

[54] **DISPLAY CARTON WITH LOCKING FLAPS**

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[51] Int. Cl. **B65d 5/10**, B65d 85/00

[58] Field of Search 206/45.14, 45.31, 206/45.19, 46 F, 65 R, 65 C; 229/40, 39 B, 39 R, 34 FS, 51 TS

[56]

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[57]

ABSTRACT

A carton construction having at least one open end for display of a tray contained therein, featuring a new end construction designed to hold the tray in place within the carton. The carton end construction includes a restraining panel, biased against a sidewall of the tray, hingedly connected to the bottom panel of the carton and extending inwardly of the carton, and two locking flaps hingedly connected to the side panels of the carton and extending inwardly of the carton. The end construction especially features a pair of engaging flaps extending laterally from the restraining panel. The locking flaps overlie the engaging flaps within the carton, thereby restricting lateral movement of the tray with respect to the restraining panel.

10 Claims, 12 Drawing Figures

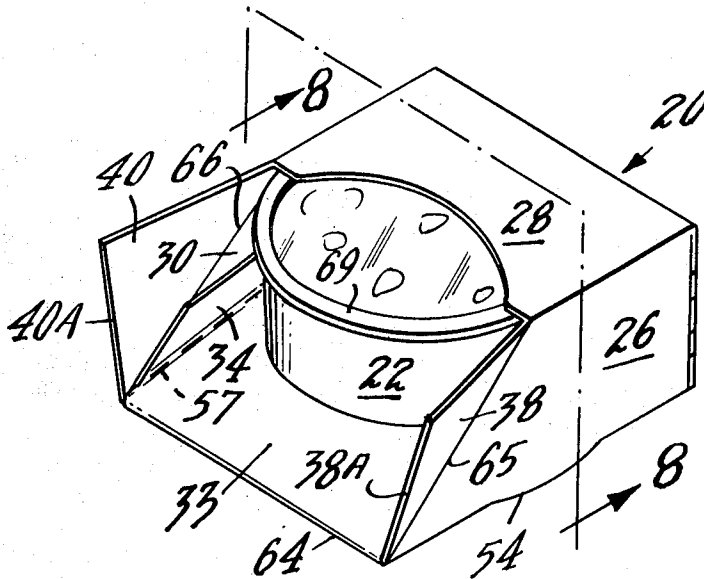


FIG. 1

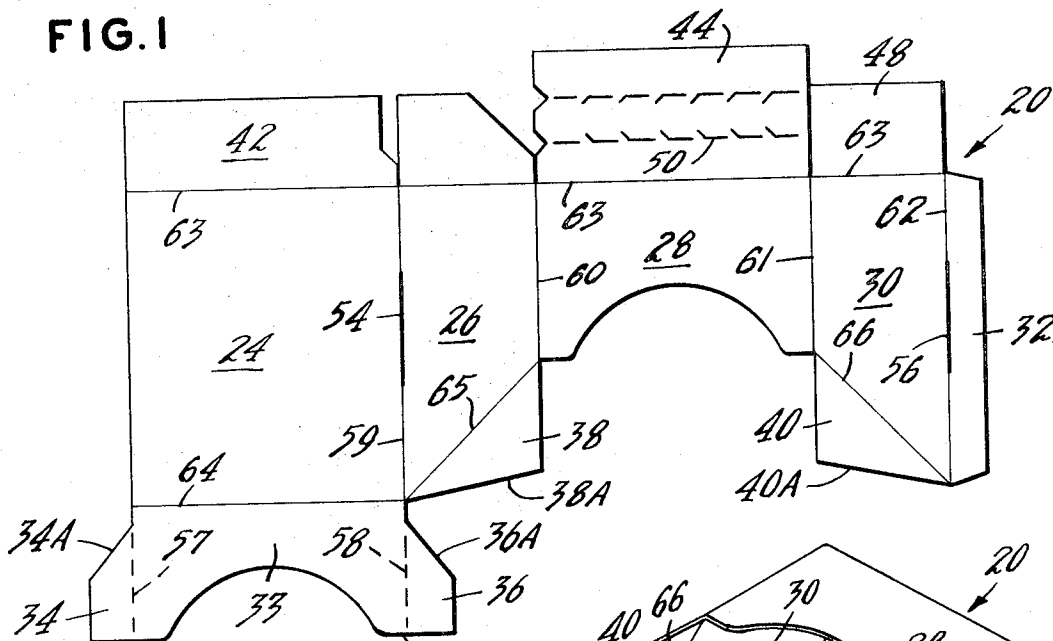


FIG. 2

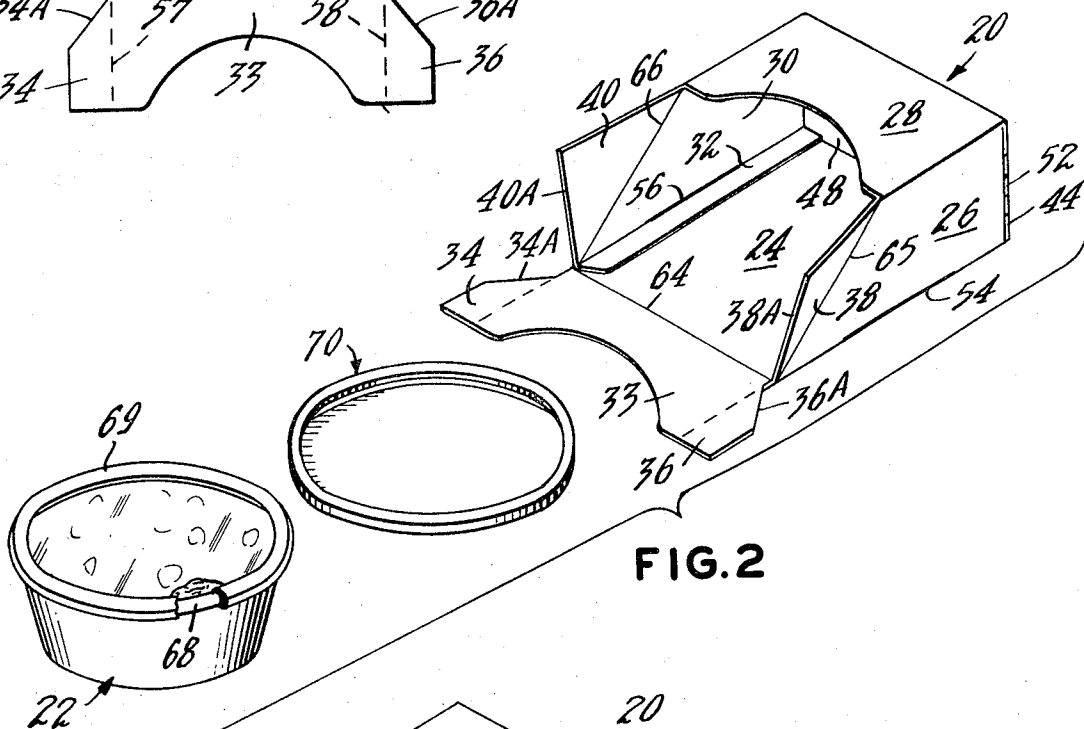
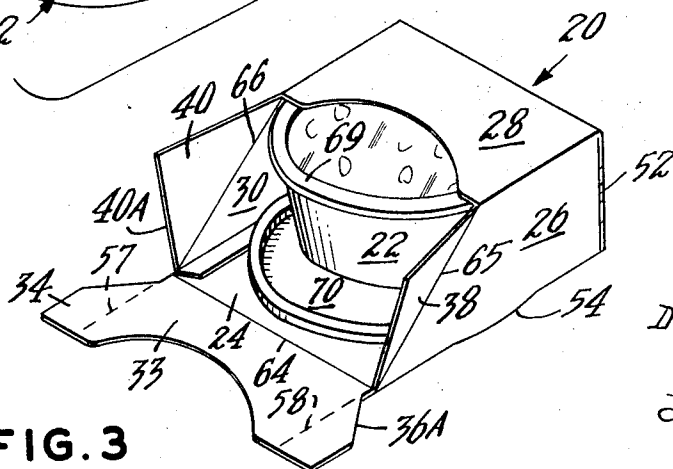


