Aug. 23, 1960 W. A. RINGLER 2,950,043

CARTON

Filed April 2, 1956

3 Sheets-Sheet 1

FIG-1

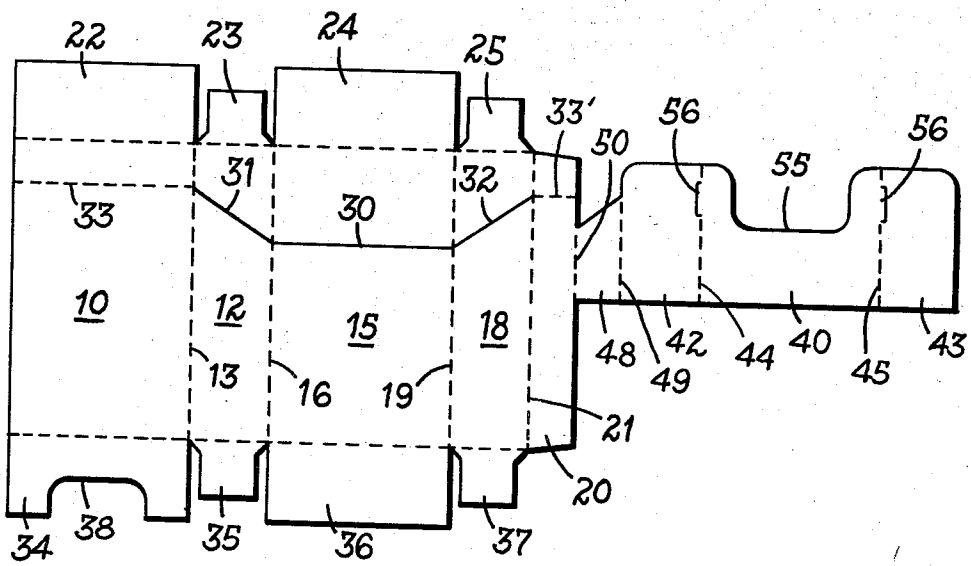
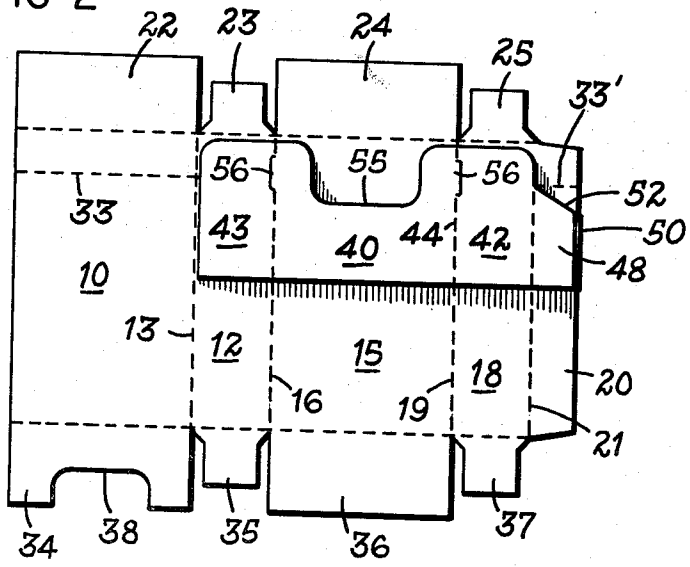


