March 12, 1968 F. A. KOHLHAAS 3,372,794

END-LOADING DISPLAY TRAY FORMING SHIPPING CARTON

Filed Jan. 16, 1967 4 Sheets-Sheet 1

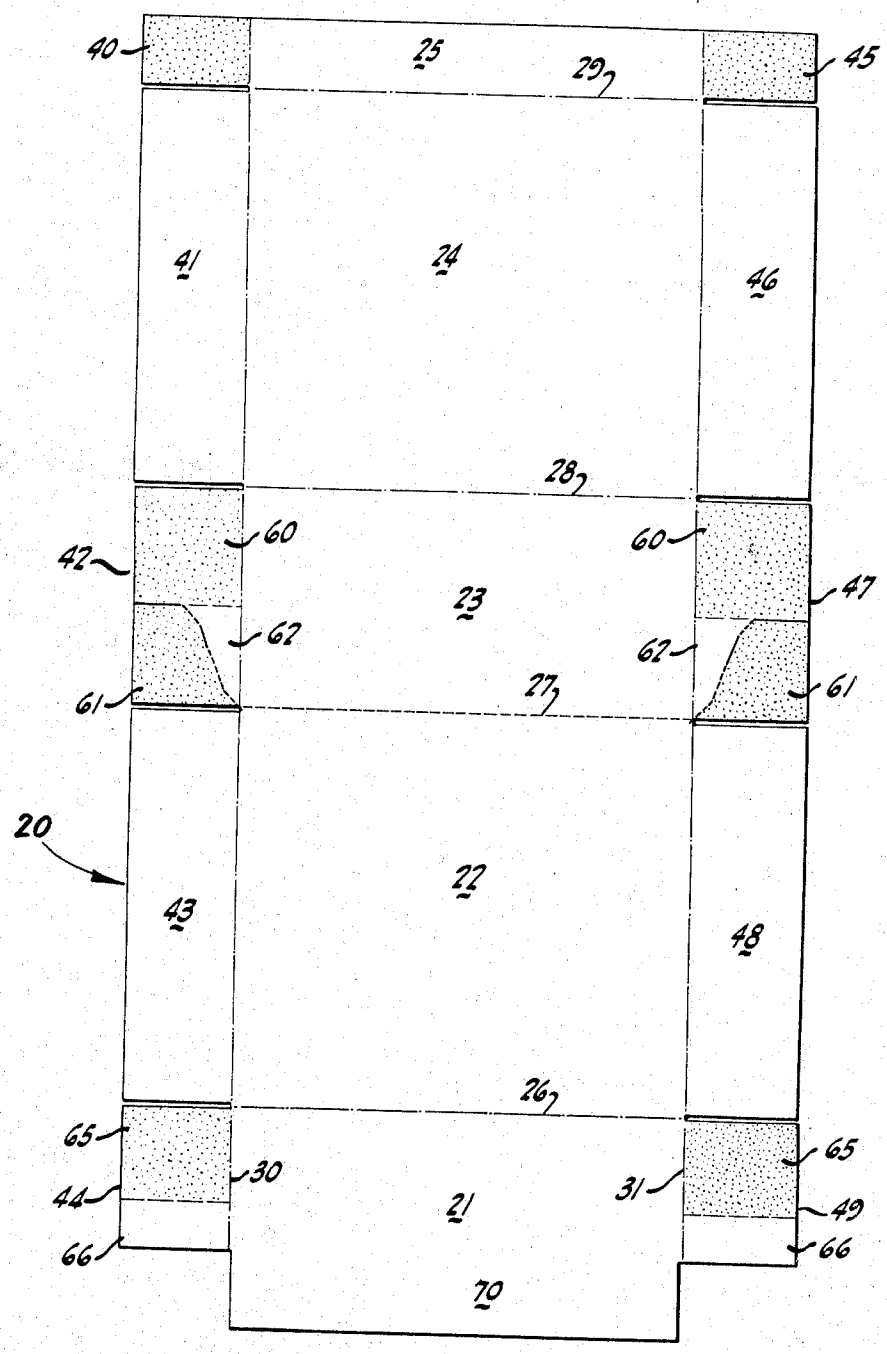


FIG. 1

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END-LOADING DISPLAY TRAY FORMING SHIPPING CARTON

Filed Jan. 16, 1967 4 Sheets-Sheet 2

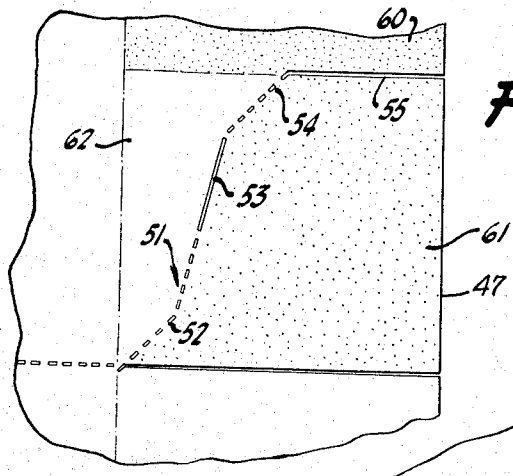


FIG. 2