FIG. 3



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FIG. 4

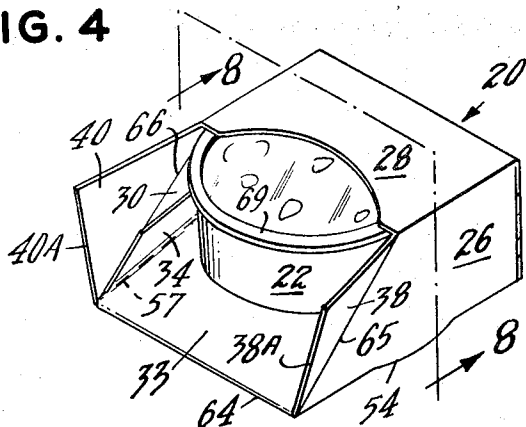


FIG. 5

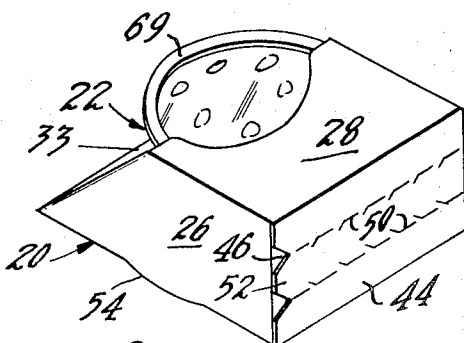
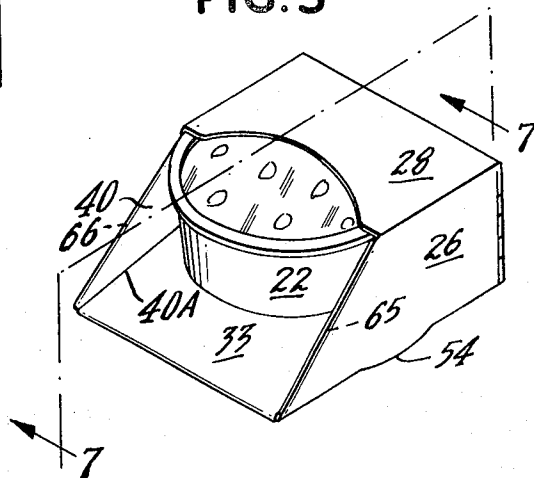


FIG. 6

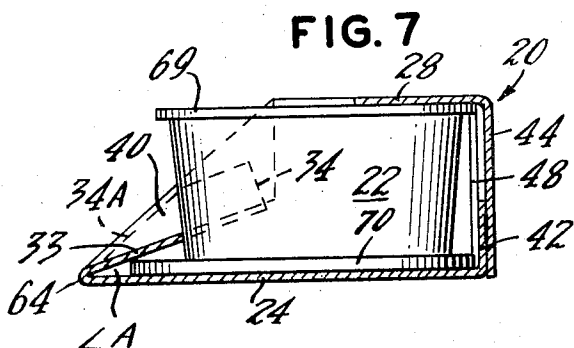


FIG. 7

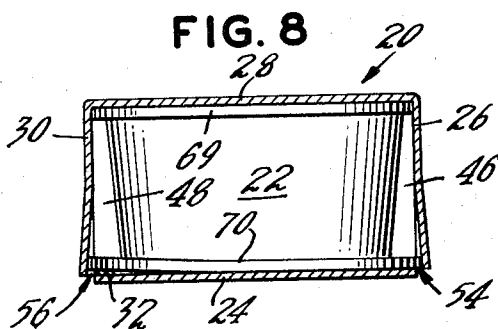


FIG. 8

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DISPLAY CARTON WITH LOCKING FLAPS

BACKGROUND OF THE INVENTION

In recent years there has been wide consumer acceptance of packages comprising open end cartons having therein a tray or tub, usually with a transparent top closure, containing comestible therein. The sidewalls of such trays or tubs have typically been tapered outwardly from the bottom to the top for ease of filling. In addition, the trays or tubs have usually been provided with an annular flange about the top thereof to create a greater overall tapered effect in the finished tray or tub.

Unfortunately, the above described carton, tapered tray and closure thereon have usually been relatively susceptible to damage from the ordinary abuse associated with transporting these packages from the factory to the consumer. There has also been an additional problem of the consumer not seeing enough of the tray within the carton. Furthermore, the tendency of the tray to bounce around in the package has created doubts in the consumers' minds as to the size and nature of the contents of the package, thereby discouraging the sale of the comestible in carton packages.

