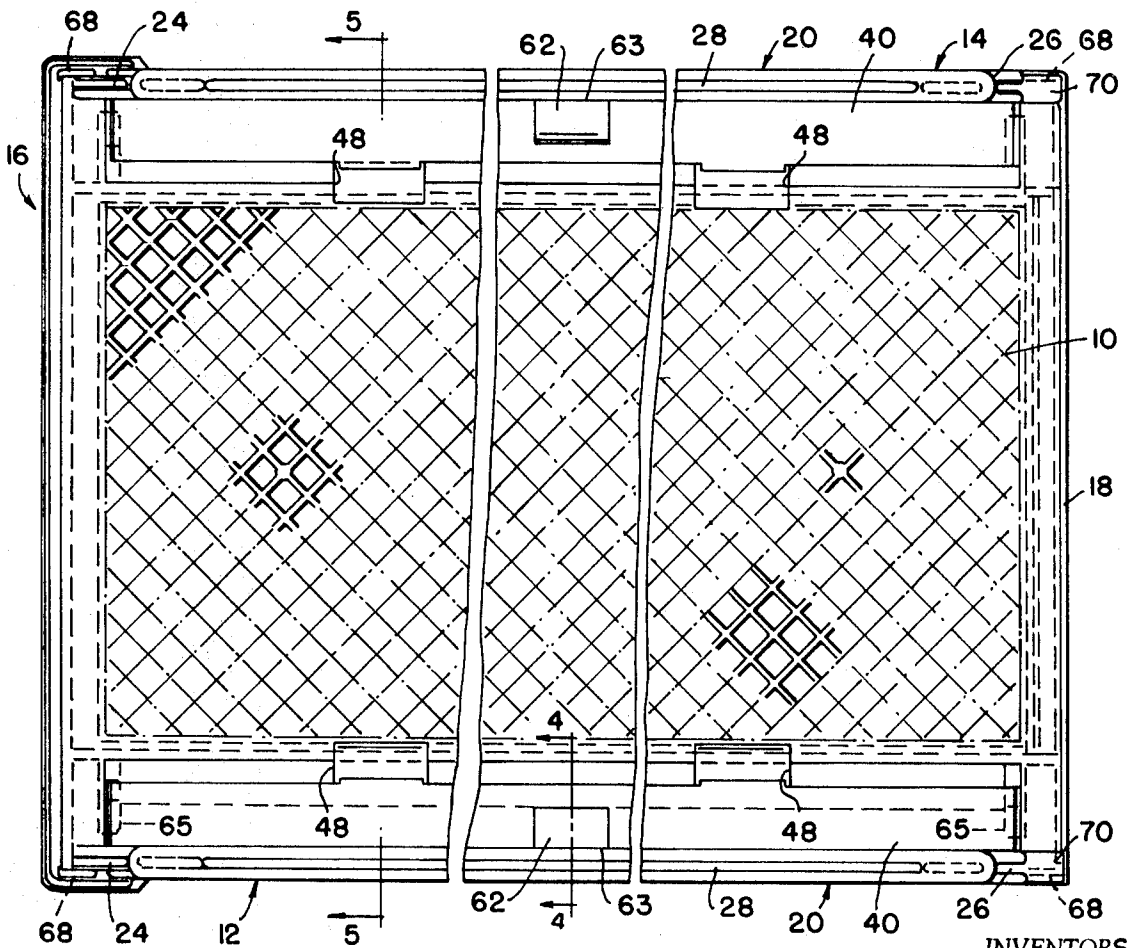


FIG. 2