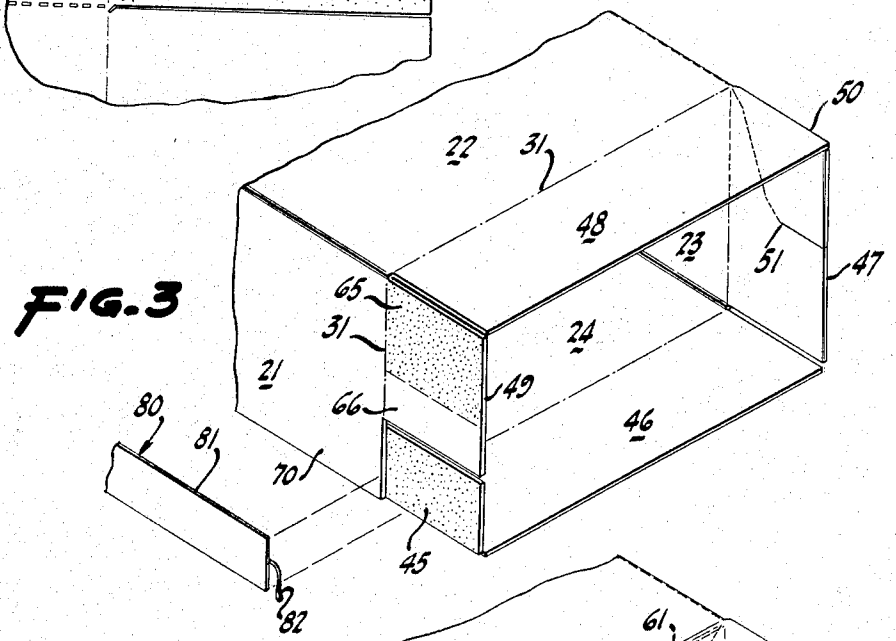


FIG. 3

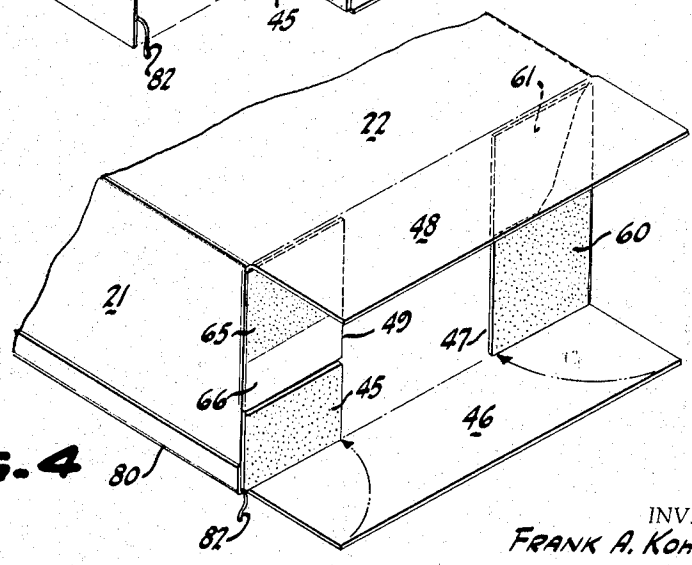


FIG. 4

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END-LOADING DISPLAY TRAY FORMING SHIPPING CARTON

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FIG. 5

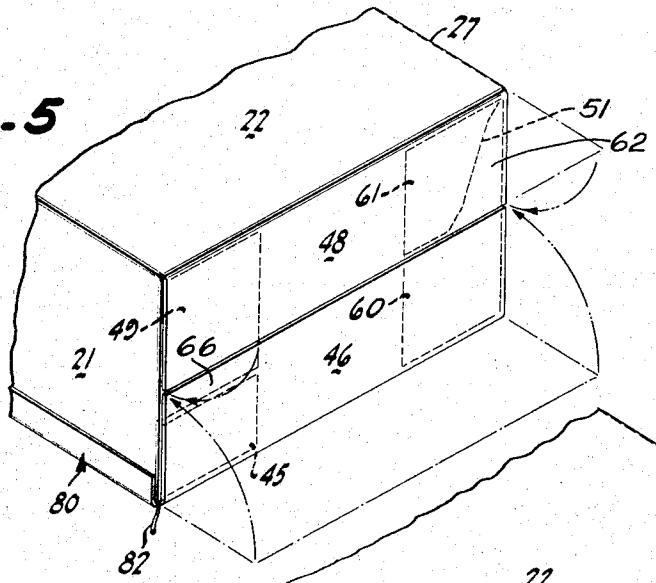


FIG. 6

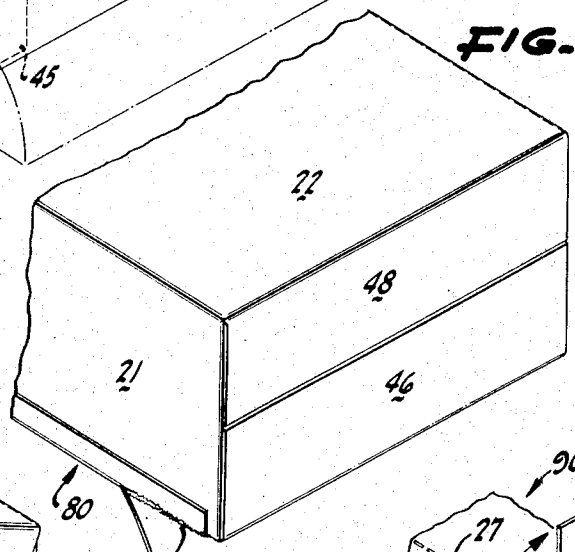
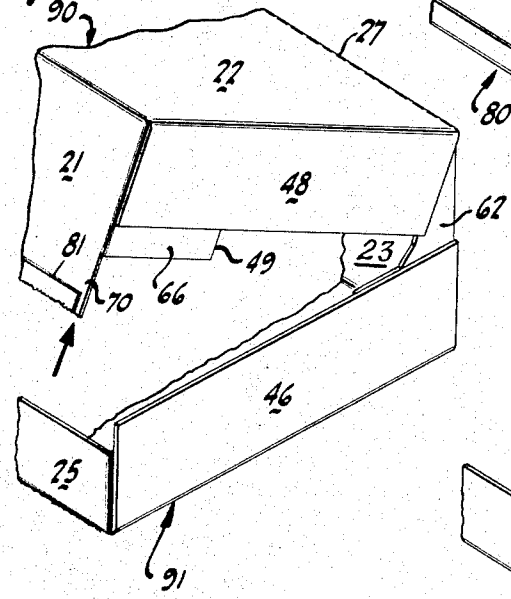