These and other problems are overcome by the instant invention which employs a novel locking design which allows a substantial portion of the tray or tub to be viewed while it is protected and held firmly within the open end carton.

SUMMARY OF THE INVENTION

The present invention provides a suitably cut and scored paperboard blank capable of being erected into a display carton for a tapered tray or tub. The blank comprises a plurality of hingedly connected, carton forming panels, including a bottom panel, a first side adjacent said bottom panel, a top panel adjacent the first side panel, a second side panel adjacent the top panel, and a glue flap adjacent the second side panel. The blank also comprises a restraining panel hingedly connected to the lower edge of the bottom panel and contoured to restrict lateral movement of the tray or tub with respect to the restraining panel.

The carton blank further comprises a first and a second locking flap, each hingedly connected respectively to the lower edges of the first and second side panels, and a pair of engaging flaps extending laterally from the restraining panel.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a paperboard blank to be formed into an open end display carton.

FIG. 2 is a perspective view of the blank of FIG. 1 partially erected into an open end carton and ready to receive a sealed tub and top closure thereof.

FIG. 3 is a perspective view similar to FIG. 2 but with the tub sitting on its top closure, both now within the carton.

FIG. 4 is a perspective view similar to FIG. 3 showing the carton partially enclosed about the tub and top closure thereof.

FIG. 5 is a perspective view similar to FIG. 4 showing the carton completely enclosed about the tub and top closure thereof.

FIG. 6 is a perspective view of the closed end portion of the carton in FIG. 5.

FIG. 7 is a sectional view taken on the vertical plane indicated by the line 7-7 of FIG. 5.

FIG. 8 is a sectional view taken on the vertical plane indicated by the line 8-8 of FIG. 4.

FIG. 9 is a plan view of an alternative paperboard blank to be formed into a display carton having both ends open.

FIG. 10 is a fragmentary, perspective view of the partially erected blank of FIG. 9 with a tapered tray inserted therein.

FIG. 11 is a fragmentary, perspective view of an end portion of the carton of FIG. 10 showing the restraining panel folded inwardly against the tray.

FIG. 12 is a fragmentary, perspective view of the carton of FIG. 11 completely enclosed about the tray therein.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A tapered tray is defined to include trays having circular cross sections, such as tubs.

As a preferred or exemplary embodiment of the instant invention, FIG. 1 shows a blank, generally designated 20, to be erected into a display carton, also generally designated 20, for a tapered tray, designated 22 (FIG. 2). The blank 20 is made from any relatively inexpensive, rigid material, such as paperboard or plastic, that is capable of affording satisfactory protection and decoration to the tapered tray to be enclosed in the erected display carton 20.

For the tray 22 to be sufficiently visible to the consumer, the end construction of this invention need be provided at only one end of the carton.

As shown in FIG. 1, the blank 20 includes the following hingedly connected panel members: a bottom panel 24, a first side panel 26, a top panel 28, a second side panel 30, and a glue flap 32. Hingedly attached to the bottom panel 24 is a restraining panel 33 having a pair of hingedly connected, lateral engaging flaps 34 and 36. A pair of locking flaps 38 and 40 are hingedly connected respectively to the side panels 26 and 30. A first end flap 42 is hingedly connected to the bottom panel 24, while a second end flap 44 is hingedly connected to the top panel 28. A first dust flap 46 and a second dust flap 48 are hingedly connected respectively to the first and second side panels 26 and 30. The panel and flap members are capable of hinged movement relative to each other due to scored or otherwise formed hinge lines or lines of weakness 57 - 66 lying between adjacent panel or flap members.

The blank in FIG. 1 is further provided with a zipper pattern 50 in the second end flap 44, comprising a plurality of cut lines and defining therein a pull tab 52. The pull tab 52 and the zipper pattern 50 are designed to enable easy opening of the carton 20 through the closed end of the carton 20.

The blank 20 is also provided with a pair of slits 54 and 56, slit 54 being located on the hinge line 59 between the bottom panel 24 and the first side panel 26, and slit 56 being located on the hinge line 62 between the second side panel 30 and the glue flap 32.

The blank 20 is still further provided on the exterior surface of the glue flap 32 with an adhesive capable of holding the glue flap 32 to the bottom panel 24. The adhesive selected may be either pressure sensitive or heat sensitive, the former being preferable if the erected carton is to be stored for a length of time and

the latter being preferable if the blank is to be stored before forming the erected carton.

