

Oct. 12, 1965

R. M. DAVIS

3,211,326

HANDLE ARRANGEMENT FOR TRAY

Filed April 20, 1964

Fig. 1

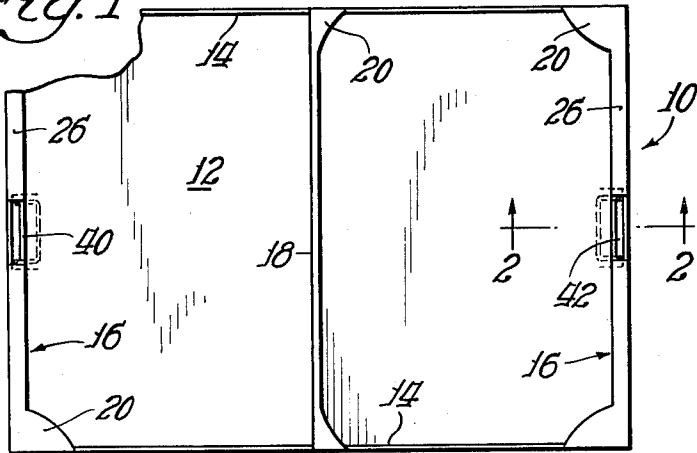


Fig. 4

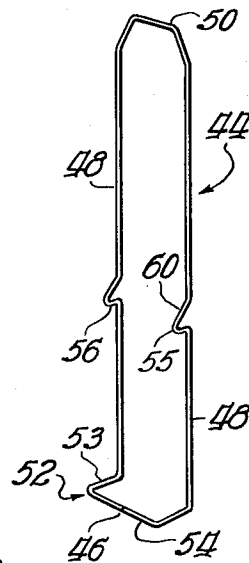


Fig. 2

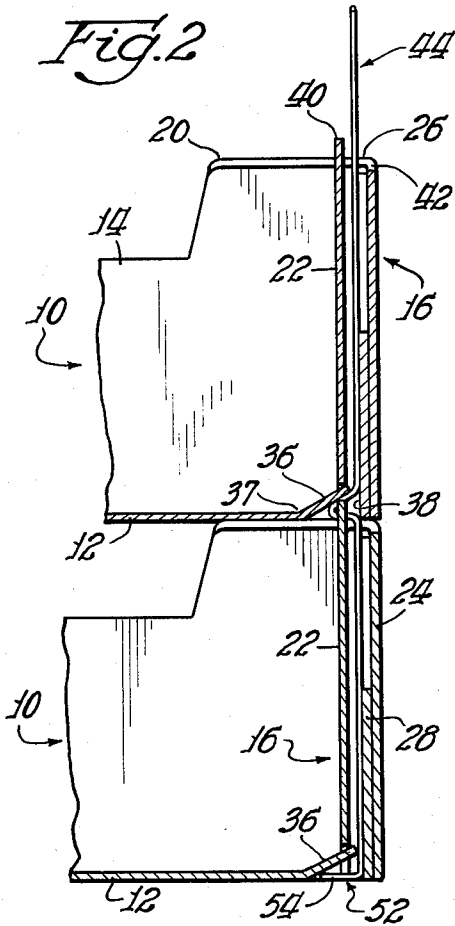
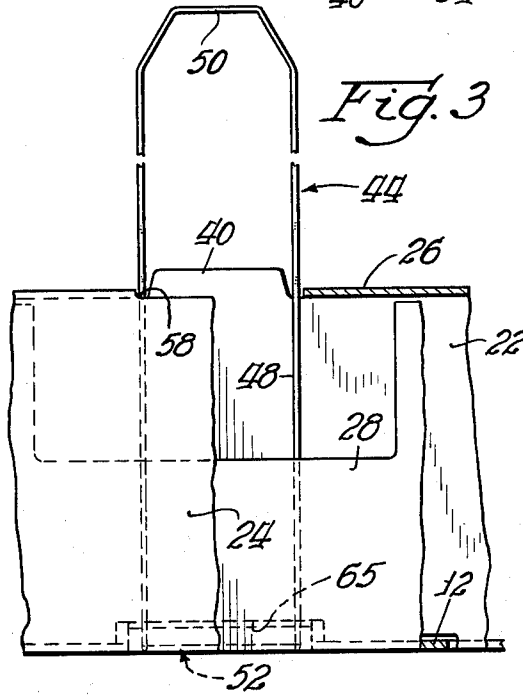


Fig. 3



Inventor:
Ralph M. Davis
By: Richard W. Carpenter *Att.*

3,211,326

HANDLE ARRANGEMENT FOR TRAY

Ralph M. Davis, Fullerton, Calif., assignor to Container Corporation of America, Chicago, Ill., a corporation of Delaware

Filed Apr. 20, 1964, Ser. No. 361,616

4 Claims. (Cl. 220-97)

This invention relates to open top trays adapted to be stacked on one another, and more particularly, to im- provide handle means that maintain stacked trays in proper vertical alignment and that increase the load carry- ing capacity of the tray because of the improved coopera- tion with the end wall construction of the tray.

