United States Patent [19]

Harned

[11] **3,900,104**

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[54] **TRAPEZOIDAL CONTAINER HAVING END-FLAPS THAT WEDGINGLY ENTRAP A TRAY**

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[52] **U.S. Cl.** **206/491;** 206/525; 229/22; 229/8; 229/19; 229/9

[51] **Int. Cl.** **B65d 85/54;** B65d 5/38

[58] **Field of Search** 229/9, 19, 22, 8; 206/521, 206/525, 494, 526, 491

[56] **References Cited**

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[57] **ABSTRACT**

This disclosure relates to a container particularly adapted for the shipment of an assembly which includes a tray having articles packed therein. The container is of a trapezoidal cross section in one direction so as to wedgingly retain the tray in position therein. End flaps of the sloping end walls are so arranged to overlap upper edge portions of the tray to further lock the tray in position within the carton.

11 Claims, 7 Drawing Figures

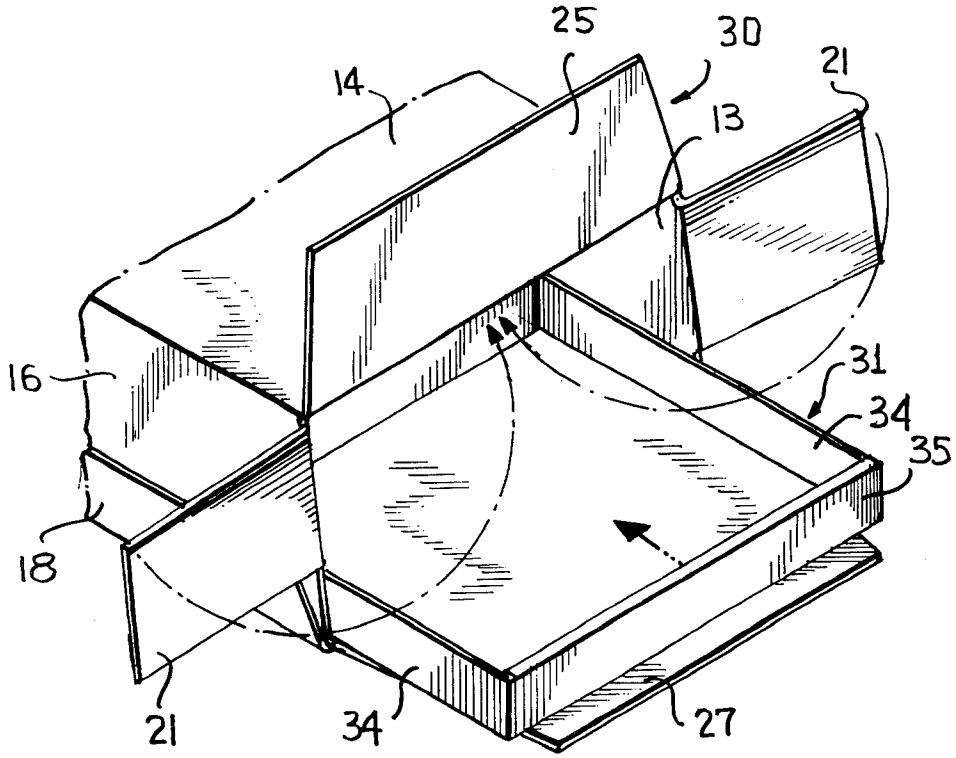
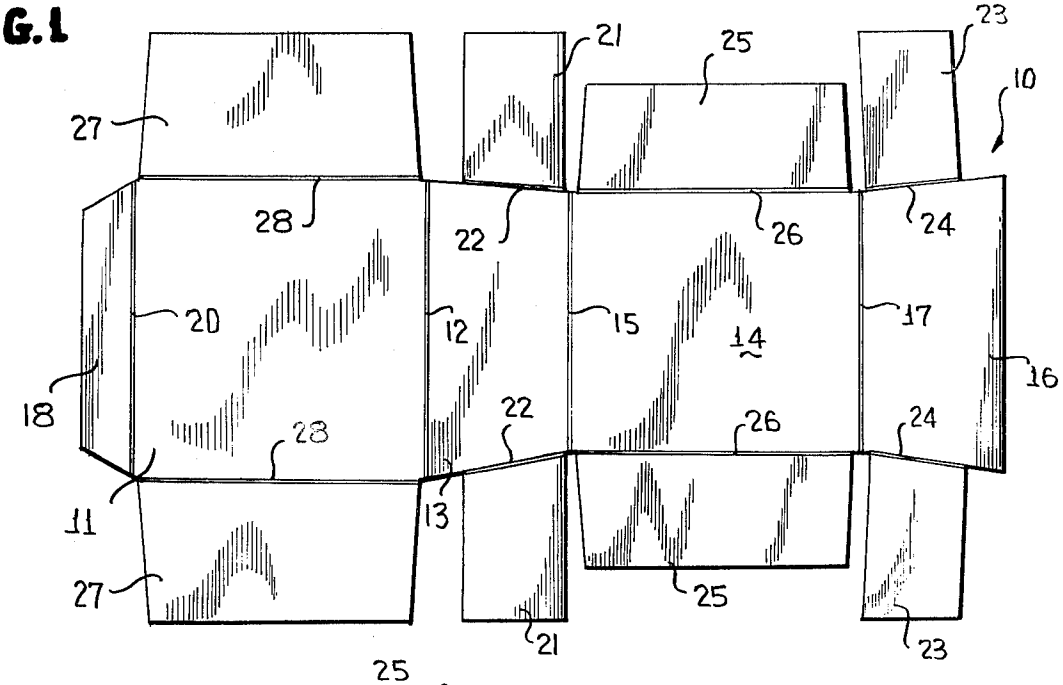


FIG.1



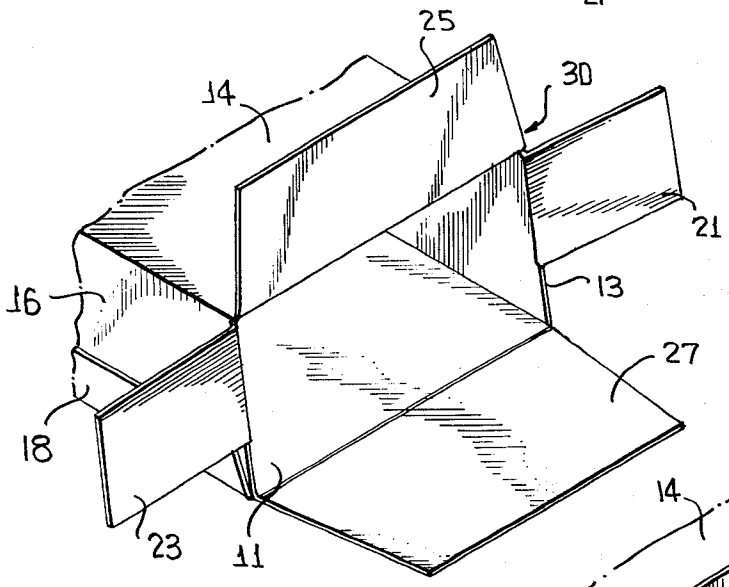


FIG.2

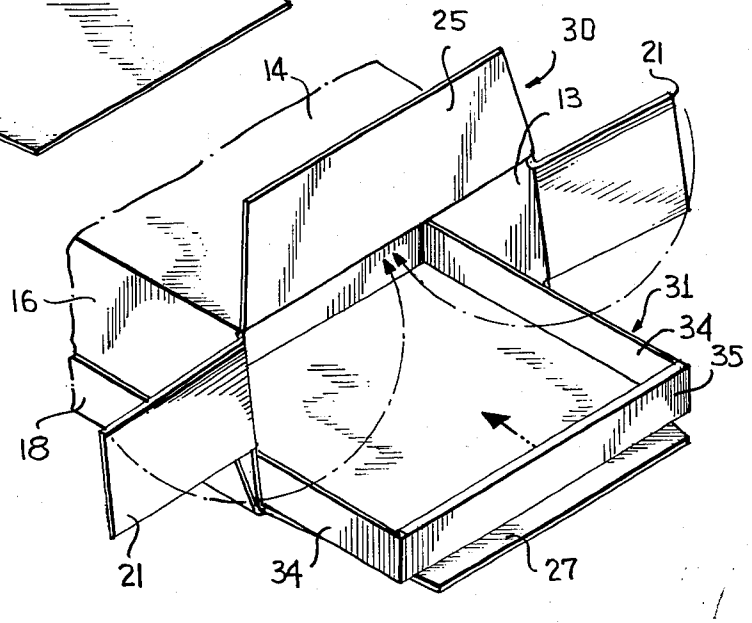


FIG.3

FIG. 4

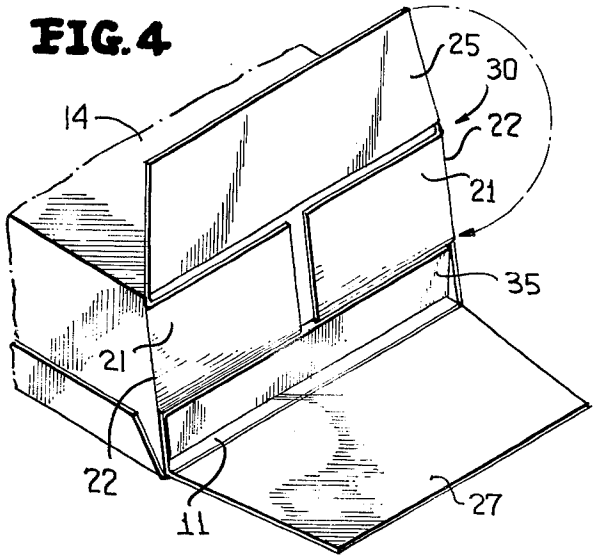


FIG. 5

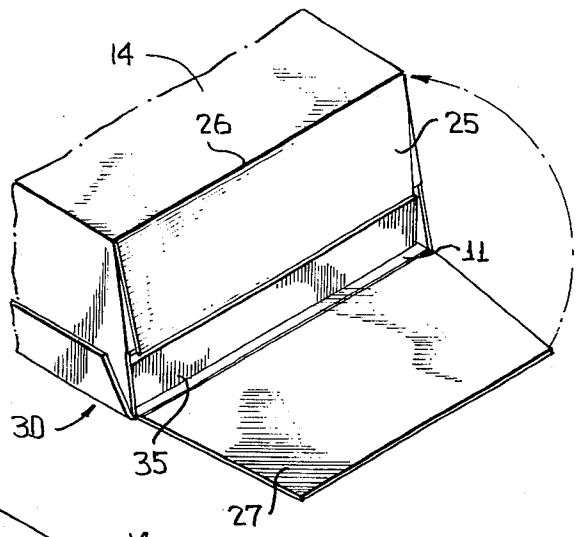


FIG. 6

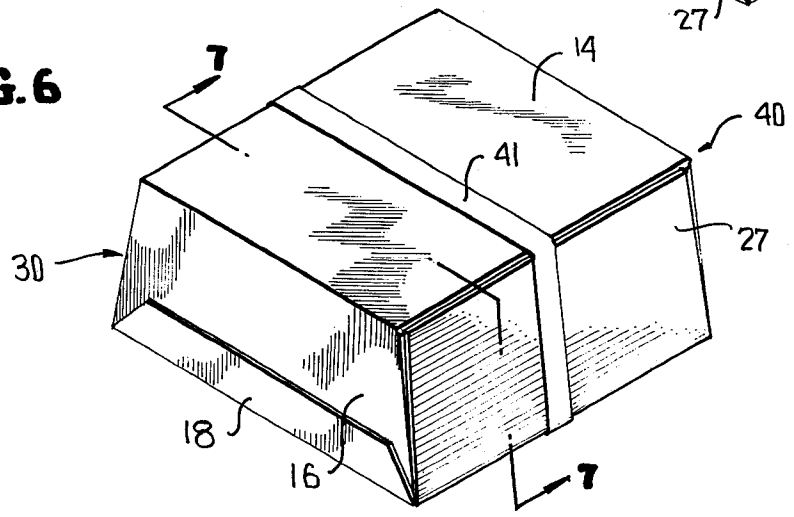
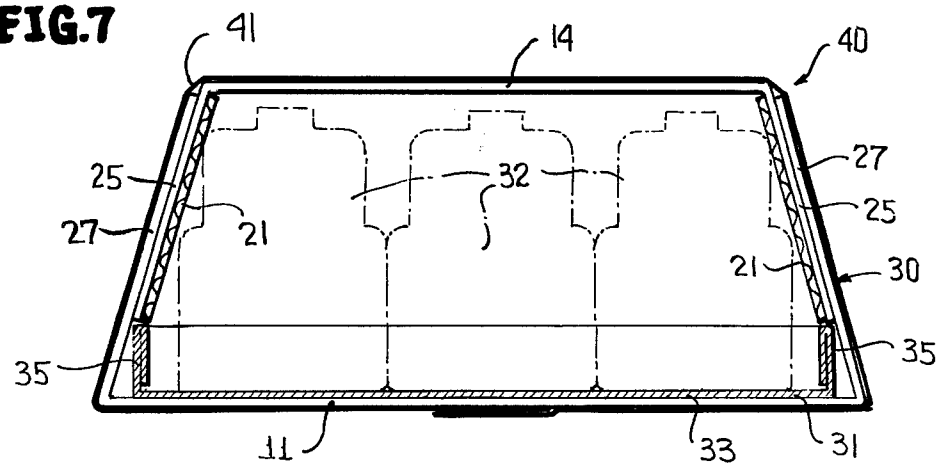


FIG. 7



TRAPEZOIDAL CONTAINER HAVING END-FLAPS THAT WEDGINGLY ENTRAP A TRAY

This invention relates in general to new and useful improvements in containers or cartons, and more particularly to a container or carton particularly adapted for packaging a tray having packed therein a plurality of articles in a manner wherein the tray will remain stationary within the carton.

Normally, containers or cartons are rectangular in cross section. However, when an article other than an rectangular article is to be shipped within such a container, it is necessary to provide suitable spacers within the container in order to prevent shifting of the article therein.

The present invention relates primarily to the problem of packing a tray which has packed therein a plurality of articles, in a manner wherein the tray and packed articles will not shift relative to the container. This is necessary in that when individual packages are shipped, especially by parcel post, the packages are relatively roughly handled and frequently inverted.

In accordance with this invention, the foregoing problem has been solved by providing a container which in one transverse cross section is trapezoidal and thus has sloping ends. The net result is that after the packed tray is slid into the carton through one open end thereof, and that end is closed, the tray is wedged against the bottom wall of the carton by the trapezoidal configuration thereof.

Another feature of the invention is that the open end of the carton is closed by a plurality of flaps which sequentially overlap one another with certain of the flaps being dismensioned to be disposed above the upper surface of the tray and thus form a stationary abutment against which the tray is engaged so as to firmly hold the tray against the bottom wall of the carton.

Another feature of the invention is the fact that the carton blank may be formed from the same size stock as a regular rectangular carton of the size necessary to package the packed tray.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings:

In the drawing:

FIG. 1 is a plan view of a carton blank for forming the carton or container of this invention.

FIG. 2 is a fragmentary perspective view of the erected carton with one end thereof open ready for the reception of a packed tray.

FIG. 3 is a view similar to FIG. 2 and shows a tray being moved into the open carton.

FIG. 4 is a view similar to FIG. 2 showing the first step in closing the open end of the carton.

FIG. 5 is a view similar to FIG. 4 showing the second step in closing the open end of the carton.

FIG. 6 is a perspective view of the completed package.

FIG. 7 is an exaggerated enlarged transverse sectional view taken along the line 7—7 of FIG. 6 and shows the specific relationship of the carton with respect to the packed tray and the manner in which the tray is retained in a fixed position within the carton.

Referring now to the drawings in detail, it will be seen that there is illustrated in FIG. 1 the blank for forming

the carton of this invention, the carton blank being generally identified by the numeral **10.** The carton blank **10** is of a one piece construction and is preferably die cut from corrugated board.

In the preferred embodiment of the carton blank **10,** a rectangular bottom panel **11** is disposed adjacent one end of the carton blank **10** and is connected by means of a transverse fold line **12** to a trapezoidal outline side panel **13.** A rectangular bottom panel **14** is connected to the side panel **13** along a transverse fold line **15.** The bottom panel **14** is of a lesser transverse dimension than the bottom panel **11** but is of the same length. A second trapezoidal side panel **16** is connected to the top panel **14** along a transverse fold line **17.**

The carton blank **10** also includes a securing flap **18** which in the illustrated form of the invention is connected to the bottom panel **11** along a transverse fold line **20,** but in certain instances, could be connected to the side panel **16.**

The carton blank **10** also includes a pair of closure flaps **21** which extend transversely from the side panel **13.** The longitudinal dimension of the flaps **21** is less than that of the side panel **13** and the flaps **21** are connected to the side panel **13** adjacent the fold line **15** remote from the bottom panel **11.** The flaps **21** are connected to the side panel **13** along fold lines **22.**

A similar pair of flaps **23** extend transversely from the side panel **16** and like the flaps **21** are of a lesser longitudinal dimension than the side panel **16.** The flaps **23** are connected to the side panel **16** along fold lines **24** and are positioned closely adjacent the fold line **17.**

A second set of end closure flaps **25** extend transversely from the top panel **14** and are connected thereto along fold lines **26.** It is to be noted that the transverse dimension of the flaps **25** is substantially equal to the longitudinal dimension of the flaps **21, 23.**

Finally, the carton blank **10** includes a pair of end panels **27** which extend transversely from opposite sides of the bottom panel **11** and are connected thereto along fold lines **28.** It is to be noted that the transverse dimension of the end panels **27** is greater than that of the flaps **25** so that the end panels **27** extend substantially the fully height of the resultant carton.

Referring now to FIG. **2,** it is to be understood that a carton **30,** which is formed from the carton blank **10** is formed by a folding of the blank generally at right angles along the fold lines **20, 12, 15** and **17** and by suitably securing the flap **18** against the outer surface of the side panel **16** such as by an adhesive (not shown). If desired, one end of the carton **30** may be closed in advance of the packaging of a product therein.

The carton **30** is particularly configurated for the packaging therein of a tray **31** in which there is securely packed articles **32** (FIG. **7**) securely fixed relative to the tray **31.** The tray **31** is of a rigid construction and includes a bottom wall **33** which has upstanding from opposite sides thereof side walls **34.** The ends of the tray **30** are of a folded double thickness construction and are identified by the numeral **35.**

Referring now to FIG. **3,** it will be seen that the packed tray **31** is slid into the partially closed carton **30** through one thereof, and that the width of the tray **31** is such that the side walls **34** thereof closely contact the inner surfaces of the side panels **13** and **16** of the carton **30.** Thus, the tray **31** is prevented from shifting transversely within the carton **30.**

After the packed tray 31 has been fully inserted within the carton 30, the flaps 21 are swung into a planar condition with the lower edges of the flaps 21 directly overlaying the upper edge of the associated end wall 35 of the tray 31. At this time it is pointed out that inasmuch as the carton 30 is formed of corrugated board, there is a certain "give" in the material which enables the flaps 21 to be generally twisted to the position shown in FIG. 4 although the natural hinging thereof along the fold lines 22 would require a slightly different position.

Referring now to FIG. 5, it will be seen that after the flaps 21 have been folded into place, the flap 25 is swung down about its fold line 26 with the lower edge of the flap 25 being disposed immediately above the upper edge of the end wall 35 of the tray to further lock the tray down against the bottom panel 11 of the carton. If desired, the flap 25 may be suitably adhesively secured to the flaps 21.

Thereafter, the end panel 27 is folded up into overlapping relation with respect to the flap 25. The flap 27 engages the outer surface of the end wall 35 of the tray, as is shown in FIG. 7, and prevents the longitudinal shifting of the tray within the carton 30. If desired, the end panel 27 may be suitably secured to the flap 25 such as by way of a suitable adhesive.

Reference is now made to FIG. 6 wherein the completed package, which is identified by the numeral 40, is shown. It is to be noted that the package 40 is completed by wrapping a suitable binding tape 41 longitudinally about the carton 30 and thus assuring the securing in place of the flaps and panel at each end of the carton 30. The tape 41 if desired, may be the only securing means for retaining the carton 30 in its closed condition.

Referring now to the exaggerated showing of FIG. 7, it will be seen that the tray 31 is wedgingly retained within the carton 30 by the end panels 27 so that the tray 31 cannot shift towards the ends of the carton and further to retain the tray seated on the bottom panel 11 of the carton. Further, the flaps 21 and 25 overlie the double thickness end walls 35 of the tray 31 and further retain the tray 31 seated against the bottom panel 11 of the carton. Thus, even though the package 40 may be turned upside down during handling, the relative position of the tray and the articles packaged therein with respect to the carton will remain the same. Accordingly, the package 40 may be subjected to rather severe handling without damage to the articles packaged in the tray.

Although only a preferred embodiment of the invention has been specifically illustrated and described herein, it is to be understood that minor variations may be made in the carton construction and the relationship thereof with respect to the tray without departing from the spirit and scope of the invention, as defined by the appended claims.

I claim:

1. A package comprising a product and an enclosing container fully enclosing said product, said product including a tray having articles packed therein with opposite ends of said tray projecting beyond said articles, said container having side walls and ends closed by end walls, said container side walls being trapezoidal and said container end walls sloping towards one another remote from said tray and forming means wedgingly entrapping said tray.

2. The package of claim 1 wherein both ends of said container are of the open type and said end walls include flaps, said tray including ends each having a free edge, and at least one of said flaps of each end wall of said container having a lower edge directly overlying said tray free edge.

3. The package of claim 1 wherein at least one of said container ends if of the open type and the respective one of said end walls includes flaps, said tray including an end at said container open end having a free edge, and at least one of said flaps having a lower edge directly overlying said tray free edge.

4. The package of claim 3 wherein said flaps include opposed flaps swingable together above said tray edge, and a third flap swingable generally at right angles to said two flaps into overlying relation to said two flaps and above said tray edge.

5. The package of claim 4 wherein there is a fourth flap generally abutting said tray end and overlapping said third flap.

6. The package of claim 4 wherein said opposed flaps are connected to said side walls only above said tray.

7. The package of claim 1 wherein said container walls are generally parallel to one another.

8. An enclosing container including a bottom, top, sides and ends combining to define a complete enclosure, said sides being trapezoidal and said ends sloping towards one another, and at least one of said ends is of the openable type, said sloping of said ends together being towards said top, said one end being defined by flaps securable to one another in stacked relation with innermost ones of said flaps having lower edges spaced above said bottom for retaining an article generally seated on said bottom.

9. A one-piece carton blank comprising generally rectangular bottom and top panels having substantially like lengths and different widths, a first trapezoidal side panel connecting said bottom and top panels and a second trapezoidal side panel connected to one of said top and bottom panels, first end flaps connected to opposite ends of each side panel, second end flaps connected to opposite ends of said top panel, and third end flaps secured to opposite ends of said bottom panels.

10. The carton blank of claim 9 wherein said first ends flaps are of a width generally equal to one half the width of said second and third end flaps.

11. The carton blank of claim 9 wherein said first and second and third end flaps have progressively increasing widths.

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