As seen in FIG. 1, an acute angle is formed by the hinge lines 57 and 58 between the restraining panel 33 and the engaging flaps 34 and 36 respectively, and the free edges 34A and 36A most adjacent the bottom panel 24 of each engaging flap 34 and 36, respectively. Also, the hinge line 66 between the second side panel 30 and the second locking flap 40 forms an acute angle with the hinge line 62 between the second side panel 30 and the glue flap 32. Similarly, the hinge line 65 between the first side panel 26 and the first locking flap 38 forms the same acute angle with the hinge line 59 between the first side panel 26 and the bottom panel 24.

FIG. 1 shows the lower portion of the top panel 28 as cut away, but the configuration of the top panel 28 could be almost any design, and could be extended to lie adjacent the angle cut edges 38A and 40A. For maximum display purposes, however, it is preferable that the top panel 28 extend no further than the intersection of the hinge lines 60 and 61 between the top panel 28 and side panels 26 and 30 with the hinge lines 65 and 66 respectively between the side panels 26 and 30 respectively and their respective locking flaps 38 and 40.

Shown in FIG. 2 is the blank 20 partially erected into a carton 20, the bottom panel 24 being adhesively secured to and overlapping the glue flap 32. The dust flaps 46 and 48 are folded inwardly about the hinge line 63 to lie in a common plane. The first end flap 42 is also folded inwardly about hinge line 63 to overlie the dust flaps 46 and 48. The second end flap 44 is also folded inwardly about hinge line 63 and adheres to the underlying first end flap 42 by means of an adhesive coated on the interior surface of the free edge of the second end flap 44. As the carton 20 is initially erected, the restraining panel 33 and the engaging flaps 34 and 36 are shown extending outwardly of the carton 20. Also shown in FIG. 2 are the sealed tapered tray 22 and the top closure 70 thereof. The tray 22 is generally sealed initially by a transparent film across the open top of the tray 22. A snap ring 69 secures the film to the tray 22. The top closure 70 is included in the package for reclosure of the tray 22 after removal of the sealing film.

After the blank 20 is erected as shown in FIG. 2, the top closure 70 with the tray 22 sitting thereon is inserted into the carton 20 (FIG. 3). The slits 54 and 56 secure the top closure 70 in a stable position. The side panels 26 and 30 are so positioned relative to each other as to restrict movement of the tray 22 therebetween.

It should be obvious that the novel end construction of the instant invention is not limited to tapered trays nor to rounded tray corners. However, both rounded tray corners and tapered tray sidewalls have been found preferable in connection with the preferred embodiments of the carton of the instant invention. It should also be obvious that the restraining panel 33, the locking flaps 38 and 40, and the engaging flaps 34 and 36 could easily be adapted to accommodate non-rounded corners and non-tapered trays.

As shown in FIG. 4, after the tray 22 and top closure 70 are inserted into the carton 20, the restraining panel 33 is hingedly rotated about hinge line 64 inwardly of the carton 20 until the restraining panel 33 is biased against the tray 22. As the restraining panel 33 is so hingedly rotated, the engaging flaps 34 and 36 are

hingedly rotated respectively about hinge lines 57 and 58 so that the free edges of the engaging flaps 34 and 36 are visible. The restraining panel 33 is designed to urge the tray 22 inwardly of the carton 20 and to obstruct movement of the tray 22 outwardly of the carton 20 through the substantially open end thereof. The contour of the portion of the restraining panel 33 which contacts the tray 22 is adapted to closely surround the tray 22 to provide a cradling effect when the restraining panel 33 is biased there against. The cradling effect is intended to restrain lateral movement of the tray 22 within the carton 20.

The positioning of the top closure 70 beneath the tray 22 but on the bottom panel 24 helps the restraining panel 33 to remain in its biased position rather than tend to lie in a plane with the bottom panel 24. However, it should be noted that all folded paperboard had "fight," that is, a tendency to revert to its original position, or resistance to lying in a creased position. Thus, there is no real danger of the restraining panel 33 lying in the plane of the bottom panel 24 in the absence of a top closure beneath the tray 22.