FIG. 7



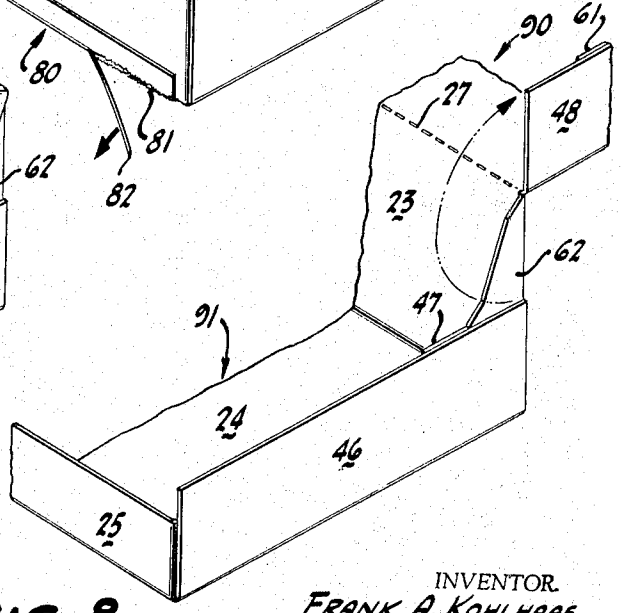


FIG. 8

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END-LOADING DISPLAY TRAY FORMING SHIPPING CARTON

Filed Jan. 16, 1967 4 Sheets-Sheet 4

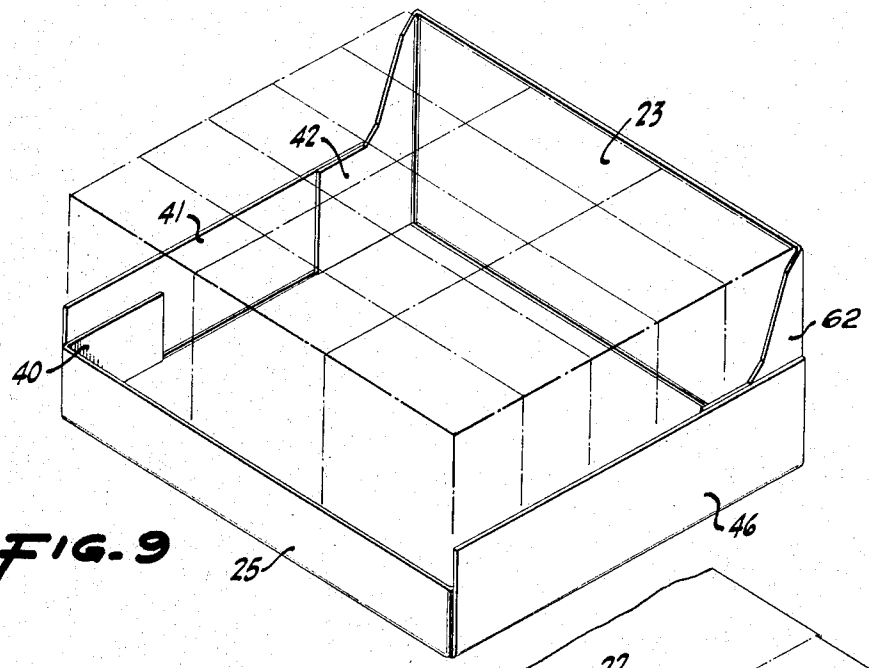


FIG. 9

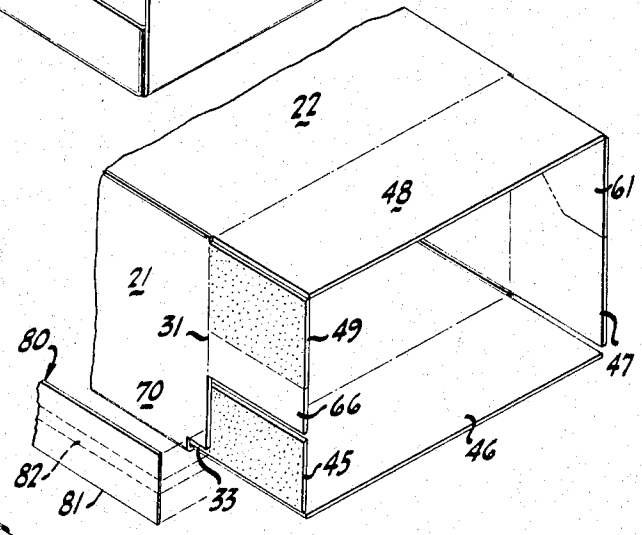
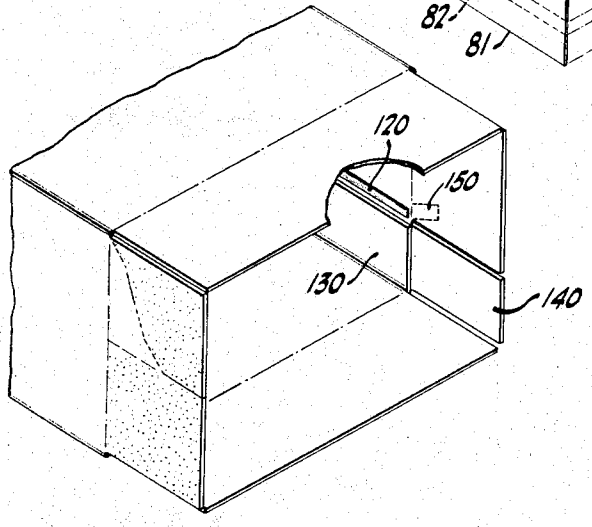


FIG. 10

FIG. 11



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United States Patent Office 3,372,794 Patented Mar. 12, 1968

3,372,794

END-LOADING DISPLAY TRAY FORMING SHIPPING CARTON

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Filed Jan. 16, 1967, Ser. No. 609,555
9 Claims. (Cl. 206—44)

ABSTRACT OF THE DISCLOSURE

A regular slotted shipping carton having a conventional flap-type end closure modified to be convertible into a display tray. The front wall panel overlaps a front tray-wall panel and is secured thereto with a tear-string tape. The two rear-wall flaps are provided with a perforated score and a particular glue pattern for cooperation with the top and bottom wall flaps which results in the tearing away of a portion of the rear wall flaps with the cover portion as it is removed during the conversion of the carton to a display tray.

Brief summary of the invention

The invention relates to a regular slotted shipping carton having conventional flap-type end closures provided with perforated scores in the rear wall flaps adapted to cooperate with a particular glue pattern which results in a tearing away of the upper portion of the rear wall flaps as the top portion of the carton is removed. The remaining portion of the rear wall flaps provides support for the rear wall as an integral part of the resulting display tray. The display tray allows maximum exposure of the contents therein. The carton has been designed for easy opening and for compatibility with all conventional carton end-loading and sealing equipment.

There have been various attempts to provide a shipping carton which is easily converted to a display tray for the goods packaged therein. A few of the designs have been moderately successful, however, each requires a special carton with special equipment for handling. Accordingly, an object of this invention is to provide a regular shipping carton with a conventional flap-type end closure which may be quickly and easily converted into a display tray without the necessity for cutting the carton and endangering the goods packed therein.

