

Dec. 20, 1960

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2,965,279

TRAY

Filed April 18, 1958

4 Sheets-Sheet 1

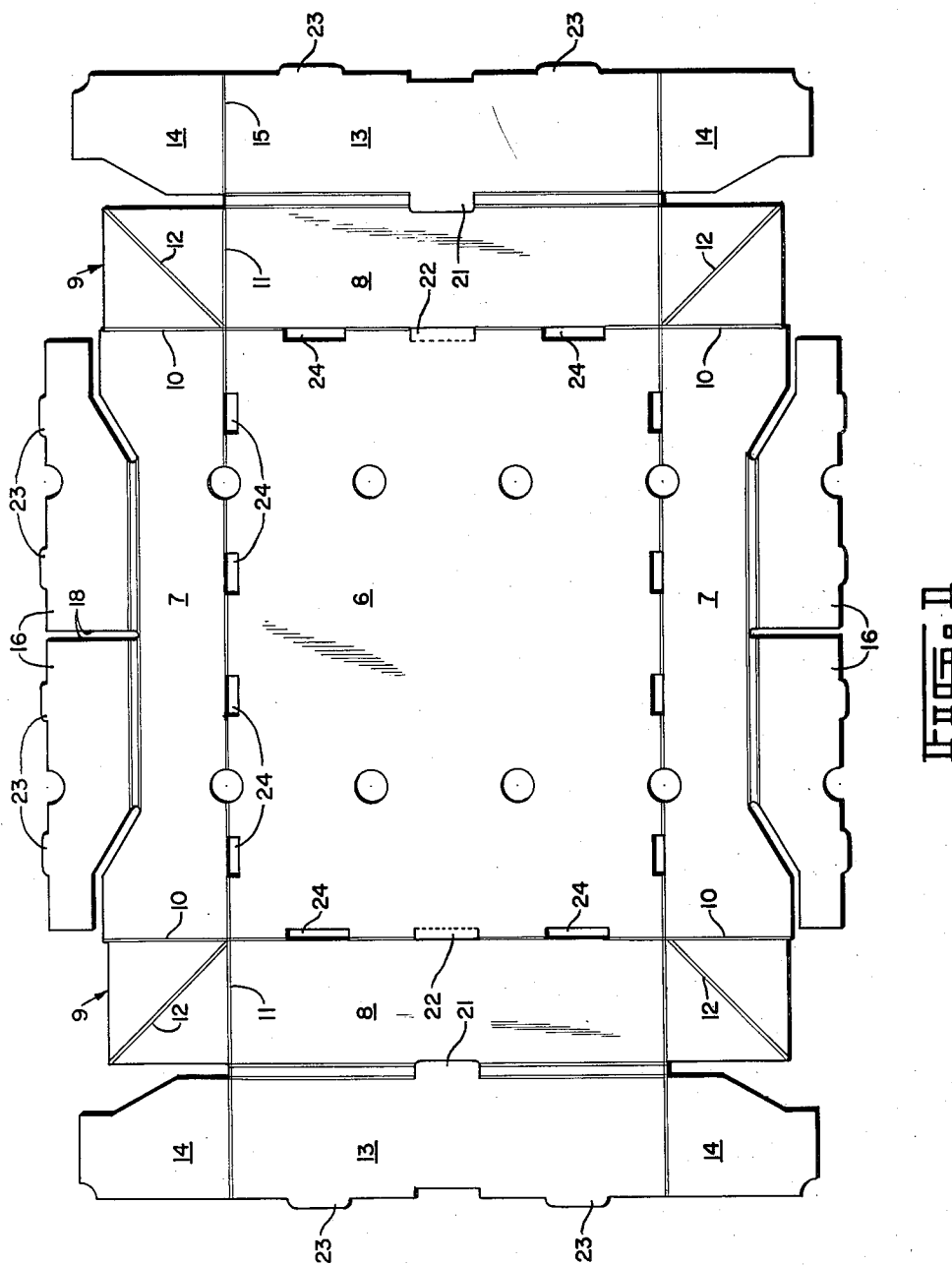


FIG. 1

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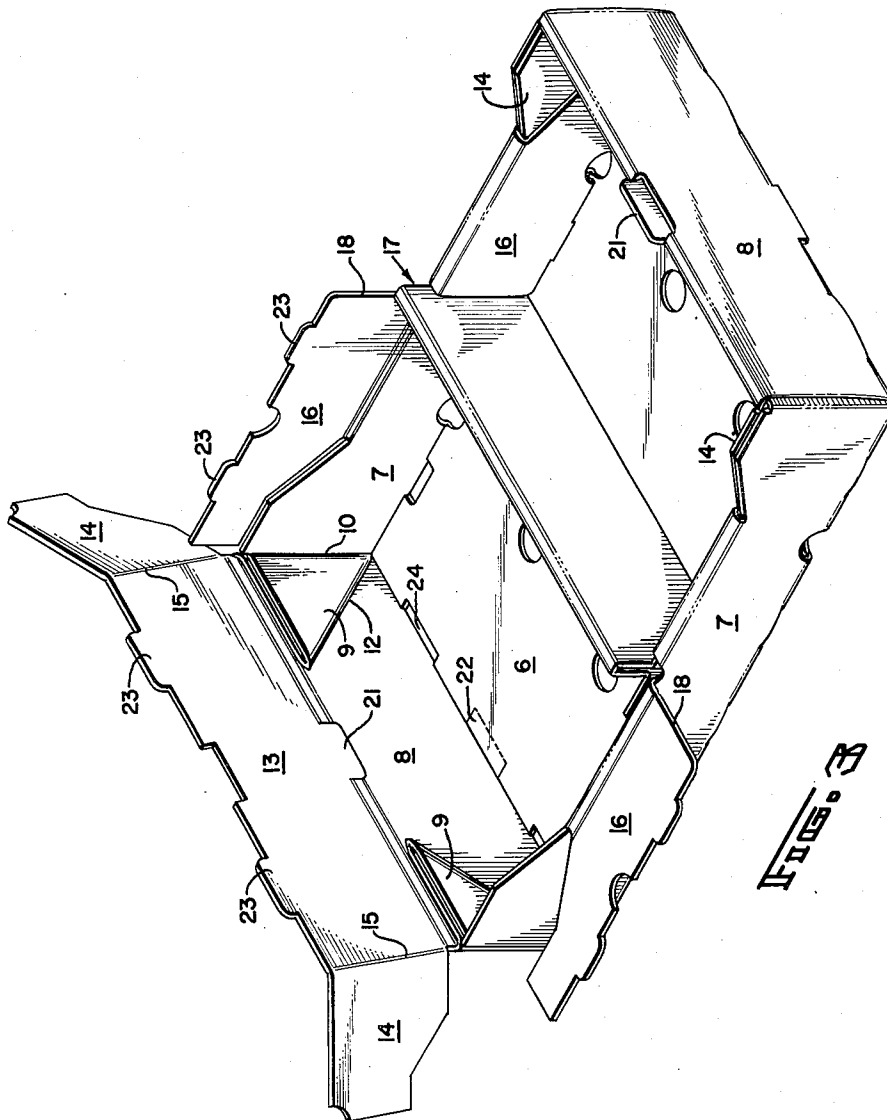