The height of the restraining panel 33, i.e. the distance between score line 64 and the most remote free edge of the panel 33, is designed such that the restraining panel 33 does not strike the top panel 28 or the tray flange 68 when the restraining panel 33 is hingedly rotated inwardly of the carton 20 about score line 64. The contour of the free edge of the restraining panel 33 is adapted so that the panel 33 passes relatively freely between the side panels 26 and 30 and the tray 22 when the restraining panel 33 is hingedly rotated inwardly of the carton 20.

After the restraining panel 33 and the engaging flaps 34 and 36 thereon are positioned, substantially cradling the tray 22 as shown in FIG. 4, the locking flaps 38 and 40 are hingedly rotated respectively about hinge lines 65 and 66 and are urged inwardly of the carton 20 (FIG. 5). In this manner, the locking flaps 38 and 40 overlie the engaging flaps 36 and 34 respectively, thereby achieving complete security of the tray 22 and top closure 70 within the carton 20.

In order for the locking flaps 38 and 40 to pass inwardly of the carton 20 over the restraining panel 33 without substantial hindrance from the restraining panel 33, the locking flaps 38 and 40 include angle cut edges 38A and 40A respectively. The angle cut edges 38A and 40A are adapted to just pass over the surface of the restraining panel 33 as the locking flaps 38 and 40 are moved inwardly of the carton 20. As shown in FIG. 7, the restraining panel 33, when biased against the tray 22, forms an acute angle A relative to the bottom panel 24.

FIG. 8 shows how slits 54 and 56 accommodate the top closure 70, and secure it within the carton 20.

FIGS. 9 - 12 illustrate an alternative embodiment, which is more closed than that shown in FIGS. 1 - 8, but one which nevertheless utilizes the novel open end construction of the instant invention.

The blank 110, shown in FIG. 9, as well as the partially erected carton 110, shown in FIG. 10, are substantially symmetrical about their lateral midsections. The blank and carton 110 are symmetrically provided with the end construction of the instant invention at both ends, enabling the consumer to see the tray 130 inside the formed carton 110 through either end thereof. However, for the tray 130 to be sufficiently vis-

ible to satisfy a consumer, it is believed that the end construction of the instant invention need be provided at only one end of the carton 110, it not being necessary that the blank and carton 110 of the instant invention be symmetrical. Because the provision of symmetrical end constructions in the blank and carton 110 is considered optional, only half of the carton 110 is shown in FIGS. 10 - 12, and the following discussion of the alternative embodiment will similarly concern only one half of the carton 110, although it is intended to be applicable to the other half thereof.

As shown in FIG. 9, the paperboard blank 110 to be formed into the paper board carton 110 includes the following hingedly connected panel members: a second side panel 114, a top panel 113, a first side panel 112, a bottom panel 111, and a glue flap 115. Hingedly attached to the bottom panel 111 is a restraining panel 116, and hingedly attached to each side panel 112 and 114 is a locking flap 117. Two engaging flaps 135 are hingedly attached to each restraining panel 116. The panel and flap members are capable of hinged movement relative to each other due to scored or otherwise formed hinge lines or lines of weakness lying between adjacent panel members, a first hinge line 127 being located between the restraining panel 116 and the bottom panel 111, a second hinge line 129 being located between the side panels 112 and 114 and each locking flap 117, and a third hinge line 136 located on the longitudinal edges of the bottom panel 111.

The blank 110 in FIG. 9 is further provided with a zipper pattern 122 in the first side panel 112, consisting of a plurality of cut lines, and with a preweakened, removable area 118. The zipper pattern 122 and the removable area 118 are adapted to permit the completed carton 110 to be easily destroyed by tearing the first side panel 112 apart along the zipper pattern 122, the removable area 118 promoting the grasping and tearing of the first side panel 112.

The blank 110 is still further provided on the exterior surface of the glue flap 115 with an adhesive capable of holding the glue flap 115 to the bottom panel 111.

Shown in FIG. 10 is the paper board carton 110 formed from the just described blank 110, the bottom panel 111 being adhesively secured to and overlapping the glue flap 115. Because the panels and flaps are hingedly connected in the blank 110, the carton 110 may be formed with relative ease by securing the glue flap 115 to the bottom panel 111. As the carton 110 is initially formed, the restraining panel 116 and the locking flaps 117 are shown extending outwardly of the paperboard carton 110.