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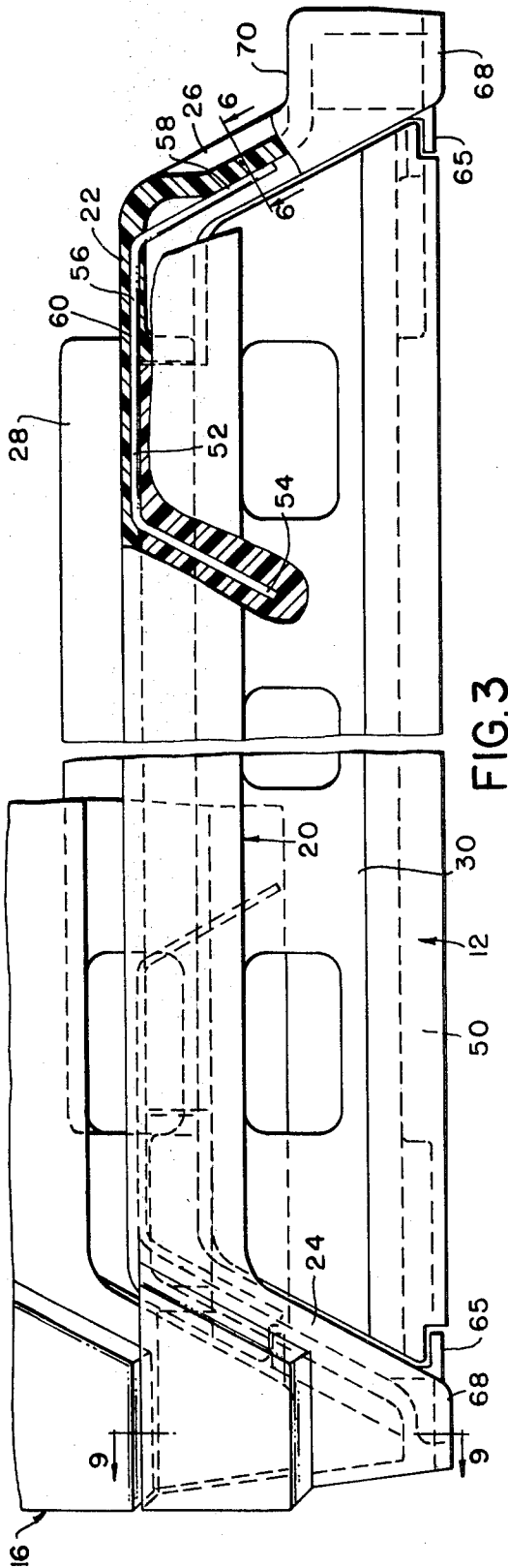


FIG. 3



FIG. 6

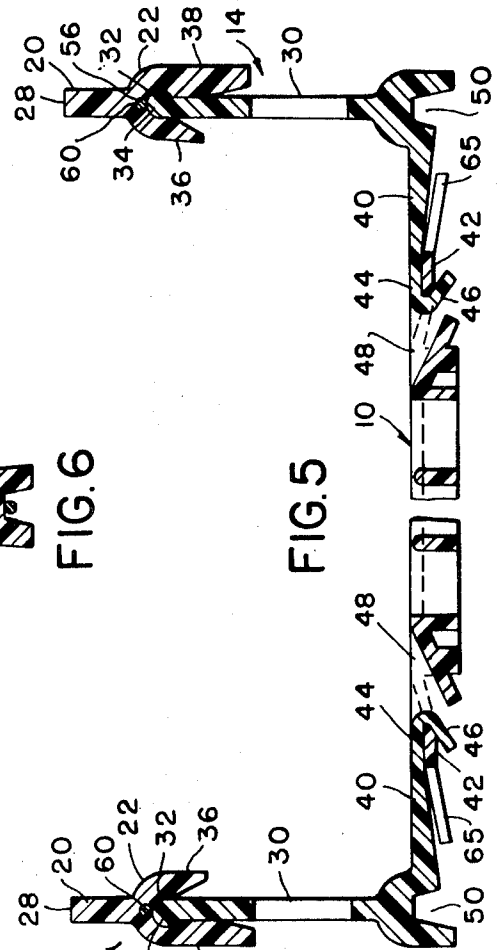


FIG. 5

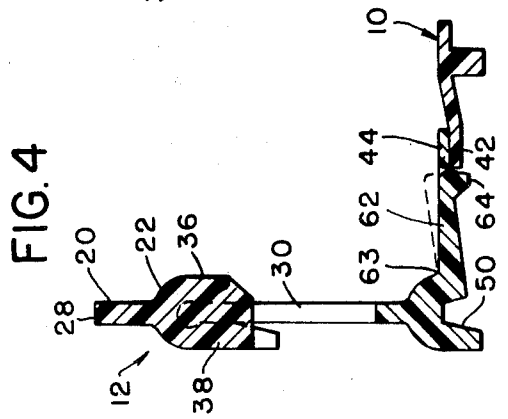


FIG. 4

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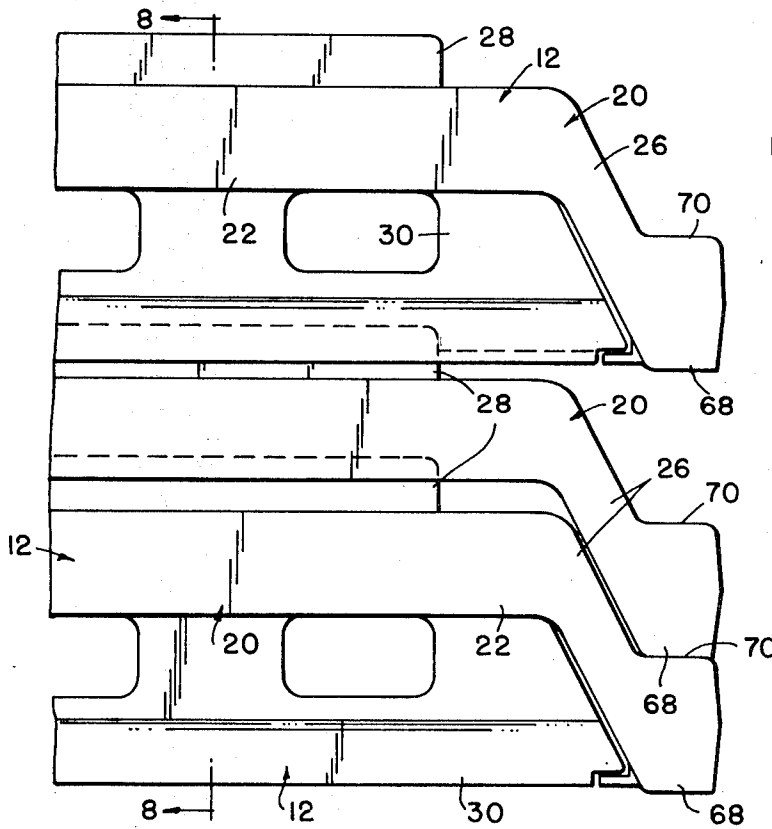