Open top trays formed of paperboard are commonly used in the packaging and transporting of berries, fruits, vegetables and other produce commodities. These trays are filled in the fields at harvest time, both the empty and full trays being stacked to considerable heights so as to save space and be readily usable. To minimize tipping of the stacked trays, particularly when they are loaded, it is desirable to maintain all of the trays in proper vertical alignment. It is also desirable that the handles of the tray be securely fastened to the tray so as to permit continued use of the trays without the handles tearing therefrom.

Accordingly, a primary object of this invention is to provide, in an open top paperboard tray, an improved handle-end wall arrangement particularly adapted to facilitate properly aligned stacking of like trays and to fasten securely the handle to the tray to increase durability of the tray.

A more specific object of the invention is to provide, in a multi-ply end wall tray, a wire handle, the handle having a lower portion adapted to engage the underside of the tray, an upper portion extending above the tray for receipt within a like end wall of an adjacent tray, and a medial portion adapted to engage a portion of the tray end wall to maintain the handle in proper position relative to the end wall.

These and other objects of the invention will be more fully understood and appreciated after reviewing the following specification including as a part thereof the accompanying drawing, wherein:

FIGURE 1 is a top plan view of a tray arrangement embodying features of the invention;

FIGURE 2 is an enlarged partial vertical sectional view of two stacked trays taken on line 2-2 of FIGURE 1;

FIGURE 3 is a fragmentary end view of one tray structure illustrated in FIGURE 2, with portions of the structure broken away; and

FIGURE 4 is a perspective view of the wire handle element.

Referring now specifically to the drawing, a typical tray 10 for which this invention forms an improvement is shown. The tray 10 may be formed of corrugated paperboard or the like and comprises a bottom wall 12, and opposed pairs of side walls 14 and end walls 16 upstanding from bottom wall 12. Side walls 14 and end walls 16 are interconnected to one another at the corners of the tray 10, and a divider wall 18 commonly extends across the tray between the spaced side walls 14 in general parallel relationship to the end walls 16. As is well known in the art, trays of this type are stacked on one another, and for this purpose enlarged seats 20 are located at the corner junctions of the side walls and the end and divider walls to provide load bearing support for the stacked trays even if they shift slightly transversely of the stack.

For the most part, the specific tray construction is immaterial, so that only the areas of particular interest

and importance to the subject invention will be disclosed in detail.

FIGURES 2 and 3, disclose an end wall construction suitable for use with the subject invention. The end wall 16 is multi-ply having an inner panel 22 and an outer panel 24 interconnected at their upper ends by a top panel 26. In the disclosed construction, the bottom wall 12 has a hinged portion 28 that extends between panels 22 and 24, the hinged portion being bonded by appropriate adhesive to outer panel 24 to form therewith in effect, a composite outer end wall panel spaced from inner panel 22.

A deflectable tab 36 is hinged at hinge line 37 to bottom wall 12, and provides thereby an opening 38 through the bottom wall adjacent the end wall. A retaining tab 40 is cut from top panel 26 to provide a top opening 42, the tab 40 being integral with and upstanding from inner panel 22. The inner and outer panels are horizontally spaced from one another between the openings 38 and 42, so that end wall 16 has intermediate its ends a medial channel through which an elongated type wire handle element 44 (FIGURE 4) can be extended.

The wire handle element 44 is formed from a sufficiently strong gauge wire butt welded together, such as at 46, to be endless around its entire length. In its finished form, wire handle 44 has two spaced substantially parallel, elongated, side members 48 interconnected at their upper ends by cross member 50 and at their lower ends by cross member 52. Lower cross member 52 further has a pair of relatively short side elements 53 connected at corresponding ends to the side members and connected at the opposite ends by cross element 54.

