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Meyers

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[54] **TRAY WITH REINFORCED CORNER CONSTRUCTION AND BLANK THEREFOR**

[75] Inventor: **George L. Meyers**, Menasha, Wis.

[73] Assignee: **American Can Company**, Greenwich, Conn.

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[52] **U.S. Cl.** **229/35**; 229/49

[51] **Int. Cl.**[2] **B65D 5/26**

[58] **Field of Search** 229/35, 36, 32, 33, 49

[56] **References Cited**

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Primary Examiner—William I. Price
Assistant Examiner—Stephen P. Garbe
Attorney, Agent, or Firm—Robert P. Auber; Ira S. Dorman; John M. Winter

[57] **ABSTRACT**

A rectangular paperboard tray having a hollow, triangular pillar corner construction and a unitary paperboard blank therefor. The interior corner panels of the hollow triangular pillar corners are hingedly connected at opposite sides to side panels and inner corner flaps. The side and end panels of the tray are secured together by inner and outer corner flaps.

4 Claims, 8 Drawing Figures

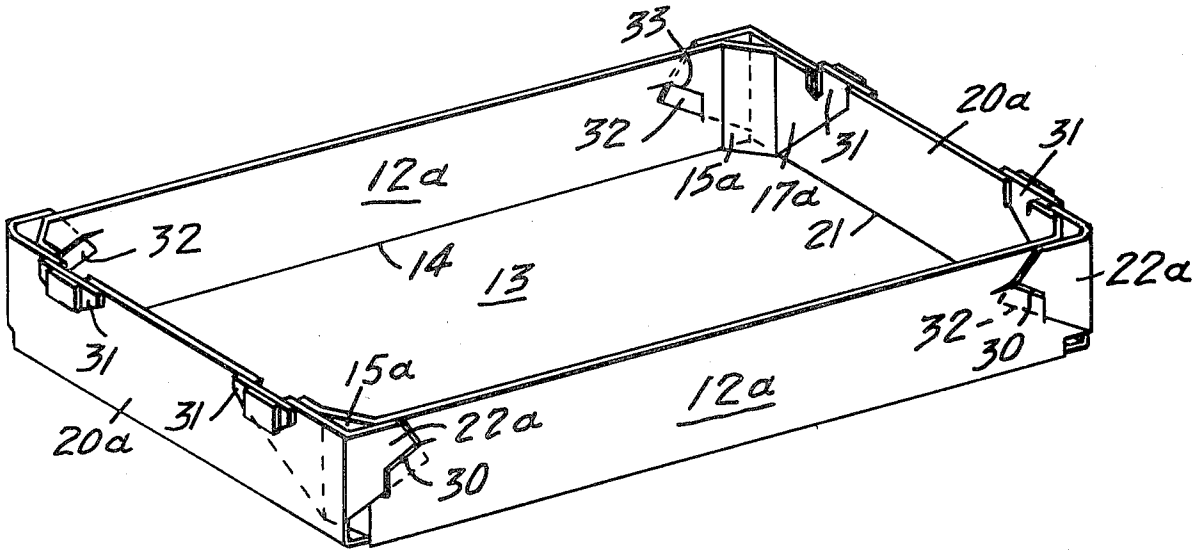


FIG. 1

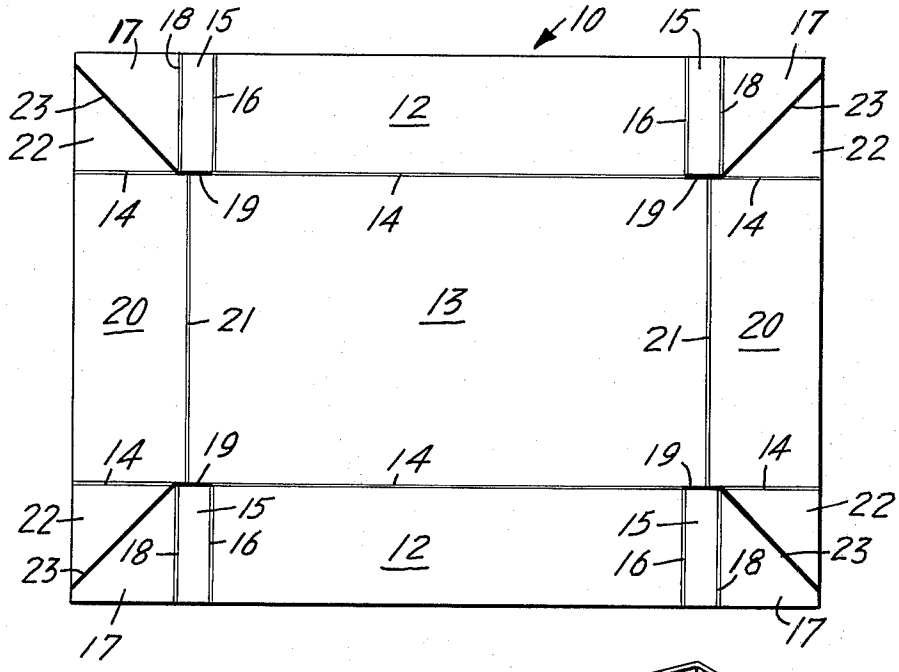


FIG. 2

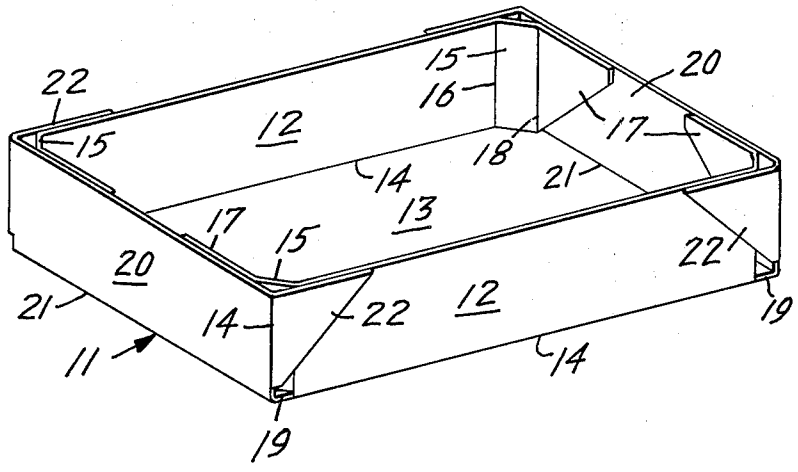