Various prior art cartons which may be converted into a display tray result in a tray having relatively small retaining walls of the same vertical dimension extending around the tray. This type of display tray provides no vertical stability or stacking strength when it is desired to convert several cartons into display trays and stack them vertically.

Accordingly, a further object of this invention is to provide a regular slotted shipping carton which may be converted into a display tray having vertical stacking strength.

A further object of this invention is to provide a regular slotted shipping carton which may be converted into a display tray which has vertical stacking strength and is provided with means for maintaining lateral stability when stacked.

A further object of this invention is to provide a regular slotted shipping carton which is convertible into a display tray having stacking strength while exposing a relatively large portion of the goods being displayed.

In the carton manufacturing industry, a shipping carton which comprises the advantages above-mentioned and which may also be loaded by equipment designed for a conventional end-loading slotted carton, has been long sought.

Accordingly, it is a further object to provide a tray-forming shipping carton which is compatible with conventional equipment for end-loading and sealing cartons.

Brief description of the drawing

FIGURE 1 is a plan view showing the outside face of a foldable blank from which the container is formed.

FIGURE 2 is a fragmentary plan view showing the perforations in the rear wall flap.

FIGURE 3 is a perspective view of the container erected to a tubular configuration in position to receive the tear strip seal.

FIGURE 4 is a fragmentary perspective view of the container being closed, with the front and rear wall flaps being folded inwardly.

FIGURE 5 is a fragmentary perspective view of the container during the closing process showing the top and bottom wall flaps being folded inwardly to complete the end seal of the container.

FIGURE 6 is a fragmentary perspective view of the container depicting the tearing of the seal, thus beginning the opening process.

FIGURE 7 is a fragmentary perspective view of the container with the seal being completely broken and the top portion of the container being pivoted about the upper edge of the rear wall during the opening process.

FIGURE 8 is a fragmentary perspective view of the container with the top portion being folded back 180 degrees from its closed position.

FIGURE 9 is a perspective view of the display tray formed when the top portion of the carton is removed therefrom, thus exposing the contents therein.

FIGURE 10 is a fragmetary perspective view of an alternative embodiment of the carton.

FIGURE 11 is a fragmentary perspective view of an alternative embodiment of the carton.

Detailed description of invention

Referring now to several views of the drawings wherein like reference numerals refer to like components in the various views, the container blank generally designated by reference numeral 20 shown in FIGURE 1 includes rectangular wall panels 21–25 inclusive, foldably connected by lines of scoring 26–29 inclusive. It should be noted, however, that score line 27 which separates top wall panel 22 and rear wall panel 23 is perforated. The end edges of the wall panels are determined by flap scores 30 and 31 which serve as the hinge connection of the respective end closure flaps 40–44 and 45–49 respectively.

Referring now to FIGURE 2, the upper portion of rear wall flap 47 contains an irregular line of weakness 51 comprised of perforated score sections 52 and 54 and cut score sections 53 and 55 for reasons hereinafter explained.

Referring again to FIGURE 1, rear wall flaps 42 and 47 comprise glue areas 60 and 61, and non-glue area 62. Flaps 44 and 49 comprise glue areas 65 and non-glue areas 66. Flaps 40 and 45 are glued over their total outside surface area.

Non-glue areas 62 and 66 may be formed by the application of glue releasing ink to the non-glue areas before glue is applied. Glue may then be applied to the total surface area of the flap, but will only be effective in the areas free of the glue-releasing ink. Alternatively, the glue may be applied directly in the desired pattern.

Referring now to FIGURE 3, the carton has been folded into a tubular configuration with tab portion 70 of front wall panel 21 completely overlaping tray wall panel 25 and positioned to receive tear strip tape 80 thus providing an effective easy-opening manufacturer's joint. The tape is comprised of adhesive backing 81 and a heavy tear string 82. The string is merely adhered to the adhe-

sive side of the tape backing 81 longitudinally along its center line. Tear-strip tape 80 is thus applied along the bottom edge of tab 70 and the front portion of bottom wall 24 adjacent score line 29, thus securing the blank in a tubular or rectangular configuration.

In the preferred embodiment, tear string 82 is a relatively narrow filament tape. Referring now to FIGURE 11, it will be noted that the end of tear strip tape 80 is adjacent to and parallel to the ends of the carton (see FIGURE 4). The end of filament tape tear string 82 coincides with the end of tape 80. In the embodiment shown in FIGURE 11 notches 33 are provided in the corners of the lower free edge of tab portion 70 of front wall 21. It can be seen that tape 80 will overlay notches 33 when applied to the carton with tear string 82 lying along the lower free edge of tab portion 70. Thus, when it is desired to break the tape, one's finger may be inserted into the notch 33 thus providing easy access to tear string 82.