In its inserted position, the wire handle element fits between the inner and outer panels of the end wall structure until the lower elements 53 and 54 engage the underside of the tray. Toward the furtherance of maintaining the underside of the bottom wall 16 flat or uniform while still providing a strong handle tray connection, inner panel 22 has its lower edge 65 generally adjacent and in line with deflectable flap 36 spaced from the bottom wall slightly, so that the flap can rotate about hinge line 37 until it abuts the inner panel 22 to form thereafter a solid support with the end wall. The cross element 54 engages the flap slightly outboardly of hinge line 37 to cause this flap deflection. The lower member 52 of the handle fits within opening 38 provided after deflection of the flap to provide a substantially flat or uniform underside for the tray 10.

The side members of handle 44 further have between the connected spaced locations 50 and 52 medial bends 55 extending transversely to the plane defined by the side members. Each medial transverse bend 55 has a lower surface 56 that cooperates with upper edge 58 of inner panel 22 when the handle is fully inserted into the end wall. Further, the sides of the transverse bends 55 engage the opposite sides of the medial tab 40 on inner panel 22. This engagement by the medial bent portions 55 of the handle prevents transverse or vertical displacement of the side members 48 of the handle relative to the end wall on each other. Thus, when the trays are stacked on one another, the handle elements in the lower tray are received within the open end wall structure of the upper stacked tray to fix the trays in proper vertical alignment. The upper portion of each handle 44 at end 50 extends through the opening in its top panel to provide handle means for the tray. In the stack, upper surface 60 of the transverse bends 55 and tab 40 nest within the opening 38 in the bottom wall provided by deflected flap.

It is thus seen that the disclosed handle end wall arrangement securely fastens an otherwise detachable han-

3

dle to the tray while providing load bearing support on both the bottom and end walls. Furthermore, the subject handle is transversely and vertically locked to the end wall to help maintain proper vertical alignment of the stacked trays, since two cooperating trays in a stack by necessity have to be stacked properly.

While only a single embodiment of the subject invention has been disclosed, it will be obvious to those skilled in the art that modifications can be made therefrom without departing from the inventive concept of the disclosure. Accordingly, it is desired that the invention be limited only by the scope of the claims hereinafter following.

I claim:

1. A paperboard, stacking, tray arrangement comprising, in combination:

- (a) an open top tray having a bottom wall and opposed pairs of side and end walls upstanding therefrom;
- (b) each of said end walls including a pair of horizontally spaced, vertical, inner and outer panels interconnected at their upper edges by a relatively narrow, horizontal top panel;
- (c) said top panel having in a medial portion thereof an opening between said inner and outer panels;
- (d) a retaining tab integral with one of said vertical panels;
- (e) said bottom wall having adjacent an end edge thereof an opening therein disposed adjacent the end wall and aligned with the opening in said top panel;
- (f) a one-piece wire handle disposed to extend vertically through the aligned openings in said bottom wall and said top panel, between said inner and outer panels, and having an upper portion projecting above said end wall top panel;
- (g) said handle including a pair of horizontally spaced substantially parallel, elongated, vertical side members having lower portions interconnected by a lower cross member;
- (h) said lower cross member including a pair of relatively short, horizontal, side elements, projecting inboardly from lower portions of respective side members and having inboard ends interconnected by a horizontal cross element;
- (i) said lower cross member extending under said bottom wall with said cross element engaging said bottom wall along a line spaced inboardly from said end wall to provide ledge support for the bottom end wall of the tray when the tray is lifted by the handle;
- (j) the side members of said handle having vertically aligned, medial portions which are offset laterally from the remainder of the side members to provide retaining loops which project horizontally from and normal to the vertical plane defined by said side members for engagement with the outwardly facing side edges of said retaining tab and an upwardly facing surface of said end wall to confine the handle in a predetermined position relative to said end wall.

2. A paperboard, stacking, tray arrangement comprising, in combination:

- (a) an open top tray having a bottom wall and at least one end wall upstanding therefrom;
- (b) said end wall including a pair of horizontally spaced, vertical panels interconnected at their upper edges by a relatively narrow, horizontal top panel;
- (c) said top panel having in a medial portion thereof an opening cut therein between said vertical panels;
- (d) a retaining tab formed integrally with one of the vertical panels and being aligned with the opening in the top panel;
- (e) said bottom wall having adjacent an end edge thereof a supporting flap cut therefrom to form an opening therein disposed adjacent the end wall and aligned with the opening in said top panel;
- (f) the inner panel of said vertical panels having a

4

medial portion of its lower edge presenting a horizontal abutment surface spaced a short distance above the opening in said bottom wall;