FIG-2



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CARTON

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FIG-3

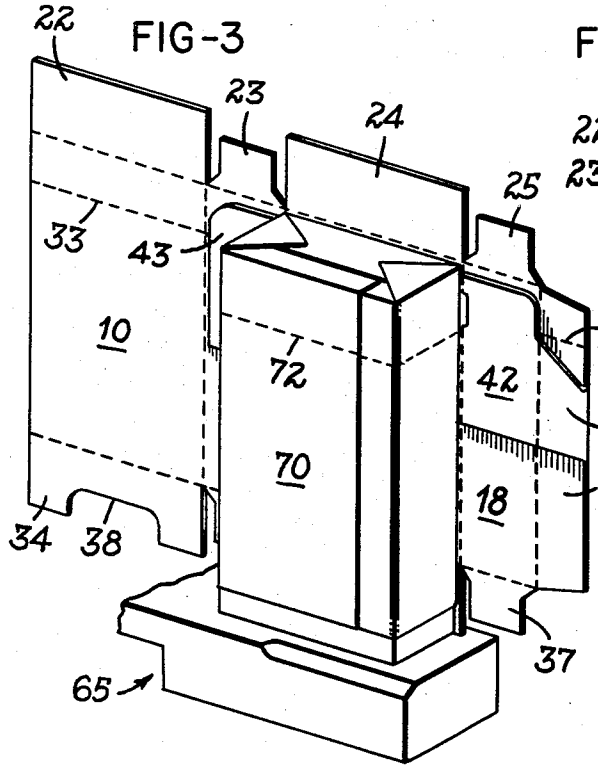


FIG-5

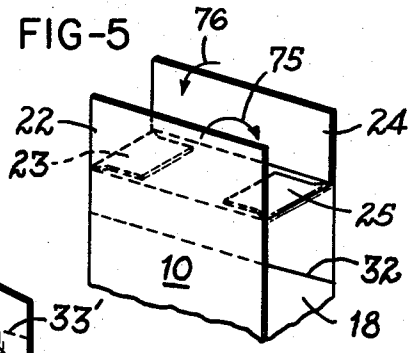


FIG-6

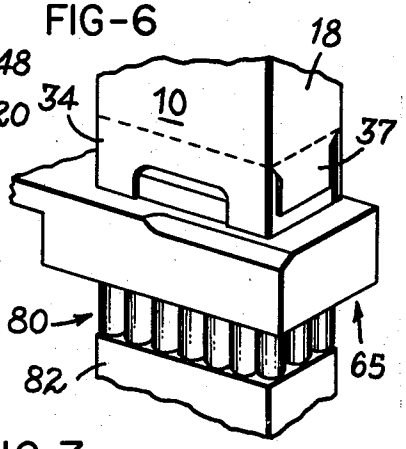


FIG-4

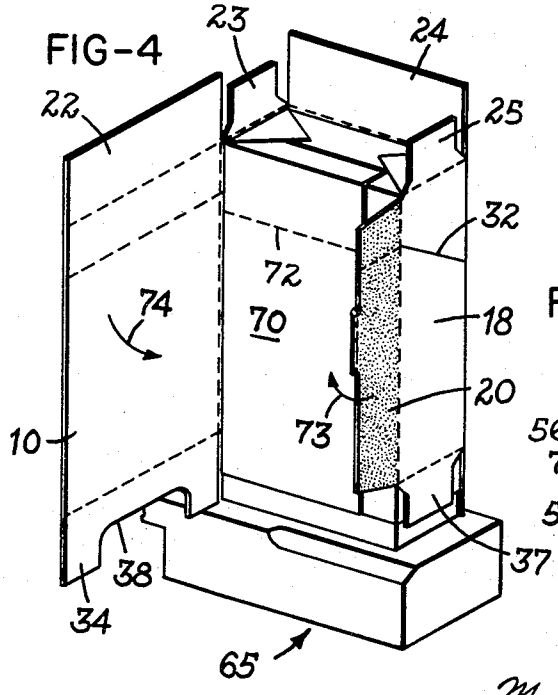


FIG-7

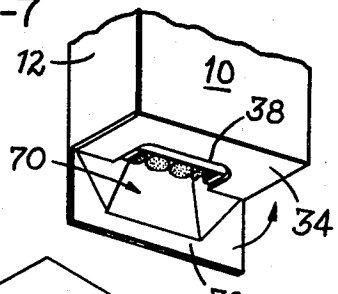
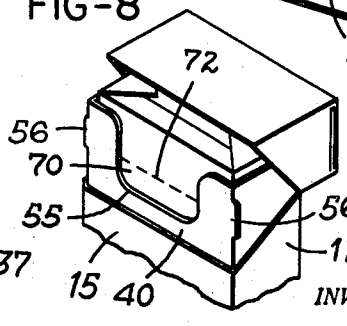