FIGURES 4 and 5 depict the manner in which the end closure of the preferred embodiment is effected. Referring now to FIGURE 4, front tray wall flap 45, rear wall flap 47 and front wall flap 49 have been folded inwardly. It will be noted that glue areas 60 and 61 on flap 47 and, glue area 65 on flap 49, in addition to the outer surface of front tray wall flap 45 are positioned facing outwardly.

FIGURE 5 shows top wall flap 48 and bottom wall flap 46 being folded inwardly to complete the end closure. It will be noted that when top wall flap 48 is folded to its vertical position the free lower edge of the flap lies adjacent to or slightly below the lower extremity of glue area 65 on front wall flap 49, and substantially adjacent the cut score portion 55 of the irregular line of weakness 51 in rear wall flap 47. Thus, the top wall flap 48 is adhered to front wall flap 49 at glue area 65 and to rear wall flap 47 at glue area 61. It will also be noted that the upper free edge of bottom wall flap 46 substantially abuts the lower free edge of top wall flap 48. It will also be noted that bottom wall flap 46 is adhered to rear wall flap 47 at glue area 60 and front tray wall flap 45. Non-glue area 66 on front wall flap 49 has been provided to extend downwardly with its lower free edge in abutting relationship with the uppermost free edge of front tray wall flap 45 thus maintaining the same vertical stacking strength as an unmodified regular slotted carton. The area 66 has not been provided with glue as it is desirable that it not be adhered to bottom wall flap 46 which it abuts when the carton is closed for shipping. It will also be noted that top wall flap 48 will not be adhered to rear wall flap 47 in the area beneath the irregular line of weakness 51 as that area denoted by reference numeral 62 is a non-glue area.

FIGURES 6–8 depict the manner of opening the shipping carton and the conversion of the carton into a display tray. Referring particularly to FIGURE 6, the receiving clerk merely grasps the end of exposed tear string 82 and pulls it outwardly in the manner shown. The tear string thus tears the adhesive backing of tear strip 80 along the bottom free edge of tab portion 70. This frees the joint between tab portion 70 and bottom wall 24. Referring now to FIGURE 7, the cover portion of the carton designated generally by 90 is removed from the tray portion of the carton designated generally by 91. To effect this opening the receiving clerk grasps the lower free edge of tab portion 70 and raises it upwardly in the direction of the arrow. The cover portion 90 pivots about perforated score 27 which joins top wall 22 to rear wall 23. It will be noted that rear wall flap 47 is separated along irregular line of weakness 51 as the cover portion is lifted. This results because top wall flap 48 is adhered to glue area 61 above line of weakness 51, and bottom wall flap 46 is adhered to glue area 60 beneath irregular line of weakness 51. Non-glue area 62 being integrally connected to rear wall 23 and adhesively connected to bottom wall flap 46 thus serves to laterally stabilize rear wall 23 in its vertical position.

Referring again to FIGURE 2, the preferred embodiment of irregular line of weakness 51 is comprised of four sections, perforated sections 52 and 54 and slit sections 53 and 55. As the cover portion 90 is removed from the tray portion 91 of the carton, line of weakness 51 tears at perforated section 54 first, and then at perforated section 52. I have discovered that the proper tear may be controlled through the provision of slit sections between the perforated sections of the irregular line of weakness 51. If the slits are not provided, the tear will not consistently follow the perforated score at the point where it changes direction. It will be noted, however, that a direction change is shown in perforated section 52. There has been no difficulty with "tearing-out" in this section as the direction change is slight and is relatively near the end of the line of weakness 51. It must also be pointed out that this configuration of line of weakness 51 is a preferred embodiment, however, many other configurations have been found workable, for instance, a straight line perforated score encompassing sections 52, 53 and 54. The particular configuration of the perforated score 51 is not critical except to the extent that it results in a portion of the rear wall tabs remaining when the cover portion of the carton is removed which will expose a maximum amount of the goods being displayed while providing stability for the rear wall. Thus, in my preferred embodiment I have selected the configuration shown in FIGURE 2 which extends from a point substantially equidistant the top and bottom of the rear wall flap, to a point at which the upper edge of the rear wall flap joins the upper edge of the rear wall. It has also been envisioned to end slit sections 55 short of the free vertical edge of rear wall flaps 42 and 47 thus providing a very short unslit section which connects glue areas 60 and 61, thus providing stability between those sections at the outer edge of the rear wall flaps.

FIGURE 8 shows the top covered portion folded back 180 degrees from the closed position of the carton. At this point the cover portion 90 is removed from the display tray portion 91 by tearing along the perforated score 27. The resultant is the article display tray depicted in FIGURE 9.