FIG. 7

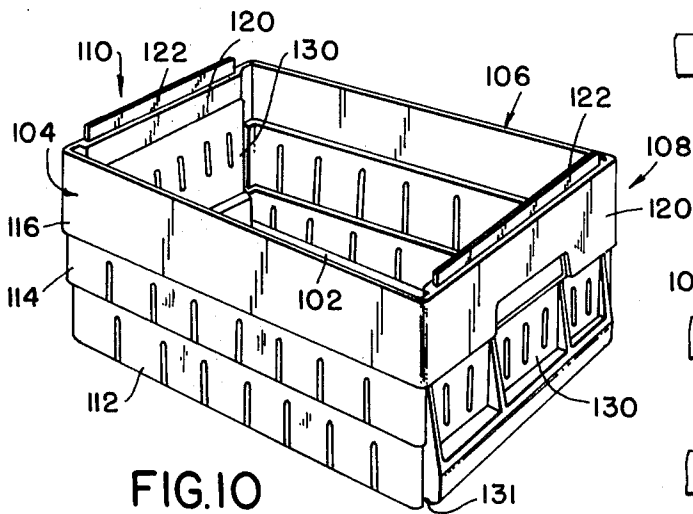


FIG. 10

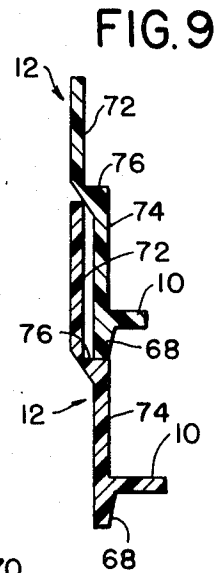


FIG. 9

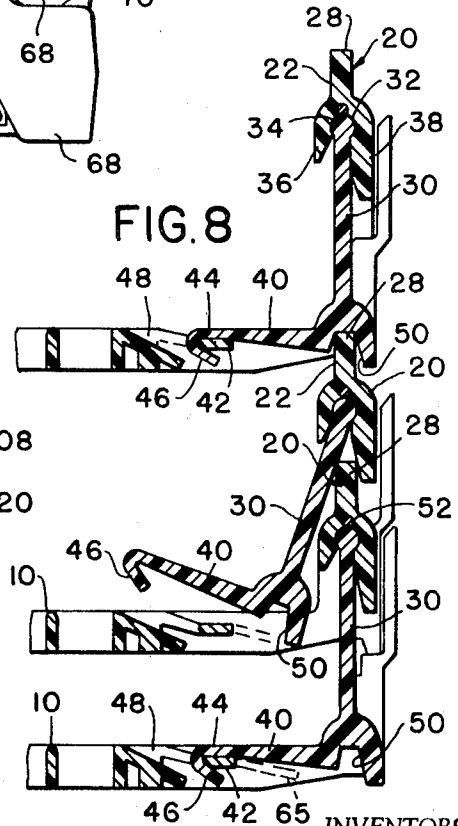


FIG. 8

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NEST AND STACK CONTAINERS

SUMMARY OF THE INVENTION

It is an essential object of this invention to provide an improved container capable of either nesting or stacking with other containers of identical construction.

Another object is to provide a nesting and stacking container having supporting elements adapted to be shifted from one position for stacking to another position for nesting.

Another object is to provide a nesting and stacking container having sidewalls including means providing seats spaced above the bottom wall for supporting the feet on the sidewalls of an upper container of identical construction in stacked relation, and in which the feet are movable to a different position clearing the seats for nesting.

Another object is to provide a nesting and stacking container in which the supporting feet are formed on sidewall panels which are movable between nesting and stacking positions.

Another object is to provide a nesting and stacking container wherein the side panels upon which the feet are formed are swingable laterally inwardly so that the feet thereof clear the seats of a lower container for nesting.

Another object is to provide a nesting and stacking container in which the side panels are vertical when stacked, for maximum strength.

Another object is to provide container seats which are preferably in the form of elongated upstanding ridges and container feet which are preferably in the form of elongated grooves adapted to receive the ridges during stacking.

Another object is to provide a container having means for guiding the same laterally across a lower container to a stacked position, with means for then locating the upper container in a position directly above the lower container upon which it is stacked.

Another object is to provide releasable means for locking the side panels in vertical positions for stacking.

Another object is to provide a nesting and stacking container which may be embodied in a two-wall, three-wall or four-wall construction, as desired.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a container constructed in accordance with our invention.

FIG. 2 is a top plan view, with parts broken away, of the container shown in FIG. 1.

FIG. 3 is a side elevational view of the container, with parts broken away and in section, and showing fragmentarily a second container nested therewith.

FIG. 4 is a fragmentary sectional view taken on the line 4-4 of FIG. 2.

FIG. 5 is a sectional view, with parts broken away, taken along the line 5-5 of FIG. 2.

FIG. 6 is a fragmentary sectional view taken along the line 6-6 of FIG. 3.

FIG. 7 is a fragmentary side elevational view showing three containers, the middle container being nested with the lower container and the upper container being stacked upon the middle container.

FIG. 8 is a fragmentary sectional view taken on the line 8-8 of FIG. 7.

FIG. 9 is a fragmentary sectional view taken on the line 9-9 of FIG. 3.

FIG. 10 is a perspective view of a modified container.

A three-walled container is shown in FIGS. 1-9. The container comprises a flat, horizontal, rectangular bottom wall 10, two sidewalls 12 and 14 along opposite side edges of and projecting upwardly from the bottom wall, and one end wall 16 projecting upwardly from one end edge of the bottom wall. The opposite end of the container is substantially open, except for a relatively low vertical flange 18 which extends upwardly a short distance from the bottom wall and is provided to

prevent articles supported upon the bottom wall sliding from the open end of the container. The container shown in FIGS. 1-9 may be considered as more in the nature of a tray because of its low side and end walls, in contrast to the deeper construction of the four-walled container shown in FIG. 10.

The bottom wall may be imperforate, if desired, but for reasons of economy of material and lightness and strength, it is preferably of the open grid construction best seen in FIGS. 1 and 2. The open grid construction also is easier to clean.

The sidewall 12 is a mirror image of the sidewall 14 and therefore only one sidewall will be described. The same reference characters will, however, be applied to both sidewalls. Sidewall 12 has a vertical rigid structure or frame 20 of the inverted U-shaped configuration shown and includes the straight horizontal rail 22 which extends above and parallel to the plane of the bottom wall 10, and the downwardly diverging end members 24 and 26 which are integrally joined to the bottom wall 10 of the container at their lower ends. The rail 22 and end members 24 and 26 making up the frame 20 are disposed in a common vertical plane. An upstanding ridge 28 extends along and projects upwardly from the rail 22 for slightly less than the full length of the rail. The opposite ends of ridge 28 are spaced equal distances from the adjacent ends of the container so that the ridges are centrally located with respect to the container longitudinally thereof (See FIG. 3).

The sidewall 12 also includes a panel 30 which is hinged to and depends from the rail 22 of the frame 20. This panel 30, although openings are blanked out to reduce the weight of the container, substantially fills the open space outlined by the U-shaped frame 20 to complete the sidewall structure.

Referring to FIGS. 3-6 and 8, it will be noted that the rail 22 has an arcuate hinge socket 32 in its underside which extends throughout substantially its entire length. An enlarged bead 34 of like arcuate form extending along the upper edge of the panel 30 may be snapped into socket 32. Thus the panel 30 is hinged for swinging movement from a vertical position for stacking to an inwardly displaced position suitable for nesting (see FIG. 8). The rail 22 has the depending inner and outer flanges 36 and 38 extending downward from the socket 32 along the inner and outer sides of the panel 30 which are suitably flared so as not to interfere with the swinging motion of the panel between its two positions.

The panel 30 has an integral substantially right-angle flange 40 extending laterally inwardly from its lower edge along its full length, the panel and flange together having the L-shaped configuration shown. As seen in FIG. 4, the adjacent side edge of the bottom wall has a slightly downwardly displaced marginal portion 42 which supports the inner extremity 44 of flange 40 when the panel 30 is in its vertical position for stacking. The slight downward displacement of the marginal portion 42 of the bottom wall causes the top surface of flange 40 to be disposed substantially in the horizontal plane of the top surface of the central open grid portion of the bottom wall as clearly shown in FIG. 4.

The panel 30 is located in its vertical position for stacking, and prevented from moving laterally outwardly beyond that position by integral hooks 46 along the inner edges of the flanges 40 of the panels. In the present instance, two such hooks 46 are provided which are turned downwardly and return bent as shown in FIGS. 5 and 8 and are adapted to engage the marginal portion 42 of the bottom wall. The bottom wall is cut out as indicated at 48 so that the hook 46 may engage within the opening thus provided in the bottom wall and engage the inner edge of the marginal portion 42.

The panel 30 is formed with an elongated downwardly opening groove 50 along its lower edge which extends for a distance equal to or slightly greater than the length of the ridge 28 and of a size adapted to receive the ridge of a second container of identical construction for stacking purposes.

A spring in the form of an elongated wire 52 is provided for normally urging the panel 30 laterally outward to its vertical position for stacking. As seen in FIGS. 4-6, one end portion 54 of the wire is embedded in the panel 30 or it may simply

bear against the inner surface of panel 30, and the remaining portions 56 and 58 of the wire are received in a tunnel or channel 60 in the frame 20, the portion of the channel in rail 22 which receives the portion 56 of the wire being in open communication with the arcuate hinge socket 32.

The panel is provided with means for releasably locking it in its vertical position. Such means in the present instance comprises a tab 62 which is cut from the material of the flange 40 centrally thereof along three sides so that it may swing upwardly about the integral side 63 as a hinge from the normal position shown in FIG. 4 to the dotted line position. In this position, the flange 64 along the inner edge of the tab engages the marginal portion 42 of the bottom wall to prevent inward swinging of panel 30. Thus the panel 30 is normally held in its vertical position by tab 62, but manual upward pressure upon the tab will elevate flange 64 sufficiently to clear the marginal portion 42 and permit inward swinging of the panel 30 for nesting.

The bottom wall is provided with corner tabs 65 which project under the opposite ends of flange 40 of the panel. These tabs 65 together with the marginal portion 42 of the bottom wall which supports the inner edge of flange 40 throughout substantially its full length provide the support needed to sustain the weight of articles carried by the container when the panel 30 is in its vertical position.

The bottoms of the members 24 and 26 of frame 20 have depending guide ribs 68. These are arranged in pairs two at one end of the container and two at the other end of the container and each pair is spaced apart a distance greater than the distance between the upstanding ridges 28 to guide an upper container moving across a lower container by engagement of the guide ribs with the ridges 28 to a stacked position.

The lower ends of the members 26 of the frames 20 have upwardly facing the support surfaces 70. These support surfaces support the guide ribs 68 on the bottoms of the end members 26 when two containers are nested as indicated by the lower two containers in FIG. 7.

The end wall 16 is inclined upwardly and outwardly as shown so that the end walls 16 of two similarly oriented containers will nest as shown in FIG. 3. The sidewall structure of the container adjacent end wall 16 has the two generally vertical surfaces 72 and 74 separated by an upwardly facing shoulder 76. When two similarly oriented containers are nested as in FIG. 1, the guide ribs 68 on the bottoms of end members 24 of frames 20 engage shoulders 76 as shown in FIGS. 1 and 9.

When the side panels 30 are in their normal vertical positions the container is in condition for loading and any material desired may be supported and carried by the container such as bread loaves for example. The bottom wall is completed by the horizontal flanges 40 of the side panels 30 to provide a complete and strong supporting surface for the contents of the container. In this vertical position of the side panels, the loaded containers may also be stacked upon one another in the manner illustrated by the upper two containers in FIG. 7 so that the contents of the individual containers will not be crushed. In the stacked relation of the containers shown in FIGS. 7-9, the grooves 50 in the panels 30 will receive the ridges 28 along the horizontal rails 22 of the side frames 20, the ends of the grooves engaging the ends of the ridges to provide stops preventing relative longitudinal movement between the two stacked containers. The ridges 28 thus serve as set as for the containers stacked thereon and the grooves 50 are in the nature of supporting feet for the upper or stacked container.

While two stacked containers may as shown in FIGS. 7-9 be similarly oriented, it is quite obvious that the upper container may be reversely oriented with respect to the lower container since the supporting seats or ridges 28 of the lower container will engage and be received in either one of the grooves or feet 50 of the container stacked thereon.

When it is desired to nest the containers, as when the containers are returned empty for example, the tabs 62 may be

pushed upwards by finger pressure and the side panels 30 pressed inwardly to the position shown in FIG. 8 such that the feet or grooves 50 will clear the seats or ridges 28 of a lower container so that when the upper container is lowered it will nest with the lower container as clearly seen in FIGS. 3 and 7, with guide ribs 68 resting upon supporting surfaces 70 and shoulders 76.

At this point it should be pointed out that the containers will nest whether similarly or reversely oriented. This is for the reason that the supporting shoulders 76 are at the same elevation and spaced apart the same as the supporting surfaces 70 at the opposite end of the container. As seen in FIG. 2, these shoulders 76 and surfaces 70 have the same relative positions with respect to one another at the opposite ends of the container, and therefore will support either pair of guide ribs 68 at the ends of an upper container, no matter whether it is similarly or reversely oriented.

While FIGS. 1-9 illustrate a three-walled container, it should be clear that the open end of the container could be closed by a wall such as the wall 16 to provide a four-walled container which would nest or stack as already described in either a reversely oriented or similarly oriented relationship. The container may be of any suitable material such, for example, as polyethylene, and in the present instance the two side panels 30 are separate integral members. The rest of the container including the bottom wall 10, side frames 20 and end wall 16 is of integral construction.

FIG. 10 illustrates a four-walled container which is deeper than the container shown in FIGS. 1-9. The container in FIG. 10 has a bottom 102, sidewalls 104 and 106 and end walls 108 and 110. The bottom wall is rectangular and the sidewalls 104 and 106 are stepped instead of upwardly inclined having the vertical bottom, middle and top wall portions 112, 114 and 116 of substantially equal height each spaced outwardly a slight distance from the one beneath it to permit nesting of two identical containers whether similarly oriented or reversed end for end. Of course, when nested, the bottom wall portion of the upper container will rest upon the step between the bottom and middle wall portions of the lower container, and the middle wall portion of the upper container will be disposed inwardly of and on a level with the top wall portion of the lower container.

The end walls 108 and 110 have fixed upper vertical wall portions 120 which are integrally connected to the ends of the upper wall portions 116 of the sidewalls. Wall portions 120 are provided with elongated seating ridges 122 which project upwardly for substantially the full length of the end wall portions 120. The end walls also include the end panels 130 which are similar to the panels 30 described in the first embodiment in that they normally assume vertical positions for stacking but may be swung inwardly for nesting. The upper edges of the panels 130 are hinged to the lower edges of end wall portions 120. The lower edges of the panels 130 have seats preferably in the form of elongated grooves 131 adapted to receive the seating ridges 122 when two containers are stacked. When the end panels 130 are vertical, the inner surfaces of the entire end walls have the same stepped configuration as the sidewalls for proper nesting. Containers constructed as in FIG. 10 can obviously nest and stack whether similarly or reversely oriented.

This container is of integral one-piece construction except for the end panels 130 which are formed separately, and, as with the container in FIGS. 1-9, may be formed of any suitable material, such as polyethylene.

What we claim as our invention is:

1. A nesting and stacking container comprising a rectangular bottom wall, two sidewalls along opposite side edges of and projecting upwardly from said bottom wall, each sidewall having a rail providing a seat spaced above said bottom wall, each sidewall also having a panel hinged to and depending from said rail provided with a foot, the seats of said container being adapted to support the feet of an upper container of identical construction in stacked relation thereon in one position of the

panels of the upper container, the panels of said container being swingable inwardly to a different position such that the feet thereof clear the seats of a lower container of identical construction when lowered with respect thereto into a nested relation therewith, said bottom wall having means providing panel stops, and said panels having hooks engageable with said panel stops to limit outward swinging of said panels to substantially upright positions for stacking.

2. The container defined in claim 1, including spring means urging said panels to their substantially upright positions for stacking.

3. The container defined in claim 2, wherein releasable means are provided to prevent inward swinging of said panels from their substantially upright positions.

4. The container defined in claim 3, wherein said releasable means comprise stops on said bottom wall and tabs on said panels, said tabs being manually movable to positions clearing said last-mentioned stops.

5. The container defined in claim 2, wherein said seats are in the form of elongated upstanding ridges extending parallel to one another, said feet are in the form of elongated grooves adapted to receive the ridges of a lower container of identical construction, said grooves having end stops engageable with the ends of the ridges of a lower container stacked therewith to locate the two stacked containers one substantially directly above the other.

6. The container defined in claim 2, said container having two additional sidewalls along the remaining opposite side edges of said bottom wall.

7. The container defined in claim 2, said container having an additional sidewall along one only of the two remaining side edges of said bottom wall, the side of said container along the other of the said two remaining side edges of said bottom wall being open.

8. A nesting and stacking container comprising a rectangular bottom wall, two sidewalls along opposite side edges of and projecting upwardly from said bottom wall, each sidewall having a member which provides a seat and which is fixed with respect to and spaced above said bottom wall, each sidewall also having a panel hinged to and depending from said member and provided with a foot, each panel being swingable inwardly from a substantially vertical position for stacking to an inclined position for nesting, the seats of said container being adapted to support the feet of an upper container of identical construction in stacked relation thereon in the substantially vertical position of the panels of the upper container, the feet of said panels of said container, when said panels are swung inwardly to their inclined positions, clearing the seats of a lower container of identical construction when said container is lowered with respect thereto into a nested relation therewith.

9. The container defined in claim 8, including means providing panel stops fixed with respect to said bottom wall, said panels have abutment means engageable with said stops to limit outward swinging of said panels to their substantially vertical positions.

10. The container defined in claim 8, including spring means urging said panels to their substantially vertical positions.

11. The container defined in claim 8, including releasable means for preventing inward swinging of said panels from their substantially vertical positions.

12. The container defined in claim 8, wherein said seats are in the form of elongated, upstanding, parallel ridges, and said feet are in the form of elongated, downwardly opening, parallel grooves.

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