FIG. 3

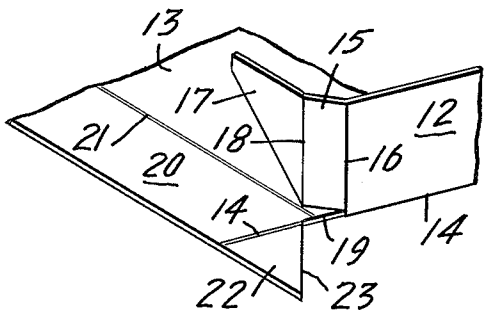


FIG. 4

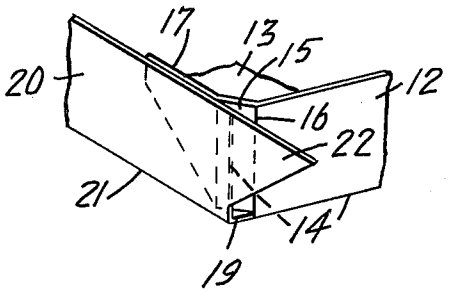


FIG. 5

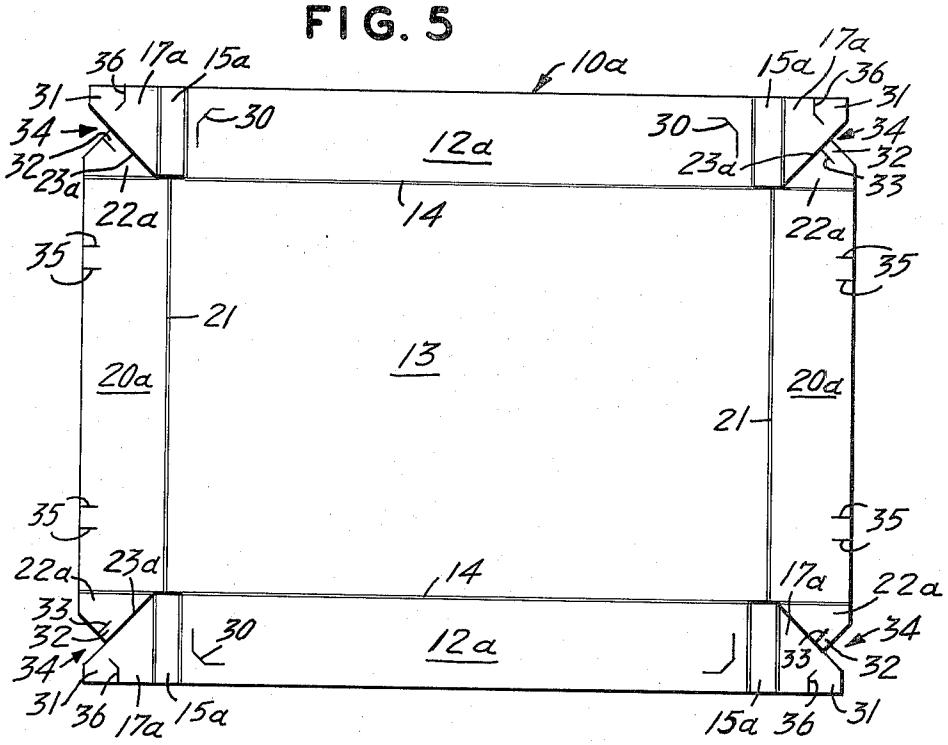


FIG. 6

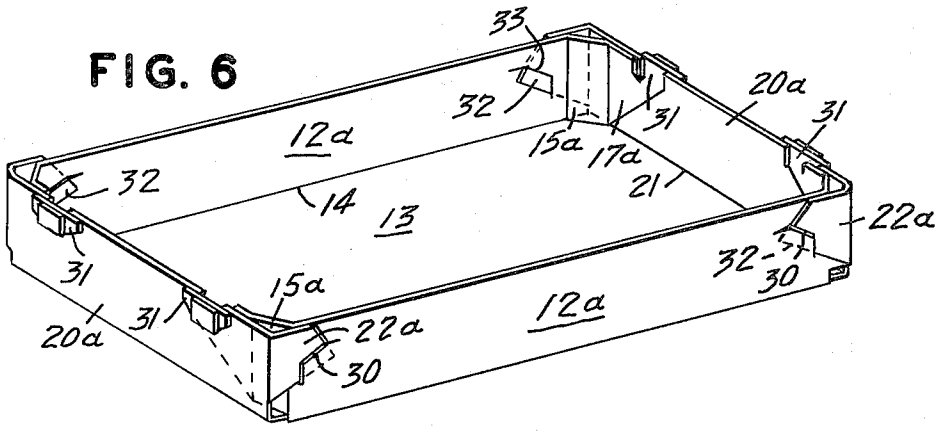


FIG. 7

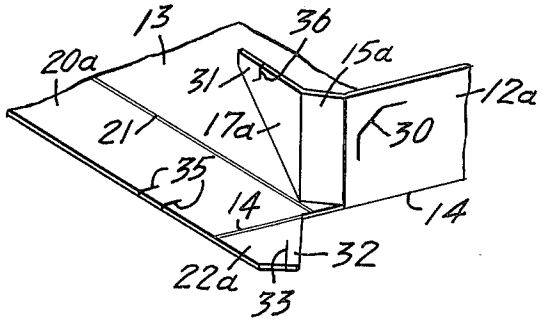
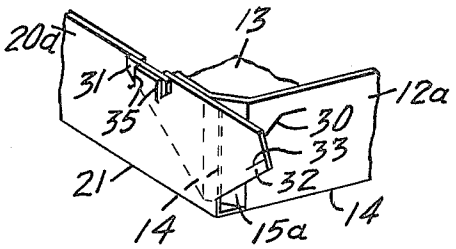


FIG. 8



TRAY WITH REINFORCED CORNER CONSTRUCTION AND BLANK THEREFOR

BACKGROUND OF THE INVENTION

This invention relates to cartons and blanks therefor and more particularly to rectangular paperboard trays with a hollow triangular pillar corner construction formed from unitary substantially rectangular blanks.