The alternative embodiment of FIGURE 10 comprises a conventional glue flap 130 in substitution for the tray wall panel 25 with closure flaps 140 foldably connected to the end edges of tab portion 70 instead of the substituted glue flap. Tab portion 70 is secured to sealing flap 130. The carton is opened by pulling filament tape tear-strip 120 which has been secured to the inside of front wall panel 20 adjacent to the upper edge of tab portion 70. Access tabs 150 defined by a perforated score have been provided in the front wall flaps thus providing access to the ends of tear-strip 120.

It is also envisioned that the manufacturer's joint may be provided by gluing the tab portion 70 to tray wall flap 25 (see embodiment of FIGURE 2) and providing tear-strip 120 and access tabs 150 in the manner above-mentioned.

Using the tear-strip tape 120, the front wall panel 21 is severed along the upper edge of tab portion 70, the tab portion 70 thus providing the outer tray wall panel.

It is further conceived that each of the embodiments disclosed may comprise a sealing tab at the lower edge of front wall 21 which may be folded under and secured to the underside of bottom wall panel 24 by adhesive, tape, or other means.

It is further envisioned that the particular closure structure may also be used to facilitate the opening of shipping cartons not intended for secondary use as a display tray. In this embodiment, the front and bottom wall panels are directly connected by easy opening means as described above without the provision of a tray-wall panel. Access to the goods packaged therein may be gained simply by pulling the tear-strip tape, soft-seal adhesive or other means, and raising the cover panel. The advantage of this embodiment is in the provision of

a shipping carton which is compatible with conventional carton end-loading and sealing equipment and may be opened without exposing the packaged goods to the receiving clerk's knife.

From the foregoing it will be apparent that the objects of the invention heretofore enumerated and others have been accomplished in that there has been provided a novel and improved tray-forming shipping carton adapted to be loaded and sealed by conventional equipment, the carton having the stacking strength of a regular slotted carton when closed, and the carton being easily converted into a display tray also having stacking strength while exposing a relatively large amount of the goods being displayed. The invention is not limited to the carton shown as it is my intention to cover hereby all adaptations and modifications thereof which come within the practice of those skilled in the art to which the invention relates and to the scope of the appended claims.

Having thus described my invention, I claim:

1. A regular slotted shipping carton adapted to be converted into a display tray, comprising:

(a) a display tray portion, comprising:

(1) rear, bottom and tray wall panels connected in series relation,

(2) closure flaps foldably connected to each end of said tray wall panel,

(3) closure flaps foldably connected to each end of said rear wall panels, said rear wall closure flaps having a perforated score running from a point substantially medially of the free vertical edge thereof, to a point near the upper end of the foldable connection between said rear wall panel closure flap and said rear wall panel,

(4) closure flaps foldably connected to each end of said bottom wall panel, each of said bottom wall closure flaps lying adjacent to and secured to one of said tray wall closure flaps, and lying adjacent to and secured to the lower portion of one of said wall closure flaps, and

(b) a cover portion, comprising;

(1) a top wall panel,

(2) a perforated line of weakness foldably connecting said top wall panel to the rear wall panel of said display tray portion such that said top wall panel may be removed from said rear wall panel along said perforated line of weakness,

(3) a full front wall panel foldably connected along its upper edge to said top wall panel, said front wall panel having a lower edge adjacent the foldable connection between said bottom and tray wall panels,

(4) easy-opening means securing the lower portion of said front wall panel to said display tray portion,

(5) closure flaps foldably connected to each end of said front wall panel, and

(6) closure flaps foldably connected to each end of said top wall panel, each of said top wall closure flaps lying adjacent to and secured to one of said front wall closure flaps and lying adjacent to and secured to one of said rear wall closure flaps in an area above the perforated score in said rear wall closure flap such that the portion of said rear wall closure flap secured to said top wall closure flap will be torn away when said easy-opening connecting means is broken and said cover portion pivoted about said perforated line of weakness connecting said top wall panel to said rear wall panel.

2. The carton of claim 1, wherein:

(a) the lower free edges of each of said front wall flaps substantially abut the upper free edges of one of said tray wall flaps to provide a continuous vertical column;

(b) said easy-opening means comprises a tear-strip tape adhesively secured to each of said front and bottom wall panels;

(c) notches are provided in each end of the lower edge of said front wall panel to provide easy access to said tear-strip tape; and

(d) the outer free edges of said top and bottom closure flaps are in substantial abutting relation.

3. The carton of claim 1 wherein said tray wall panel is integral with said front wall panel.

4. The carton of claim 3, further comprising a relatively narrow tear string adhesively secured to the inside of said front wall panel along an imaginary line which separates said front wall panel from said tray wall panel, and at least one access tab in said front wall panel adjacent the end of said tear string.

5. The carton of claim 4 comprising a glue flap foldably secured to the front edge of said bottom wall panel, the inner surface of said tray wall panel adhesively secured to said glue flap.