FIG-8



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CARTON

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FIG-9

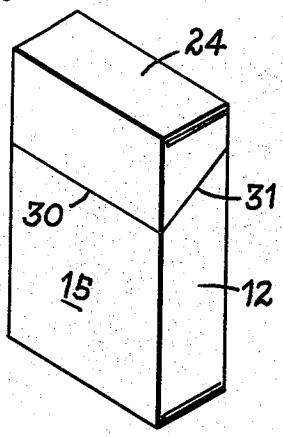


FIG-11

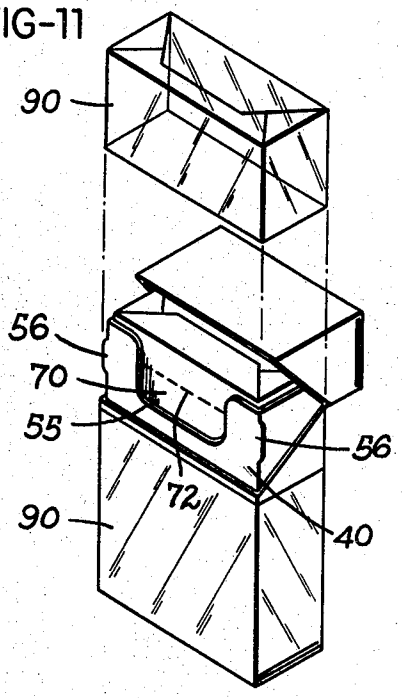


FIG-13

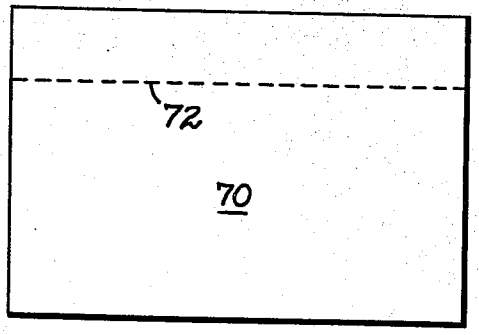


FIG-10

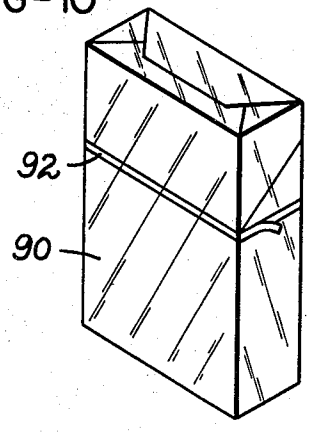
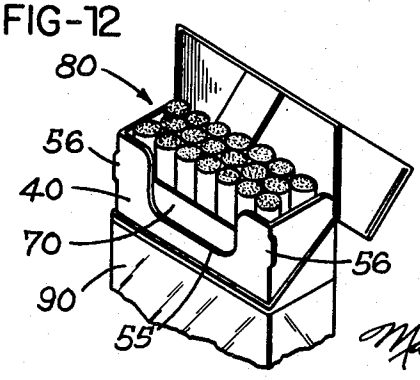


FIG-12



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United States Patent Office

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CARTON

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Filed Apr. 2, 1956, Ser. No. 575,530

1 Claim. (Cl. 229—44)

This invention relates to a carton, particularly to a carton having a reclosable lid.

The carton provided by this invention is intended primarily for use in packaging cigarettes and similar rod-like articles, although this carton can be readily adapted to the packaging of other materials. There are in present use many cigarette packing machines manufactured by The American Machine and Foundry Company of New York and known commercially as the AMF 3–79 standard cigarette packer, such machines being generally as shown in United States Patent 1,926,192. These machines are at present used to provide the well known cigarette package comprising an inner foil wrap and an outer paper pouch which is in turn covered with a cellophane wrapper.

Cigarette cartons having integral hinged lids heretofore proposed have met with little commercial success largely due to the fact that they are, generally speaking, not adaptable to the folding operations of the AMF standard packing machine, and the conversion of these machines for use with such cartons has either not been possible or has been prohibitive from the standpoint of cost. In spite of the fact that a reclosable lid type of carton provides many advantages from the standpoint of neatness of appearance and resistance to crushing during handling and use the packaging industry, particularly with regard to cigarette packaging, has largely continued the use of the present well known cigarette package and has not enjoyed the paperboard type of package.

Therefore, the primary object of this invention is to provide a blank for forming a carton having a reclosable lid and which is adaptable to the high speed folding and packaging operations of folding and packaging machines now in general use.

A further object of the present invention is to provide such a carton blank including an inner member comprised of three panels hinged to one side of the outer panels of the blank and arranged for folding onto the main or outer side wall panels, leaving the inner panels free to slide relative to the outer panels during folding of the carton blank into tubular form.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claim.