The restraining panel 116 is provided with two outwardly or longitudinally extending fingers 126, which fingers extend from the lateral portions of the restraining panel 116. The exact placement and configuration of the fingers 126 will be hereinafter more fully described.

After the carton 110 is formed, a tapered tray 130 is inserted therein, the smaller, bottom portion of the tray resting on the bottom panel 111 and the larger, top portion of the tray being located in proximity to the top panel 113. Movement of the tray 130 is restrained somewhat by closing one end of the carton 110 in a manner appropriate to the construction of the end. The method used to close this first end will, of course, correspond to the method used to form the end construction of the instant invention if the carton is symmetri-

cal. The exact method of forming the end construction of the carton 110 of the instant invention will be hereinafter explained with reference to FIGS. 11 and 12.

With regard to the structure of the tapered tray 130 to be inserted into the carton 110, only several portions thereof are important to the cradling effect of the end construction of the instant invention. The important portions of the tray 130, which will be hereinafter referred to, are as follows: the tray end panels 131 which are the portions of the tray 130 that can be seen through the end construction of the carton 110; the tray side panels (not shown); the rounded tray corners 132 which constitute the areas of the tray between the tray end panels 131 and the tray side panels; and the tray flange 134 which surrounds the top of the tapered tray 130.

As shown in FIG. 11, after the tray 130 is inserted in the carton 110, the restraining panel 116 is hingedly rotated about hinge line 127 inwardly of the carton 110 until the restraining panel 116 is biased against the tray end panel 131. As the restraining panel 116 is so hingedly rotated, the engaging flaps 135 are hingedly rotated about the third hinge lines 136 so that the free edges of the engaging flaps 135 are visible. The restraining panel 116 is designed to urge the tray 130 inwardly of the carton 110 and to obstruct movement of the tray 130 outwardly of the carton 110 through the substantially open end thereof. The fingers 126 on the restraining panel 116 are adapted to closely surround the tray corners 132 and the lateral portions of the tray side panels to provide a cradling effect for the tray end panel 131 when the restraining panel 116 is biased there against. The cradling effect is intended to restrain lateral movement of the tray 130 within the carton 110, the fingers 126 extending laterally of the tray end panel 131, inwardly of the carton 110. Because the length of the fingers 126 is relatively limited by the height of the tray 130, the principal restraining action of the fingers 126 is directed to the tray corners 132. To insure, in a relatively low carton, the cradling effect of the fingers 126 and the restraining effect of the restraining panel 116 against portions of the tray 130, the fingers 126 and the restraining panel 116 are relatively closely shaped to the contours of the tray corners 132 and the tray end panels 131, respectively. Thereby, when the restraining panel 116 is biased against the tray 130, the tray 130 is restrained against both lateral and longitudinal movements relative to the carton 110 and the end construction of the instant invention.

The length of each finger 126, is of course, adapted so that it does not strike the top panel 113 or the tray flange 134 when the restraining panel 116 is rotated inwardly of the carton 110. The width of each finger 126 is adapted so that it passes relatively freely between the side panels 112 and 114 and the tray side panels when the restraining panel 116 is rotated inwardly of the carton 110. The length and width of each finger 126 depends then on the dimensions of the tray 130, the carton 110 and the relative position of the tray 130 in the carton 110 when the restraining panel 116 is folded inwardly of the carton 110.

After the restraining panel 116, the fingers 126 and engaging flaps 135 thereon are positioned, substantially cradling the end panel 131 of the tray 130 as shown in FIG. 11, the pair of locking flaps 117 is hingedly rotated about the second hinge line 129 and is urged inwardly of the carton 110. In order for the locking flap

117 to pass inwardly of the carton 110 over the restraining panel 116 without substantial hindrance from the restraining panel 116, the locking flap 117 includes a first angle cut edge 117A, which is adapted to just pass over the surface of the restraining panel 116 as the locking flap 117 is moved inwardly of the carton 110.

A second angle cut edge 117B is also included on the locking flap 117, which is adapted to provide the proper amount of surplusage of paperboard at this lateral, free edge 117B of locking flap 117, the lateral surplusage portions associated with the second angle cut edge 117B hindering rotational movement of the locking flap 117, past the tray corner 132, into and out of the locking position thereof. By locking position is meant the location of the locking flaps 117 between the tray side panel and the carton side panels 112 and 114, as shown in FIG. 12. The lateral surplusage portions of the locking flap 117 are bent outwardly of the carton 110 as the locking flap 117 is urged past the tray corner 132 into the locking position inwardly of the carton 110. These lateral portions of the locking flap 117 tend to be biased against the tray side panels in the locking position due to the resiliency of the paperboard hinge urging the locking flap 117 outwardly of the carton 110. In spite of the resiliency of the hinge of locking flap 117, however, it cannot swing back outwardly of the carton 110 once it has been forced into its locking position because it is restrained by the tray corner 132.

A third angle cut edge 117C is further included in locking flap 117. In this carton 110, however, the third edge 117C is merely adapted to avoid having the locking flap 117 strike the tray flange 134 when the locking flap 117 is rotated inwardly of the carton 110.

The engaging flaps 135 function in this alternative carton 110 in the same manner as they do in the preferred carton embodiment 20.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of the parts of the article and that changes may be made in the steps of the method described and their order of accomplishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

What is claimed is:

1. A suitably cut and scored blank capable of being erected into a display carton for a tray, comprising:
 - a plurality of hingedly connected, carton forming panels, including a bottom panel, a first side panel adjacent said bottom panel, a top panel adjacent the first side panel, a second side panel adjacent the top panel, and a glue flap adjacent said second side panel, and wherein the edge of the first side panel adjacent the top panel is shorter than the edge of the first side panel adjacent the bottom panel;
 - a restraining panel hingedly connected to the lower edge of said bottom panel and contoured to restrict lateral movement of the tray with respect to the restraining panel;
 - a locking flap hingedly connected to the angled lower edge of said first side panel, said locking flap having an angle cut lower edge which forms an acute angle with the edge of the first side panel adjacent the bottom panel; and

an engaging flap adjacent the locking flap and extending laterally from the restraining panel.

2. The blank of claim 1 wherein the tray is tapered.

3. The blank of claim 1 wherein an acute angle is formed by the hinge line between the restraining panel and the engaging flap and the free edge of the engaging flap most adjacent the bottom panel, and additionally comprising end flaps hingedly connected to the upper edges of the top and bottom panels, and dust flaps hingedly connected to the upper edges of both side panels.

4. The blank of claim 3 wherein the top panel extends no further than the intersection of the hinge line between the top panel and the first side panel with the hinge line between said first side panel and the locking flap.

5. The blank of claim 4 wherein the top panel end flap includes a herring bone zipper strip with a pull tab.

6. A carton erected from the blank of claim 5, wherein the restraining panel is folded inwardly of the carton adjacent the bottom panel, and the locking flap is also folded inwardly of the carton and overlies the engaging flap.

7. A carton erected from the blank of claim 1, wherein the restraining panel is folded inwardly of the carton adjacent the bottom panel, and the locking flap is also folded inwardly of the carton and overlies the engaging flap.

8. In combination, a display carton and a tapered tray firmly held within the carton, said carton having been erected from a suitably cut and scored blank capable of being erected into a display carton for a tray, comprising:

a plurality of hingedly connected, carton forming panels, including a bottom panel, a first side panel adjacent said bottom panel, a top panel adjacent the first side panel, a second side panel adjacent the top panel, and a glue flap adjacent said second side panel, and wherein the edge of the first side panel adjacent the top panel is shorter than the edge of the first side panel adjacent the bottom panel;

a restraining panel hingedly connected to the lower edge of said bottom panel and contoured to restrict lateral movement of the tray with respect to the restraining panel;

a locking flap hingedly connected to the angled lower edge of said first side panel, said locking flap having an angle cut lower edge which forms an acute angle with the edge of the first side panel adjacent the bottom panel; and

an engaging flap adjacent the locking flap and extending laterally from the restraining panel.

9. The combination of claim 8 wherein an acute angle is formed by the hinge line between the restraining panel and the engaging flap and the free edge of the engaging flap most adjacent the bottom panel, and additionally comprising end flaps hingedly connected to the upper edges of the top and bottom panels, and dust flaps hingedly connected to the upper edges of both side panels.

10. The combination of claim 9 wherein the top panel extends no further than the intersection of the hinge line between the top panel and the first side panel with the hinge line between said first side panel and the locking flap.