Paperboard trays have, of course, gained a wide acceptance in the packaging industry for merchandising a wide variety of products.

It is well known in the packaging industry that trays with a reinforced corner construction are better able to withstand stacking pressure during storage. While several such trays with reinforced corners are known, the blanks and carton construction embodied by this invention are believed to be significantly simpler and more efficient than those heretofore known to the industry.

SUMMARY OF THE INVENTION

I have invented a rectangular paperboard tray and a unitary blank therefor having hollow triangular pillar corners of new and improved simplicity and construction. The interior corner panels of the hollow triangular pillar corners are hingedly connected at opposite sides to side panels and inner corner flaps.

In the first embodiment of my invention the inner corner flaps are glued to the end panels and the outer corner flaps are glued to the side panels. In the second embodiment of my invention, the inner corner flaps are secured to the end panels by pushing the corner tabs of the inner corner flaps through the short parallel slits of the end panels where they are retained. The outer corner flaps are secured to the side panels by pushing the end tabs of the outer corner flaps through the slits of the side panels where they are retained.

Further objects, features and advantages will be apparent from the following detailed description taken in conjunction with the accompanying drawings showing preferred embodiments of the invention for exemplification.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view of a paperboard blank comprising a preferred embodiment of my invention.

FIG. **2** is a perspective view of a rectangular paperboard tray formed from the blank shown in FIG. **1**.

FIGS. **3** and **4** are enlarged fragmentary views showing a corner of the blank of FIG. **1** in two stages of progression from flat blank to the finished corner.

FIG. **5** is a plan view of a paperboard blank having provisions for tab locking corners comprising a second embodiment of my invention.

FIG. **6** is a perspective view of a rectangular paperboard tray formed from the blank shown in FIG. **5**.

FIGS. **7** and **8** are enlarged fragmentary views showing a corner of the blank of FIG. **5** in two stages of progression from flat blank to the finished corner.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIGS. **1** and **2**, the blank **10** shown is suitably cut and scored to provide a rectangular tray **11**. Side panels **12** are hingedly connected to a rectangular bottom panel **13** along a pair of score lines **14**. Interior corner panels **15** are hingedly connected to the side panels along fold lines **16**. Inner corner flaps **17** are

hingedly connected to the interior corner panels along fold lines **18**. The bottom edges of the interior corner flaps are defined by end portion slits **19**. End panels **20** are hingedly connected to the bottom panel **13** along score lines **21**. Outer corner flaps **22** are hingedly connected to the end panels along the score lines **14**. The diagonal edges of the outer corner flaps **22** and the inner corner flaps **17** are defined by the corner slits **23**.

Referring to FIGS. **3** and **4**, a description of the assembly of the blank **10** of FIG. **1** into the tray **11** of FIG. **2** will be given, preferred procedure for one corner being sufficient to demonstrate the assembly for the entire tray.

Referring to FIG. **3**, the side panel **12** is folded upwardly along score line **14** until substantially perpendicular to the bottom panel **13**. The interior corner panel **15** is folded along line **16** until positioned diagonally across the corner formed by the intersection of score line **21** and slit portion **19** whereby the bottom of interior corner panel **15** abuts on bottom panel **13**. The inner corner flap **17** is folded along fold line **18** until it is substantially parallel to score line **21**.

Referring to FIG. **4**, the end panel **20** is folded upwardly along score line **21** until substantially perpendicular to the bottom panel **13**. The outer corner flap **22** is folded along score line **14** until substantially perpendicular to the end panel **20** as illustrated in the completed assembly of FIG. **2**. The inner and outer corner flaps **17** and **22** respectively, are secured to the end and side panels **20** and **12** respectively, by gluing, heatsealing or other suitable means.

