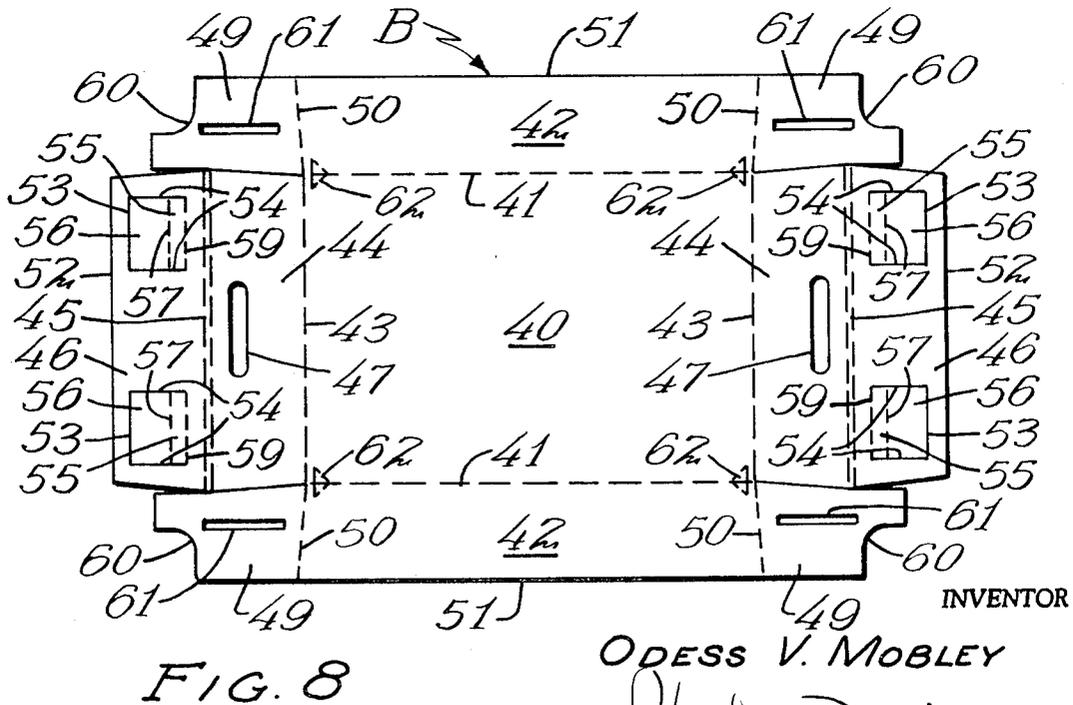
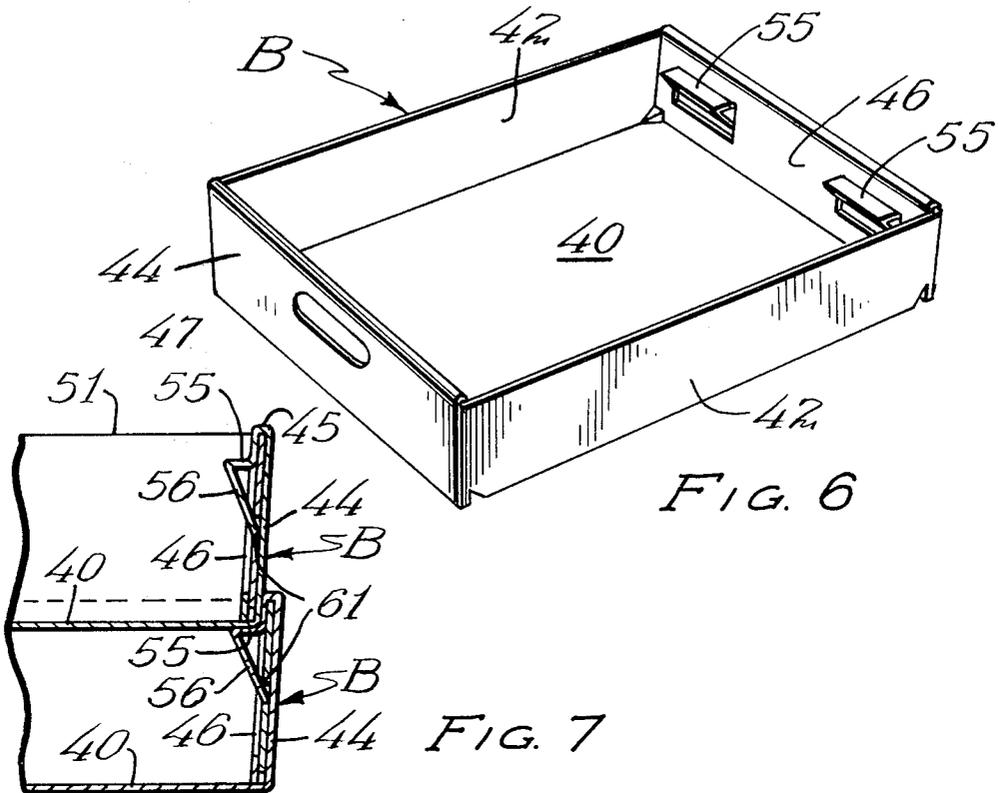


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## STACKING TRAYS

This invention relates to an improvement in stacking trays and deals particularly with a type of tray which may be set up without the use of tools, and which may be stacked one upon the other.

### BACKGROUND OF THE INVENTION

Bakery goods are usually handled in trays which are usually placed on racks during storage and delivery. When the bakery goods is delivered to the retail outlet, the goods are usually removed from the trays and placed in display cases or racks. The trays are returned to the bakery for reuse.

In order to be practical, the trays must be of a type which may be easily erected. One form of tray of this type is shown in U.S. Pat. No. 3,252,648, issued May 24, 1966, to R. V. Johnson. This type of tray is set up by folding the sidewalls upwardly from the bottom panel, folding corner flaps inwardly along the ends of the bottom panel, folding the end walls outwardly of the corner flaps, and folding end wall liner panels over and downwardly, inwardly of the corner flaps. The liner flaps are then locked in place by forming abutments at the corners of the bottom panel. Various other means have also been used for locking the trays assembled.

### SUMMARY OF THE INVENTION

I have found that by properly forming the corner flaps, and forming a pair of connected flanges foldably connected to the end wall liner panels, one or more ledges may be formed on each end wall near the upper end thereof, so that the trays may stack one upon the other. By forming the tray walls to incline upwardly and outwardly to a slight extent, the bottom of one tray may nest within the top of a similar tray, and the ledges support the trays in nested position.

A feature of the present invention resides in the provision of a stacking tray of the type described which may be provided with handle openings in each of the end walls, and in which the stacking ledge may overlie the handle opening in order to prevent the fingers from contacting the contents of the tray. Thus, a handle arrangement is provided by means of which the tray may be easily lifted, but without the danger of contaminating the product being carried.

A feature of the present invention resides in the provision of a tray of the type described in which the corner flaps are cut to provide an abutment spaced from the bottom of the tray, and in which the liner panels of the end walls include a first flange hinged to the liner panel and foldable into substantially horizontal position, and a supporting flange which is foldable downwardly and outwardly to engage against the abutment formed in the corner flaps. Thus, the first flange forms a supporting ledge on which the bottom of a similar tray may rest, while the second flange forms a support for holding the first flange in substantially horizontal relation.

A further feature of the present invention resides in the provision of a tray which may be provided either with an elongated tray supporting ledge extending across the middle portion of each end wall liner panel, or in which each liner panel may be provided with a pair of spaced supporting ledges between the centerline of the end wall and the side edges thereof.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the tray in readiness for use.

FIG. 2 is an end elevation view of an end of the tray in partially assembled position, a portion of the end wall being broken away to disclose the corner flaps.

FIG. 3 is an elevational view of a series of trays in stacked relation.

FIG. 4 is a vertical sectional view through the ends of a pair of stacked trays.

FIG. 5 is a diagrammatic view of the blank from which the tray is formed.

FIG. 6 is a perspective view of a modified form of tray.

FIG. 7 is a vertical sectional view through the ends of a pair of stacked trays.

FIG. 8 is a diagrammatic view of the blank from which the modified form of construction is formed.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The trays are indicated in general by the letter A. Each tray is formed of the blank illustrated in FIG. 5 of the drawings. As shown in this figure, the tray includes a generally rectangular bottom panel 10 connected by parallel fold lines 11 to sidewalls 12. The bottom panel 10 is connected by fold lines 13 along its end edges to end wall panels 14. The end wall panels 14 are connected along double lines fold 15 to end wall liner panels 16. The fold lines 13 and 15 are parallel, and are at right angles to the fold lines 11.

As will be noted, the sidewalls 12 are slightly trapezoidal in shape, the upper edges 17 of the sidewalls being slightly longer than the fold lines 11. The ends of the sidewalls 12 are connected along fold lines 19 to corner flaps 20. The fold lines 19 are slightly angularly related to the fold lines 13 so as to define the trapezoidal shape of the sidewalls. The side edges of the end walls 14 are separated from the corner flaps 20 by cut lines 21 which are also slightly angularly related to the fold lines 11 so as to make the end walls 14 trapezoidal in shape, with the widest parallel edge of the trapezoidal panels defined by the fold lines 15. The liner panels 16 are also of trapezoidal shape, the shorter parallel edge being defined by each end edge 22 of the blank. The end edges 22 are of slightly shorter length than the fold lines 15.

The end walls 14 are provided with centrally located hand holes 23 which are parallel to and spaced from the fold lines 15. Each of the end wall liner panels 16 is provided with a U-shaped cut line including an elongated cut line 24 which is parallel to and spaced from the end edge 22 of the corresponding liner panels, and by parallel cut lines 25 which are at right angles to the cut lines 24 and extend toward the fold lines 15 of the corresponding panel. The space defined by the U-shaped cut line is divided to form a first flange 26 and a second flange 27 by a fold line 29. The flange 26 is hingedly connected to the remainder of the liner panel 16 by a fold line 30, connecting the upper ends of the cut lines 25 the fold lines 29 and 30 being parallel to the fold lines 15. The upper end corners of the corner flaps 20 are notched as indicated at 31 to avoid extending over the hand hole 23. The corner flaps 20 are slotted as indicated at 32 to form an abutment 33. The ends of the slots 32 of the corner flaps 20 at each end of the tray are spaced apart a distance at least equal to the length of the flanges 26 and 27.

In forming the trays, the sidewalls 12 are folded upwardly to almost vertical position, and the corner flaps 20 are then folded inwardly to extend along the fold lines 13 at the ends of the bottom panel 10. The end walls 14 are then folded upwardly into the position indicated in FIG. 2 of the drawing. In this figure, a portion of the visible end wall 14 has been cut away to show the end portions of the corner flaps. The end wall liner panels are then folded inwardly and downwardly and locked in this position in any suitable manner. The flanges 26 and 27 are then folded inwardly from the surface of the liner panel 16, the flanges 26 extending inwardly on a substantially horizontal plane, and the flanges 27 inclining downwardly and outwardly. The end edge of the flange 27 which is defined by the cut line 24 is inserted into the opening in the liner panel 16 which was formed by the inward folding of the flanges, and the end edge of the flange 27 engages the abutment 33 at the end of each corner flap 20, the flanges 26 and 27 being held in angular relation by this engagement with the abutment 33. The flanges 26 then form ledges projecting into the tray on a common plane to form a support for the bottom of a similar tray. As will be noted, the hand holes 23 in this form of tray are outwardly of the angularly extending flanges 27 so that the fingers may be inserted through the hand hole comfortably, but will not contact any of the contents of the tray due to the presence of the angularly related flanges 26 and 27.

In order to lock the trays assembled, cut lines intersect the fold lines 11 near each corner of the bottom panel, the cut lines being parallel to the fold lines 13, and extending an equal distance into the bottom panel 10 and the sidewall panels 12. Fold lines 36 extend from the ends of the cut lines to a common point on the fold line 11 spaced from the center of the cut line 35. This arrangement provides two triangular areas on opposite sides of the fold line 11 which may be pressed inwardly as indicated in FIG. 1 to lock the end wall liner panels 16 in place. This structure is shown more in detail in the above-mentioned U.S. Pat. No. 3,252,648. When the trays A are formed as indicated, they may be readily stacked one upon another as indicated in FIGS. 3 and 4 of the drawings. The bottom of one tray is spaced from the bottom of the next a distance sufficient to permit the goods to be contained between the trays. At the same time, the bottom of one tray telescopes into the top of the next a distance sufficient so that the trays may be properly stacked and held from relative movement.

A modified form of container B is indicated in FIGS. 6, 7, and 8 of the drawings. As indicated in FIG. 8, the tray B includes a bottom panel 40 which is hingedly connected along parallel fold lines 41 to sidewalls 42. The bottom panel 40 is connected along parallel fold lines 43 which intersect the fold lines 41 at right angles to end walls or end wall panels 44. The end wall panels 44 are hingedly connected along double fold lines 45 to end wall liner panels 46. The end walls 44 are provided with hand holes 47 by means of which the tray may be lifted.

Corner flaps 49 are hingedly connected to the end edges of the sidewalls 42 by fold lines 50. The sidewalls 42 are of trapezoidal shape so that the fold lines 50 are slightly angularly related to the ends of the fold lines 43, the upper edges 51 of the sidewalls 42 being slightly longer than the parallel fold lines 41. The end walls 44 are also trapezoidal with the upper edges thereof defined by the fold lines 45 being slightly longer than the fold lines 43. The liner panels 46 are also of trapezoidal shape with the upper edge defined by the fold lines 45 being slightly longer than the end edges 52 of the blank which define the lower edges of the liner panels 46 when the carton is set up.

To this point, the structure is identical to the structure of the tray A. However, in the tray B, each end wall liner panel 46 is provided with a pair of U-shaped cut lines between the centerline of the liner panels and the side edges thereof, each U-shaped cut line including a cut line 53 parallel to the fold lines 45, and a pair of right angular cut lines 54 which extend toward the fold lines 45. The U-shaped cut lines are preferably of equal dimensions and are located near opposite side edges of the panel 46, on opposite sides of the location of the hand hole 47. The U-shaped cut lines described define first flanges 55 and second flanges 56 which are connected by fold lines 57. The first flanges 55 are hingedly connected to the remainder of the liner panels 46 along fold lines 59 extending parallel to the fold lines 45 and connecting the upper ends of the cut lines 54. The first flanges 55 are designed to fold into a common horizontal plane in setup condition of the container, while the second flanges 56 are designed to form supporting flanges.

The corner flaps 49 are provided with notched ends 60 so as to avoid overlapping the hand hole 47 when the tray is set up. Each corner flap 49 is provided with an elongated slot 61. The slots 61 are designed to register with the openings in the liner

panels provided by the flanges 55 and 56 when the tray is set up.

The tray B is set up in much the same manner as the tray A. The sidewalls 42 are swung upwardly from the bottom panel 40, and the corner flaps 49 are folded inwardly along the fold lines 43. The end walls 44 are then swung upwardly outwardly of the corner flaps 49, and the end wall liner panels 46 are swung inwardly and downwardly, the corner flaps 49 being sandwiched between the end walls 44 and the liner panels 46. Locking means 62 are then flexed inwardly to lock the liner panels 46 into position.

The flanges 55 are folded inwardly into horizontal relation, and the supporting flaps 56 are hinged downwardly and outwardly, these flaps extending through the openings in the end wall created by the U-shaped cut lines forming the flanges, and the ends of the flanges 56 are engaged in the slots 61. The lower edges of these slots form abutments against which the flanges engage.

The tray E has the slight disadvantage that the liner panels 56 lie inwardly of the hand holes 47, limiting the extent to which the fingers may be inserted. However, the structure does have the advantage of providing greater stability, particularly when the trays are relatively wide. In general, both structures function in much the same manner to provide stacking trays, the lower end of one tray telescoping slightly into the upper end of a similar tray to maintain the trays in proper alignment.

I claim:

1. A stacking tray including:
  - a generally rectangular bottom panel;
  - sidewalls hingedly connected to opposite sides of said bottom panel;
  - end walls hingedly connected to opposite ends of said bottom panel;
  - corner flaps on the ends of said sidewalls and foldable inwardly of said end walls;
  - end wall liner panels hinged to said end walls and foldable inwardly of said corner flaps;
  - a generally U-shaped cut line in each said liner panel defining a first flange hinged to said liner panel and a second flange hinged to said first flange; and
  - abutment means on said corner flaps against which said second flange may engage to hold said first flange substantially parallel to said bottom panel.
2. The structure of claim 1 and in which said side and end walls are outwardly inclined from the vertical.
3. The structure of claim 1 and in which each end wall liner panel includes a single U-shaped cut line.
4. The structure of claim 1 and in which each end wall liner panel includes a pair of spaced U-shaped cut lines.
5. The structure of claim 1 and in which each U-shaped cut line includes a cut line extending parallel to, and spaced from the lower end edge of the liner panel, and generally right angular cut lines extending toward the fold line connecting the corresponding liner panel to the corresponding end wall.
6. The structure of claim 1 and in which the portions of the liner panels within the cut lines expose portions of the corner flaps against which said second flanges engage.
7. The structure of claim 1 and in which said corner flaps include slots, the lower edges of which form said abutments.
8. The structure of claim 1 and in which each said end wall includes a hand hole which is outwardly of said second flange when engaged with said abutments.