In the drawings:

Fig. 1 is a plan view of a blank for forming a carton in accordance with the invention;

Fig. 2 is a plan view of the blank with the inner member superimposed upon the main portion of the blank;

Fig. 3 is a perspective view of the blank preparatory to folding thereof about a mandrel on a high speed machine for packaging cigarettes and the like;

Fig. 4 is a view similar to Fig. 3 showing an intermediate folding step;

Fig. 5 is a partial perspective view showing folding operations on the top flaps of the carton;

Fig. 6 is a perspective view of the loading of the carton through the mandrel;

Fig. 7 is a perspective view of the bottom of the carton, showing closing of the bottom flaps;

Fig. 8 is a partial perspective view of the completed carton with the reclosable lid in an open position;

Fig. 9 shows a completed carton formed from the blank of Fig. 1;

Fig. 10 is a perspective view of a cigarette package incorporating the carton shown in Fig. 9;

Fig. 11 shows the package in an intermediate step of opening;

Fig. 12 is a partial perspective view of the package completely opened; and

Fig. 13 is a plan view of an inner foil blank which may be incorporated as an inner wrapper in the package of Fig. 10.

Referring to the drawings, which illustrate a preferred embodiment of the present invention, the blank includes a relatively wide rear panel 10 at one end thereof having a narrower outer side panel 12 hinged to one side of panel 10 along the score line 13. A wide outer front panel 15 is connected to the opposite side of panel 12 along score line 16, and the other narrow outer side panel 18 is attached to the opposite side of panel 15 along a score line 19. A glue flap 20 is hinged at 21 to the other edge of panel 18 for connection with rear panel 10 to retain the blank in tubular form. A series of top flaps 22, 23, 24 and 25 are independently hinged to the upper edges of panels 10, 12, 15 and 18, respectively, for forming a top wall on the carton. The outer panels, which constitute the main portion of the blank in Fig. 1, are provided with slitted and scored portions for the formation of a reclosable lid on the completed carton. A continuous slit is provided through panels 12, 15 and 18 including a central portion 30 extending horizontally across front panel 15 parallel to and spaced below the upper edge thereof, and slanted or bias-cut portions 31 and 32 extending from opposite ends of slit portion 31 upwardly at an angle across panels 12 and 18, toward but spaced below the upper edges of these outer side panels. A score line 33 extends transversely of rear panel 10, spaced from the upper edge thereof and intersecting the end of slit portion 31, and a score line 33′ is also provided across glue flap 20, intersecting the end of slit portion 32 and located on the glue flap to register with score line 33 when the blank is folded into tubular form. Thus, the continuous slit and the associated score lines 33 and 33′ divide the main portion of the blank into upper and lower sections, with the sections of the blank between the upper edge thereof and the slit and score lines providing front, side, rear and top walls of a reclosable lid which is hinged to the carton along line 33. The portions of the blank below the slit and score line are foldable to provide an open top box to which the reclosable lid is integrally hinged. The bottom wall for the box is provided by flaps 34, 35, 36 and 37 foldably connected to the bottom edges of the outer front, rear and side panels, and flap 34 includes a cut-away portion 38 in its outer edge, the purpose of which will be described below in connection with the folding operations.

The blank also includes a series of three inner panels all of substantially less height than the outer panels and hinged together in side by side relation to provide an inner member in the assembled carton. Thus, referring to Figs. 1 and 2, the inner front panel 40 has inner side panels 42 and 43 hinged to opposite sides thereof along fold lines 44 and 45, respectively. A spacing tab 48 is connected along fold line 49 to the opposite side of panel 42 from inner front panel 40, and at its other side the spacing tab is hinged along line 50 to the upper side edge of glue flap 20, to provide a folding connection between the inner and outer members of the blank with the inner member panels extending in the flat form shown in Fig.

1 to one side of the outer member and generally in alignment with the slitted portions of the outer front and side panels.

The width of spacing tab **48** corresponds to the width of glue flap **20**, and similarly the widths of the inner panels **40**, **42** and **43** correspond generally to the widths of the outer front and side panels **12**, **15** and **18**, although the inner panels are slightly less in width than corresponding outer panels to provide for enfolding of the inner member within the outer or main portion of the blank in the assembled carton. The inner member, including spacing tab **48**, is thus adapted for folding as a unit along fold line **50** into superposition upon the outer member, extending across the slits **30**, **31** and **32** toward the center of the inner member and upwardly just short of the upper edge of outer panels **12**, **15** and **18**. The upper edge **52** of tab **48** is cut on a bias away from inner side panel **42** to free the score line **33'** in glue flap **20** for folding movement, and thus the hinged connection of the lid to the open box portion of the carton is not impaired by interference from the inner panel members.