6. A regular slotted shipping carton adapted to be converted into a display tray, comprising:

(a) front, top, rear, bottom and tray wall panels foldably connected in series relation, the foldable connection between said top and rear wall panels being a line of weakness perforated such that said top wall panel may be easily removed from said rear wall panel, the lower edge of said front wall panel being positioned adjacent the foldable connection between said tray and bottom wall panels, and secured in said position by easy opening means connected to said front and bottom wall panels,

(b) closure flaps on each end of said rear wall panels;

(c) a perforated score in each of said rear wall closure flaps, said perforated score extending from a point near the free vertical edge, medially of the top and bottom of said rear wall closure flap to a point near the upper extremity of the foldable connection between said rear wall closure flap and said rear wall panel;

(d) closure flaps foldably connected to each end of said front and tray wall panels;

(e) closure flaps foldably connected to each end of said bottom wall panel, the inner surface of said bottom wall closure flaps adhesively connected to said tray wall closure flaps and to substantially the lower half of said rear wall closure flaps;

(f) closure flaps foldably connected to each end of said top wall panel, the inner surface of each of said top wall panel closure flaps being adhesively secured to one of said front wall closure flaps, the inner surface of said top wall closure flap lying adjacent to substantially the upper half of said rear wall closure flap and adhesively secured thereto in an area of adhesion lying above said perforated score in said rear wall closure flap, the area of said rear wall closure flap lying beneath said line of weakness and adjacent said top wall closure flap being substantially free of adhesive connection with said top wall closure flap; such that the portion of said rear wall closure flap above said perforated score will be torn away when said easy opening means is broken and said front and top wall panels are pivoted about the perforated line of weakness connecting said top and rear wall panels.

7. The carton of claim 6 wherein said easy opening means comprises a soft seal adhesive connecting said front wall panel to said tray wall panel.

8. A tube for forming a regular slotted shipping carton adapted to be converted into a display tray, comprising:

(a) front and top wall panels foldably connected;

(b) rear, bottom and tray wall panels foldably connected in series relation the lower edge of said front

wall panel being positioned adjacent the front edge of said bottom wall panel;

(c) a perforated line of weakness foldably connecting said top wall panel to said rear wall panel;

(d) easy opening means connecting said bottom wall panel to said front wall panel;

(e) closure flaps on each end of each of said front, top, rear, bottom and tray wall panels;

(f) a perforated score in each of said rear wall closure flaps, said perforated score in said rear wall flap running from a point on the free vertical edge medially of the top and bottom of said flap to a point near one end of said perforated line of weakness connecting said top and rear wall panels;

(g) an adhesive pattern on the outer surface area of said rear wall closure flaps, said adhesive pattern covering substantially the lower half of said rear wall closure flap and the area above said perforated score in said rear wall closure flap;

(h) an adhesive-free area in each of said rear wall closure flaps, said adhesive-free area substantially defined by said perforated score in said rear wall closure flap, the foldable connection between said rear wall closure flap and said rear wall panel and said adhesive pattern on the lower half of said rear wall closure flap; and

(i) a second adhesive pattern on the surface of each of said front wall closure flaps, said second adhesive pattern extending from the upper edge of said front wall closure flaps downwardly a distance substantially equal to the width of said top wall flap, the remaining surface area of said front wall flap being adhesive-free.

9. A blank for forming a regular slotted shipping carton which is adapted to be converted into a display tray, comprising:

(a) front, top, rear, bottom and tray wall panels foldably connected in series relation, the foldable connection between said top and rear wall panels comprising a perforated line of weakness and said front and rear wall panels being of substantially equal dimension;

(b) closure flaps connected to each end edge of each of said wall panels, the outer free edges of each of said closure flaps along each end of said blank lying in a straight line;

(c) a perforated score running from a point near the outer free edge of each of said rear wall closure flaps, substantially centrally of the ends thereof, to a point near one end of said perforated line of weakness connecting said top and rear wall panels;

(d) an area on the outer surface of each of said rear wall closure flaps treated to resist adhesion, said treated area defined by said perforated score in said rear wall closure flap, the connection between said rear wall closure flap and said rear wall panel, and a line of termination parallel to and substantially centrally of the end edges of said rear wall closure flap;

(e) an area on the outer surface of each of said front wall closure flaps treated to resist adhesion, the treated area on said front wall closure flap defined by the lower edge and the outer free edge of said front wall closure flap, the connection between said front wall closure flap and said front wall panel, and a horizontal line of termination passing substantially centrally between the top and bottom extremities of said front wall panel.

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WILLIAM T. DIXSON, JR., *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,372,794 March 12, 1968

Frank A. Kohlhaas

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 33, for "fragmetary" read -- fragmentary --; column 4, line 29, after "bottom" insert -- of the vertical free edge --; column 5, line 39, before "wall" insert -- rear --.

Signed and sealed this 15th day of July 1969.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents