April 26, 1966 R. J. HENNESSEY 3,248,038

UNITIZING TRAY

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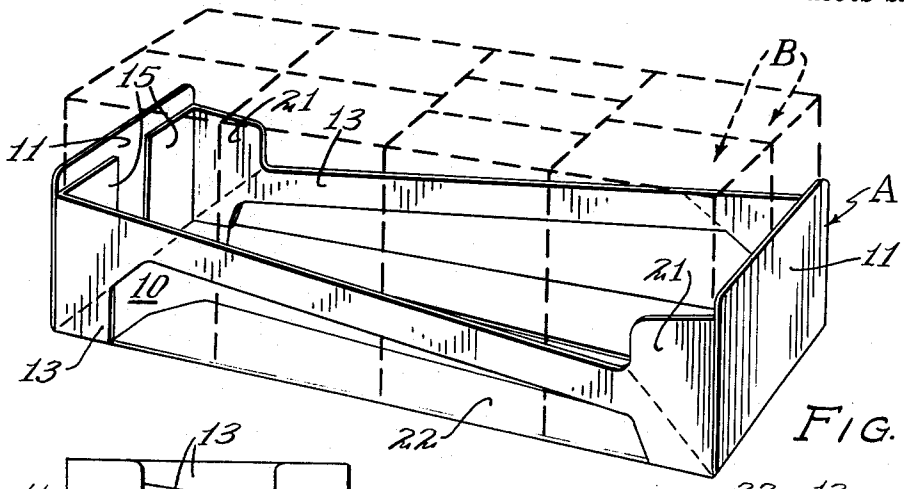

FIG. 1

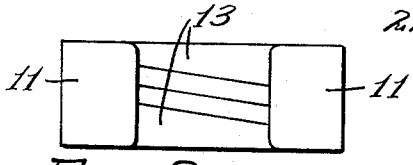

FIG. 2

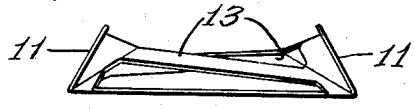

FIG. 3

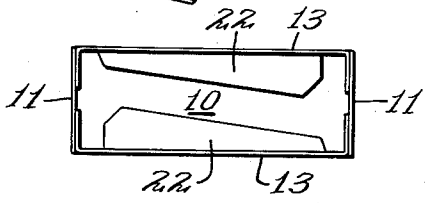

FIG. 4

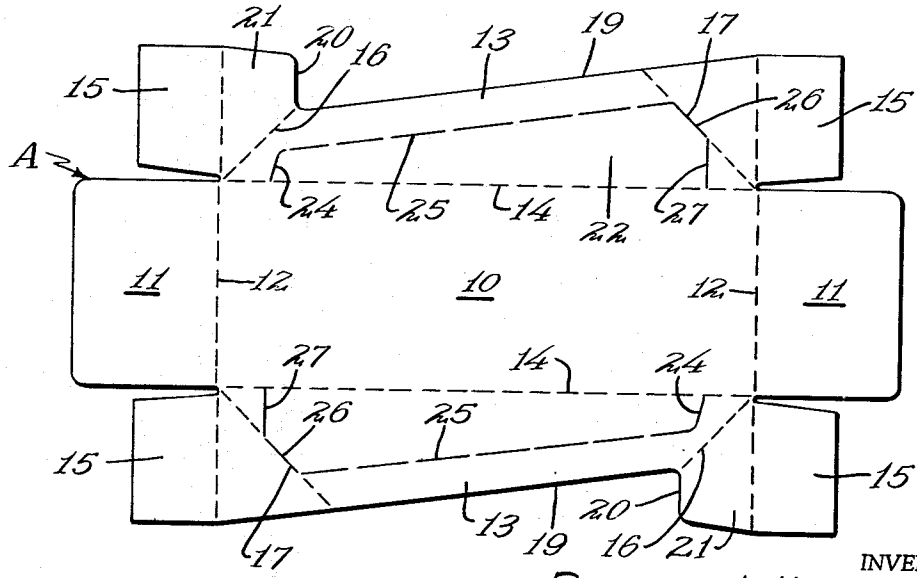

FIG. 5

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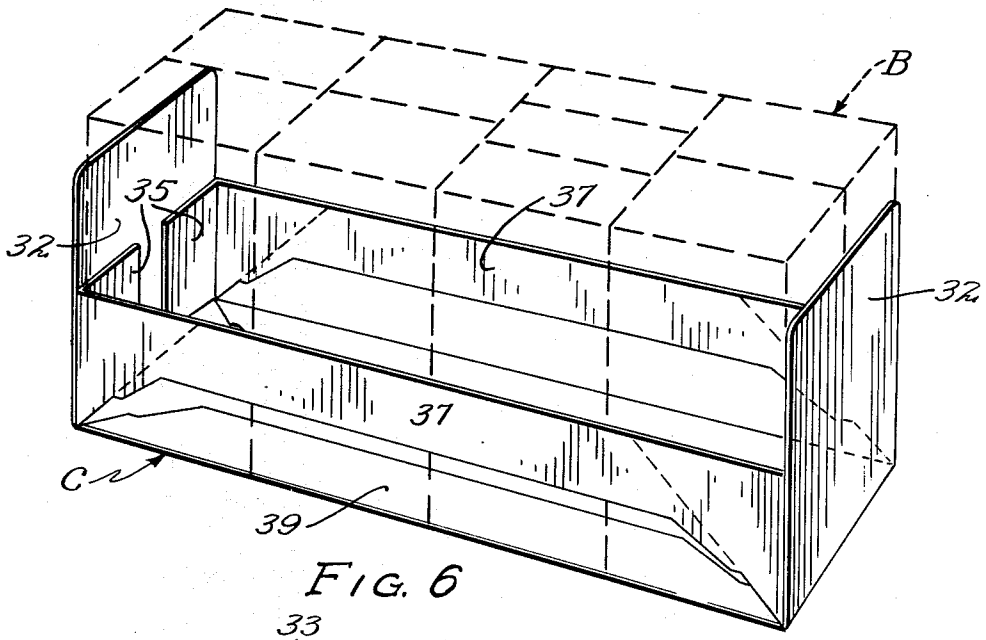

FIG. 6

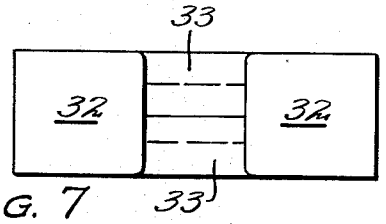

FIG. 7

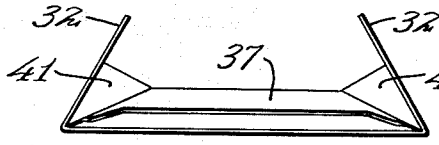

FIG. 8

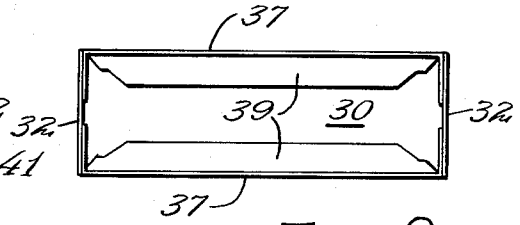

FIG. 9

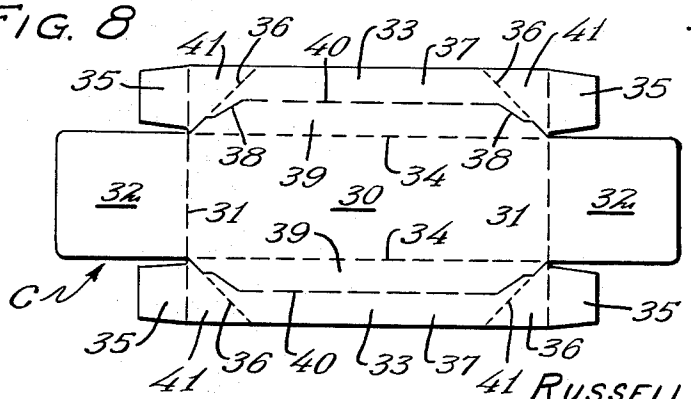

FIG. 10

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3,248,038

UNITIZING TRAY

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Filed July 21, 1964, Ser. No. 384,106
6 Claims. (Cl. 229—32)

This invention relates to an improvement in unitizing trays and deals particularly with an inexpensive tray structure capable of holding a series of packages of breakfast food or a similar product.

Most companies in the business of producing breakfast foods package their products not only in large packages designed for home consumption, but also in small individual packages oftentimes used in restaurants and the like. Most of the companies also produce a variety pack of breakfast food comprising a number of individual packages of breakfast foods of different types. When this is done, some means must be provided for unitizing the various packages so that they may be sold as a unit. In view of the low cost of the product, the unitizer must be as inexpensive as possible. Furthermore, it is desirable that the untizing means display the major portion of the main panel of the individual carton so that the product of each individual package may be prominently displayed. It is an object of the present invention to provide a unitizing tray which may be used for this purpose and which is inexpensive to produce.

In order to hold the packages securely together, it is desirable that the unitizing trays extend at least half-way up on the individual packages in order to contain them. However, if the walls of the tray are solid, the tray would then conceal the major portion of the display panels. Trays may be produced having relatively narrow strips or bands of paperboard in place of full walls. However, trays of this type are extremely hard to form as it is very difficult to control the position of the narrow bands forming the walls in the gluing of the trays. It is an object of the present invention to provide a tray which, when formed, is provided with narrow bands extending across the main panels of the cartons and yet which may be glued at high speed on conventional gluing equipment.

A feature of the present invention resides in the provision of a tray of the type described having a reinforced bottom panel. In forming the trap, portions of the side walls which are cut away to display the contents are glued to the bottom panel of the tray, thus forming a relatively stiff bottom panel and permitting the tray to be formed of relatively thin and lightweight paperboard.

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

In the drawing forming a part of the specifications,

FIGURE 1 is a perspective view of the tray in set up form, the packages of the tray being illustrated in dotted outline.

FIGURE 2 is a plan view of the tray in folded condition.

FIGURE 3 is a side elevational view of the tray in partially opened position.

FIGURE 4 is a plan view of the open tray.

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

FIGURE 6 is a perspective view of a modified form of the tray.

FIGURE 7 is a top plan view of the tray shown in FIGURE 6 when in folded condition.

FIGURE 8 is a side elevational view of the modified form of tray in partially opened position.

FIGURE 9 is a top plan view of the open tray shown in FIGURE 6.

FIGURE 10 is a diagrammatic view showing the blank from which the tray in FIGURE 6 is formed.

The tray A is designed to unitize and connect a series of individual packages B, the individual packages B being of proper size to fit in a rectangular group. The tray A is shown in FIGURE 5 as including a bottom panel **10** of rectangular form and of a proper size to accommodate the group of individual packages thereupon. End wall panels **11** are hingedly connected to opposite ends of the bottom wall **10** along parallel fold lines **12**. Side walls **13** are hingedly connected to opposite sides of the bottom panel **10** along parallel fold lines **14**. Corner flaps **15** are connected to opposite ends of the side walls **13** along extensions of the fold lines **12**.

In order to glue the tray in flat form, diagonal fold lines **16** and **17** extend aross the opposite ends of the side walls **13**, the fold lines **16** and **17** converging from each juncture between the fold lines **14** and the fold lines **12**. In the construction illustrated in FIGURES 1 to 5, the side walls **13** are notched along their upper edges with substantially triangular notches. In other words, the upper edges of the walls **13** are defined by parallel cut lines **19** which extend from the end of one of the fold lines **12** to a point spaced from the opposite fold line **12**. Cut lines **20** connect the ends of the cut lines **19** to substantially full height end portion **21** adjoining this opposite fold line **12**. Thus, both ends of the side walls **13** are of full height while the intermediate portion of the side walls are arranged on a slant.

A substantially trapezoidal bottom panel reinforcing flap **22** is provided in the side walls **13**. One side of each reinforcing flap **22** is defined by the fold line **14**. The remaining sides of the flap **22** are defined by cut lines which are interrupted at spaced points so that the flaps **22** are not completely separated from the remainder of the side walls **13** but will break away from the remainder of the side walls easily when the tray is opened. These perforated cut lines defining the remaining edges of the flap **22** include a short cut line **24** which extends outwardly from the fold line **14** at a point spaced from the end of the fold line **14**, an angularly extending cut line **25** which extends parallel to the edge **19** of the side wall **13** in which it is found, a cut line **26** which coincides with a center portion of the diagonal fold line **17**, and a cut line **27** which connects the cut line **26** to the fold line **14** at a point spaced from the opposite end of this fold line.

The tray is glued by folding the center portions of the side walls **13**, which are between the diagonal fold lines **16** and **17**, into face contact with the bottom panel **10**, folding the ends of the side walls **13** along the diagonal fold lines **16** and **17** so that the portions of the side walls outwardly of the diagonal fold line **16** and **17** lie in face contact with adjoining areas of the center portions of the side walls **13**, and folding the corner flaps **15** along the fold lines **12** to over-lie the adjoining end portions of the side walls. The end walls **11** are folded over the corner flaps **15** and adhered thereto. This type of tray is known to the trade as an in folded, diagonally creased Brightwood tray.

During the folding operation, adhesive is applied to the surfaces of the reinforcing flaps **22** forming the inner portions of the side walls. As a result, the flaps **22** are adhered to the bottom panel **10**. Adhering the side walls to the bottom panel would normally prevent the opening of the tray. However, with the present construction, as the tray is opened by folding the end walls **11** toward right-angular relation to the bottom panel **10**, as indicated in FIGURE 3 of the drawings, the side walls separate along the perforated cut lines **24**, **25**, **26**, and **27** so that only the upper portions of the side walls fold into right-angular relation to the bottom panel **10**. Thus the upper

portions of the side walls form relatively narrow bands which expose the major portion of the main panels of the individual cartons B.

If the areas forming the reinforcing flaps **22** were cut away and stripped from the blank prior to folding, it would be extremely difficult, if not impossible, to fold and glue the blanks on high speed equipment. However, by retaining these reinforcing flaps **22** as a part of the side walls **13** during the folding operation, the blanks may be folded at conventional speeds on regular equipment.

The purpose of notching the side walls in the manner described is twofold. Placing the bands forming the upper portions of the side walls **13** on a slant adds to the appearance of the finished tray. Of more importance from a structural standpoint is the fact that the height of the side walls may be somewhat increased by this arrangement. It will be noted that one end of each side wall extends across the center line of the bottom panel **10** in flat form of the blank. At the same time, the side walls do not overlap at any point. This arrangement is made possible by the fact that the full height portions **21** of the side walls are outwardly of the diagonal fold lines **16** and thus extend longitudinally of the tray in flat folded form. Usually, it is impossible to make the side walls more than one-half the width of the bottom panel if the side walls are not to overlap when the tray is folded.

FIGURES 6 through 10 of the drawings disclose a modified form of tray which is virtually identical with the tray A with exception of the fact that the side walls do not exceed one-half the width of the bottom panel. The tray C includes a bottom panel **30** which is foldably connected along parallel fold lines **31** to end wall panels **32**. The bottom panel **30** is also foldably connected to side walls **33** along parallel fold lines **34**. The side walls **33** are of a width substantially equal to one-half the width of the bottom panel **30**. Corner flaps **35** are foldably connected to the ends of the side walls **33** along extensions of the fold lines **31**. Diagonally-extending fold lines **36** extend across the side walls **33** from the intersection between the fold lines **31** and **34**.

The side walls **33** are divided into an outer band section **37** and a reinforcing flap **39**. One edge of each reinforcing flap **39** is connected to the bottom panel **30** along the fold line **34**. The ends of the flap **39** are defined by cut lines **38** which extend diagonally into the side walls **33** along, or inwardly of, the diagonal fold lines **36**. The ends of the flap **39** are connected to the band portions **37** along parallel perforated lines **40**.

In forming the tray C, the center portions of the side walls **33** between the diagonal fold line **36** are folded into face contact with the bottom panel **30** and the flap **39** are adhered in face contact with the bottom panel **30**. The side walls are folded along the diagonal fold line **36** so that the trangular areas **41** outwardly of the fold lines **36** over-lie the adjoining areas of the side walls **33** in face contact therewith. At the same time, the corner flaps **35** are folded along the fold lines **31** to over-lie the triangular corner portions **41**. The end walls **32** are folded inwardly and adhered to the corner flaps **35** to complete the tray.

When the end walls **32** are folded outwardly in the manner illustrated in FIGURE 8 of the drawing, the band portions **37** of the side walls **33** break away from the reinforcing flap **39** along the perforated lines **40**, leaving the flap **39** adhered to the bottom panel **30**. As the bands **33** are relatively narrow, they expose a portion of the main panels of the individual cartons B contained therein.

In accordance with the patent statutes, I have described the principles, construction, and operation of my unitizing tray; and while I have endeavored to set forth the best

embodiments thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A unitizing tray adapted for use in holding a series of articles assembled, including:

a bottom panel of rectangular shape,

end walls hinged to opposite ends of said bottom panel,

side walls hingedly connected to opposite side edges thereof,

corner flaps connecting the ends of said side walls to the sides of said end walls,

bottom reinforcing flaps defined by weakened lines of separation in said side walls terminating at the lines of fold connecting said side walls to said bottom panel, and

said bottom reinforcing panels being adhered in face contact with said bottom panel and holding portions of said side walls in face contact with said bottom panel until separated therefrom.

2. The structure of claim **1** and in which the side walls are diagonally creased.

3. The structure of claim **2** and in which the upper edges of said side walls slope from one end to the diagonal fold line at the other end.

4. A paperboard tray in flat folded form including:

a rectangular bottom panel,

end wall panels hingedly connected to the ends of said bottom panel,

side walls hingedly connected to said bottom panel along parallel fold lines,

diagonal fold lines extending across said side walls from the ends of said parallel fold lines defining a center side wall portion between said diagonal fold lines and corner portions outwardly of said diagonal fold lines,

corner flaps hinged to the ends of said side walls, each said center portion being divided by a weakened line of separation into a reinforcing flap hingedly connected by one of said parallel fold lines to the bottom panel and inwardly of said weakened line, and a band portion outwardly of said weakened line of separation,

said center portions of said side walls being in face contact with said bottom panel and said reinforcing flaps being adhered thereto while said band portions are unadhered thereto,

said corner portions being folded along said diagonal fold lines into overlying relation to said center portions,

said corner flaps being folded to over-lie said corner portions, and

said end wall panels being folded to over-lie said corner flaps and adhered thereto.

5. The structure of claim **4** and in which the upper edges of the side walls slope from one end thereof to the diagonal fold line at the other end thereof.

6. The structure of claim **4** and in which said side walls are substantially equal in area to one half the area of said bottom panel.

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GEORGE O. RALSTON, *Primary Examiner.*