Referring to FIGS. **5–8**, the labeling of elements is substantially the same as that used in FIGS. **1–4**. Modified elements are denoted by the subscript *a* and new elements identified by new numbers. Since a basic understanding of the invention has been provided by the description of the first embodiment shown in FIGS. **1–4**, this description will primarily describe the modified and new elements necessary to provide a carton blank and tray with tab locking corners.

Referring to FIGS. **5** and **6**, the inner and outer corner flaps **17***a* and **22***a* are formed by the V-notch cut-outs **34** at the end edges of the blank and are further formed by the corner slits **23***a* which extend diagonally inwardly from the apex of the V-notch cut-outs **34**. The side panels **12***a* have two slits **30** positioned inwardly of the side edges of the blank **10***a* to receive and retain end tabs **32** of the outer corner flaps **22***a*. The end tabs **32** are formed by edge slits **33** substantially perpendicular to the edges of the outer corner flaps **22***a* defined by V-notch cut-outs **34**. The end panels **20***a* have two pairs of short slits **35** extending inwardly from the end edges of the blank **10***a* to receive and retain the corner tabs **31** of the inner corner flaps **17***a*. The corner tabs **31** are formed by slits **36** extending inwardly from the side edges near the corners of the blank **10***a*.

Referring to FIGS. **7** and **8**, a description of the assembly of the tab locking mechanisms for the illustrated corner will be given. When the side panel **12***a* and the inner corner flap **17***a* have been folded as shown in FIGS. **7** and **8**, the corner tab **31** is pushed through the pair of short edge slits **35** and retained there, the corner tab being wider than the opening formed in the side panel **12***a* by the slits **35**. When the outer corner flaps **22***a* has been folded as shown in FIGS. **8** and **6**, the end tab **32** of the outer corner flap **22***a* is pushed through the slit **30** and is retained there,

the end tab **32** catching on the body of the side panel **12***a*.

It should be understood that this invention is not limited to the particular construction herein illustrated and described, but embodies all such modified forms as come within the scope of the following claims.

I claim:

1. A substantially rectangular unitary paperboard carton blank for forming a tray having a hollow triangular pillar corner construction, said blank comprising:

a. a bottom panel,

b. two side panels hingedly connected to said bottom panel along a first pair of parallel score lines,

c. inner and outer corner flaps formed by corner slits extending diagonally inwardly from substantially the corners of said blank to said first pair of score lines and terminating in inwardly extending short end portion slits coincident with said first pair of score lines,

d. interior corner panels hingedly connected at opposite sides to said inner corner flaps and said side panels along fold lines extending substantially from the edge of the blank to said end portion slits, and

e. two end panels hingedly connected to said bottom panel along a second pair of parallel score lines extending perpendicular to and between said end portion slits and to said outer corner flaps along said first pair of score lines.

2. A substantially rectangular paperboard carton blank as specified in claim **1** wherein said outer corner flaps have end tabs formed therein, said side panels have internal slits formed therein for receipt and retention of the end tabs of said outer corner flaps, said inner corner flaps have corner tabs formed therein, and said end panels have pairs of edge slits for receipt and retention of the corner tabs of said inner corner flaps.

3. A substantially rectangular paperboard tray having a hollow, triangular corner pillar construction, said tray comprising:

a. a bottom panel,

b. two side panels hingedly connected to said bottom panel,

c. inner and outer corner flaps,

d. interior corner panels hingedly connected at opposite sides to said inner corner flaps and said side panels, said interior corner panels extending across the corners of the tray in abutment with the bottom panel thereof,

e. two end panels hingedly connected to said bottom panel and to said outer corner flaps, and

f. said inner corner flaps being disposed inside of and attached to said end panels and said outer corner flaps being disposed outside of and attached to said side panels.

4. A substantially rectangular paperboard tray as specified in claim **3** wherein said inner corner flaps are attached to said end panels by corner tabs on said inner corner flaps inserted and retained in pairs of edge slits formed in said end panels, and said outer corner flaps are attached to said side panels by end tabs inserted and retained in internal slits formed in said side panels.

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