- (g) said supporting flap being hinged to said bottom wall along a hinge line spaced inboardly from said end wall and having a free outboard end adapted to engage said abutment surface upon the upward deflection of said supporting flap about its hinge line;
 - (h) a one-piece wire handle disposed to extend vertically through the aligned openings in said bottom wall and said top panel, between said vertical panels, and having an upper portion projecting above said top panel;
 - (i) said handle including a pair of elongated, vertical extending side members having their upper and lower extremities interconnected by upper and lower cross members;
 - (j) said handle lower cross member including a pair of relatively short, side elements, projecting inboardly from respective side members and having inboard ends interconnected by a relatively short horizontal cross element;
 - (k) said cross element extending under said bottom wall and engaging said supporting flap along a line immediately outboardly adjacent the hinge line of said supporting flap and being operable to deflect said flap upwardly until the free outboard end of the flap engages said abutment surface, when the tray is lifted by the handle, to distribute the load between the bottom and end walls of the tray;
 - (l) the side members of said handle having vertically aligned, medial portions which are offset laterally from the remainder of the side members to provide retaining loops which project horizontally from and normal to the vertical plane defined by said side members for engagement with the outwardly facing side edges of said retaining tab and an upwardly facing surface of said end wall to confine the handle in a predetermined position relative to said end wall.
3. A paperboard, stacking, tray arrangement comprising, in combination:
- (a) an open top tray having a bottom wall and at least one end wall upstanding therefrom;
 - (b) said end wall including a pair of horizontally spaced, vertical panels;
 - (c) a retaining tab integral with and upstanding from one of said vertical panels;
 - (d) said bottom wall having adjacent an end edge thereof a supporting flap cut therefrom to form an opening therein disposed adjacent the end wall and aligned with the retaining tab;
 - (e) the inner panel of the vertical panels having a medial portion of its lower edge presenting a horizontal abutment surface spaced a short distance above the opening in said bottom wall;
 - (f) said supporting flap being hinged to said bottom wall along a hinge line spaced inboardly from said end wall and having a free outboard end adapted to engage said abutment surface upon the upward deflection of said supporting flap about its hinge line;
 - (g) a one-piece wire handle disposed to extend vertically through the opening in said bottom wall, between said vertical panels, and having an upper portion projecting above said end wall top panel;
 - (h) said handle including a pair of elongated, vertical side members interconnected at spaced locations;
 - (i) a pair of relatively short side elements projecting inboardly from lower portions of respective side members and a horizontal cross element interconnecting the otherwise free inboard ends thereof;
 - (j) said cross element extending under said bottom wall and engaging said supporting flap along a line immediately outwardly adjacent the hinge line of said supporting flap operable thereby to deflect said flap upwardly until its free outboard end engages said

5

6

abutment surface, when the tray is lifted by the handle, to distribute the load between the bottom and end walls of the tray;

(k) the side members of said handle having vertically aligned, medial portions which are offset laterally from the remainder of the side members to provide retaining loops which project horizontally from and normal to the vertical plane defined by said side members for engagement with the outwardly facing side edges of said retaining tab and an upwardly facing surface of said end wall to confine the handle in a predetermined position relative to said end wall.

4. For use in a paperboard, stacking, tray arrangement having a bottom wall and opposed pairs of side and end walls upstanding therefrom, an improved handle comprising, in combination:

(a) a pair of spaced, substantially parallel, elongated, side members having opposite ends interconnected by spaced transversely extending cross members each of much shorter length;

(b) one of said cross members including a pair of spaced side elements projecting at substantially right angles to the side members from corresponding ends thereof;

(c) a relatively straight cross element connecting the free ends of the side elements remote from the side members;

(d) medial portions projecting laterally from the side members a short distance compared to the length of the side members;

(e) the handle being disposed to extend vertically through aligned openings in an end wall of a tray, between inner and outer vertical panels of the end wall, so as to present an upper portion above the end wall for grasping to lift the tray and to present the one cross member under the bottom wall of the tray so that the cross element engages the bottom wall along a line spaced inboardly of and parallel to the end wall when the tray is lifted by the handle to distribute the load between the bottom and end walls of the tray, and further to present vertically aligned, medial portions which are offset laterally to provide retaining loops which project horizontally from and normal to the vertical plane of said handle for engagement with opposed outwardly facing vertical surfaces of said end wall and with an upwardly facing horizontal surface of said end wall to confine the handle in a predetermined position relative to said end wall.

References Cited by the Examiner

UNITED STATES PATENTS

2,987,198	6/61	Crane	-----	220—97
2,990,995	7/61	Wessel	-----	229—81
3,118,563	1/64	Suchodolski	-----	229—52

JOSEPH R. LECLAIR, *Primary Examiner.*

FRANKLIN T. GARRETT, *Examiner.*

30