FIG. 2

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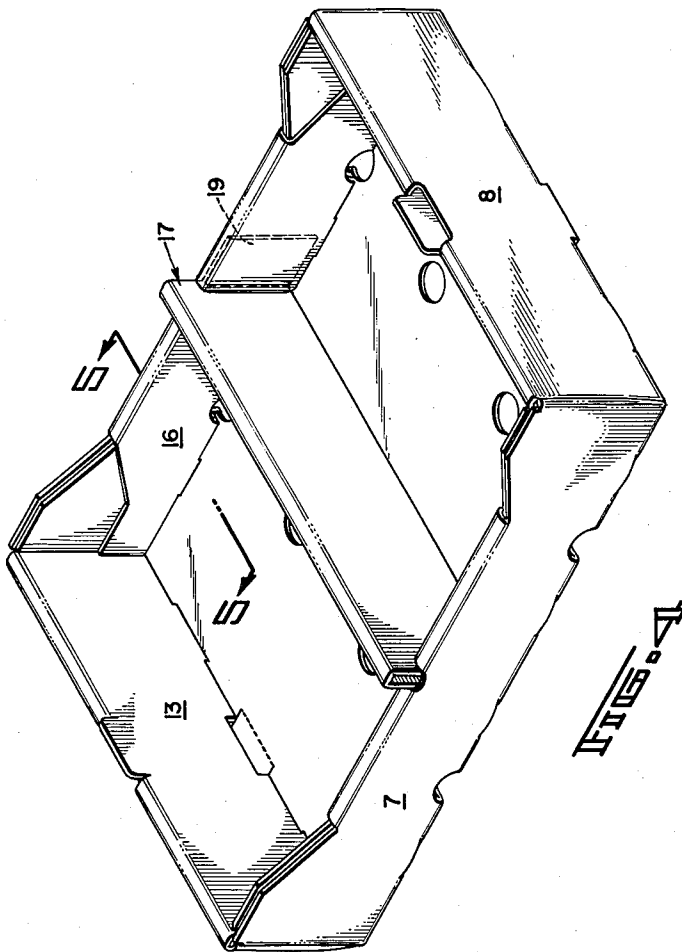
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

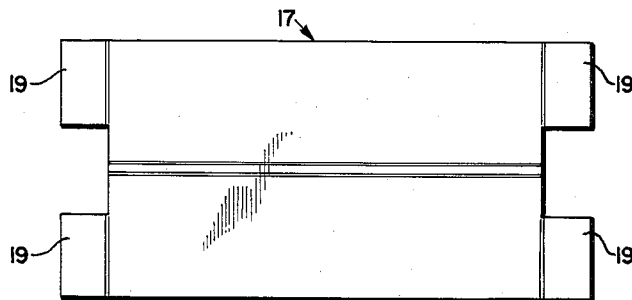


FIG. 2

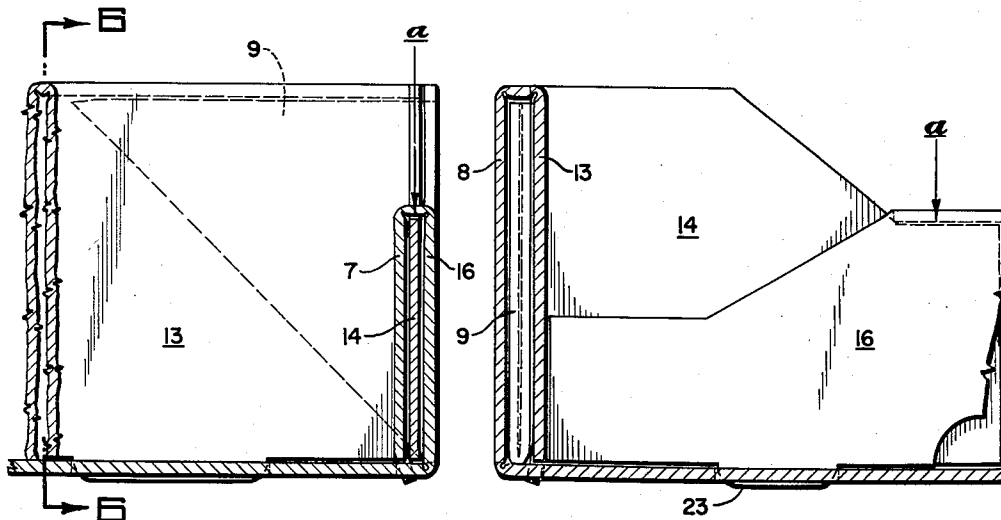


FIG. 5

FIG. 6

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2,965,279

## TRAY

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Filed Apr. 18, 1958, Ser. No. 729,373

3 Claims. (Cl. 229—34)

The invention relates to a tray made from container stock such as corrugated paperboard, fibreboard and the like. More especially, it is concerned with an improved corner construction for trays such as may be used, for example, for holding boxes of strawberries.

In the use of open trays, it is often necessary that they be stacked one atop another. As the bottom tray must carry the load imposed by all the full trays above it, the particular means for holding the side and end walls of the tray rigidly together becomes a matter of considerable practical significance. It is desirable to have as many as three vertical folds in the container stock at each corner of the tray; and in addition, to furnish means for effectively holding these three folds tightly together in vertical alignment to preserve maximum strength of the vertical folds as a column under compressive forces. Such vertical alignment of the folds can be effectively maintained only when the meeting ends of both the side and end walls are held firmly upright and prevented from pulling out at the corners of the tray. I have invented what can perhaps be described most simply and directly as a two-way gusseted corner construction in which a diagonal fold corner gusset is held between an end wall panel and its infolded end flap to form a gusset for the adjoining side wall panel, and in which an extension of such end flap lies along the inside of the side wall panel and is held down between the side wall panel and its side flap to form a gusset for the end wall. Notice that the gusset for the sidewall panel lies along the end wall panel, whereas the gusset for the end wall panel lies along the side wall panel. Thus the two gussets are disposed at right angles to one another, each gusset also being at right angles to the panel it is designed to directly support.

More particularly, my invention consists of a tray made from one piece of container stock comprising, in the form in which it is erected for use, a bottom panel, side and end wall panels extending upwardly from the edges of the bottom panel, diagonal fold gussets adjoining the ends of the side and end wall panels along vertical fold lines, the diagonal-fold gussets being folded against the respective end wall panels, end flaps extending downwardly from the upper edges of the end walls inside the tray and overlying the diagonal-fold gussets, and including as an important element of the combination, extensions of the end flaps reversely folded inside the tray and lying along the inside of the respective side wall panels where they are held down by side flaps extending downwardly from the upper edges of the side wall panels inside the tray and overlying the extensions. With this particular construction, the diagonal-fold gussets, being held between the end wall panels and flaps, support the side walls, while the extensions, being held between the side wall panels and flaps, function as gussets to support the end walls.

Referring to the drawings I shall now describe the best mode contemplated by me for carrying out my invention.

Fig. 1 is a face view of the blank from which my

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improved tray is formed. All cut lines are represented by single lines and score or fold lines are represented by light double lines. Conventional cutting and scoring dies may be used in forming the blank.

Fig. 2 is a face view of a transverse partition for the tray.

Fig. 3 is a top perspective view showing how the tray is set up for use.

Fig. 4 is a similar view showing the tray fully set up.

Fig. 5 is an enlarged detail cross sectional view on line 5—5 of Fig. 4.

Fig. 6 is a similar view taken on line 6—6 Fig. 5.

My tray as erected for use comprises a bottom panel 6, side and end wall panels 7 and 8 extending upwardly from the edges of the bottom panel, corner sections 9 adjoining the ends of the side and end wall panels along vertical fold lines 10, 11, diagonal fold lines 12 in the corner sections extending from the respective corners of the bottom panel, the corner sections folded against the respective end wall panels, end flaps 13 extending downwardly from the upper edges of the end wall panels inside the tray and overlying the corner sections 9, extensions 14 of the ends of the end flaps adjoining the end flaps along vertical folds 15 at the corners of the tray, the extensions lying along the inside of the respective side wall panels, and side flaps 16 extending downwardly from upper edges of the side wall panels inside the tray and overlying extensions 14. The construction thus described provides a two-way gusseted corner comprising the section 9 which constitutes a diagonal-fold gusset between adjacent ends of side and end wall panels, and comprising further the extension 14 which lies along the inside of side wall panel 7. The diagonal-fold gusset is held between the end wall panel and its end flap to form a gusset for the side wall panel, while said extension is held down at *a* (Figs. 5 and 6) between the side wall panel and its side flap to form a gusset for the end wall panel. The upper edge of the end of extension 14 lies just under the fold line of side flap 16 and this effectively prevents end wall 8 from pulling outwardly at the corner of the tray.

To produce this two-way gusseted corner construction from the blank shown in Fig. 1, the first step is to erect the side and end wall panels while folding gusset section 9 against end wall panel 8. Next the end flap 13 is folded inwardly and downwardly so that gusset section 9 is held between the end flap and the end wall panel while extension 14 folds into position along the inside of the side wall panel. Finally the side flap 16 is folded inwardly and downwardly so that gusset extension 14 is held between the side flap and the side wall panel. The sequence of the several folding steps will be further explained by Fig. 3. Notice that gusset sections 9 and 14 extend at right angles to one another in the erected tray.

In my preferred construction as shown, the side walls of the tray are of less height than the end walls, and a transverse partition 17 is provided. The side flaps 16 are made in two sections and the adjacent ends 18 thereof abut the transverse partition. The partition is of the same height as the end walls and serves as a support for the bottom of another tray when several trays are stacked together. The partition is constituted by a double section of container stock formed from the blank shown in Fig. 2, and has opposed flaps 19 at each end held between the respective side wall panels and side flap sections. If desired, end wall panels 8 may be formed with top projections 21 adapted to be received in suitable openings in the bottom of a like tray when arranged one atop another. Such openings may be provided by cut-outs 22 which fold upwardly or punch out of the bottom when the trays are stacked up. These cut-outs are

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formed by suitable cuts, or cuts and score lines, as desired. Also suitable means are provided for locking the side and end flaps, such as projections 23 along the lower edges of the flaps engaging openings 24 along the edges of bottom panel 6.

The terms and expressions which I have employed are used in a descriptive and not a limiting sense; and I have no intention of excluding such equivalents of the invention described as fall within the scope of the claims.

I claim:

1. A tray made from one piece of container stock comprising, in the form in which it is erected for use, a bottom panel, side and end wall panels extending upwardly from the edges of the bottom panel; corner sections adjoining the ends of the side and end wall panels along vertical fold lines, diagonal fold lines in said corner sections extending from the respective corners of the bottom panel, said corner sections folded against the respective end wall panels, end flaps extending downwardly from the upper edges of the end wall panels inside the tray and overlying said corner sections, extensions of the ends of the end flaps adjoining the end flaps along vertical folds at the corners of the tray, said extensions lying along the inside of the respective side wall panels, side flaps extending downwardly from upper edges of the side wall panels inside the tray and overlying said extensions, the side wall panels being of less height than the end wall panels, and a transverse partition, the side flaps being made in two sections and the adjacent ends of said sections abutting said transverse partition, and the partition being of the same height as the end wall panels.

2. A tray according to claim 1 in which said transverse partition is constituted by a double section of container stock with opposed flaps at each end held between the respective side wall panels and side flap sections.

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3. A tray made from one piece of container stock comprising, in the form in which it is erected for use, a bottom panel, side and end wall panels extending upwardly from the edges of the bottom panel, corner sections adjoining the ends of the side and end wall panels along vertical fold lines, diagonal fold lines in said corner sections extending from the respective corners of the bottom panel, said corner sections folded against the respective end wall panels, end flaps extending downwardly from the upper edges of the end wall panels inside the tray and overlying said corner sections, extensions of the ends of the end flaps adjoining the end flaps along vertical folds at the corners of the tray, said extensions lying along the inside of the respective side wall panels, side flaps extending downwardly from upper edges of the side wall panels inside the tray and overlying said extensions, the upper edges of the end portions of the side wall panels conforming to the height of the end wall panels and the portion of the side wall panels between said end portions being of less height than the end wall panels, the fold lines of the side flaps being downwardly offset with respect to the fold lines of the end flaps, and the extensions of the ends of the end flaps having downwardly offset upper edges lying adjacent the underside of the downwardly offset fold lines of the side flaps.

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