The free upper edge of inner front panel **40** is provided with a central cutaway portion **55** which affords a frontal access opening in the completed carton facilitating grasping of articles to be removed therefrom. Portions of the fold lines **44** and **45**, along which the inner front and side panels are hinged, are offset and slit to provide tabs **56** extending outwardly from opposite sides of panel **40** and within the lid. These tabs assist in retaining the lid of the carton in its normally closed position, as will presently be described.

The carton blank of this invention is particularly adaptable to the folding operations of high speed packaging machines, for example, machines of the type shown in above mentioned United States Patent 1,926,192. The blanks such as in Fig. 1 may be fed from a suitable magazine, and folding mechanism may be arranged to superimpose the inner member upon the outer member, as shown in Fig. 2. From the condition shown in Fig. 2 a series of only four folds are required to "tube" the blank, that is, to assemble it in open tubular form. The upper portions of the inner member overlie the continuous slit through panels **12**, **15** and **18**, and the free upper edges of the inner panels are positioned immediately below the upper edges of these panels, providing continuations of the front and sides of the open top box referred to above which extend into the closable lid of the carton.

The sequence of steps shown in Figs. 3–7 illustrate the forming of a carton from the blank shown in Fig. 2. Fig. 3 shows a hollow mandrel **65** of the type described and illustrated in the above mentioned patent, for example, in Figs. 33–37 thereof. A sheet of foil **70** having a perforation **72** extending across one of its ends, is wrapped about the mandrel in the usual manner. Such a foil sheet is shown in plan in Fig. 13 of this application.

The carton blank, with the inner and outer members folded together, is positioned against the mandrel with the inner front panel **40** abutting one of the larger flat faces thereof and overlying foil sheet **70**, preferably on the side edges thereof, and with the inner member extending over perforation **72**. The side panels of the blank are then folded around the smaller sides of the mandrel as shown in Fig. 4. During this folding step there will be a slight amount of relative movement between facing inner and outer panels, but since the inner panels are of slightly less width than the outer panels, and since they are not fixed to the outer side panels, there is no resistance to such sliding movement. Suitable adhesive is applied to the outer face of glue flap **20**, as indicated by the stippled portions in Fig. 4, and the glue flap is then folded along line **21** onto the other large side of the mandrel as indicated by arrow **73**, and finally rear panel **10** is folded in the direction of arrow **74** into contact with glue flap **20** for adherence thereto. Thus, the blank is folded into open tubular form about the mandrel.

The top wall is next formed by folding flaps **23** and **25** inwardly over the foil, as shown in Fig. 5. Flap **22** is then folded across the end of the carton in the direction of arrow **75**, and finally flap **24** is folded over in the direction of arrow **76** and adhered to the outer surface of flap **22** by a suitable adhesive (not shown). With the top wall of the carton formed, the articles to be packaged, for example, cigarettes indicated generally at **80** in Fig. 6, are pushed into the interior of the hollow mandrel by a plunger **82**, and the stroke of the plunger is extended until the cigarettes abut the now closed top wall of the carton and push the entire assembly of the carton, foil and cigarettes off the hollow mandrel.

The lower side flaps **35** and **37** are next tucked inwardly over the bottom of the carton, and the flap **34** is folded over as shown in Fig. 7 to fold the part of the foil overlying that flap across the bottom of the carton. Finally, flap **36** is folded over across the bottom of the carton, carrying with it the remaining portion of the foil. Flaps **36** and **34** are secured together by a suitable adhesive (not shown) to complete the forming of the carton. Due to the provision of cut-away portion **38** in flap **34**, when that flap is folded downwardly portions of the foil sheet folded along with it remain uncovered in the center of the bottom of the package, as shown in Fig. 7. When flap **36** is folded over, the foil folded in by this movement contacts the foil uncovered by the cut-away portion **38**, and thus none of the carton material comes into contact with the contents packaged within the carton.

The completed carton is shown in Fig. 9 with the lid in its closed position, and in Fig. 8 the upper portion of the carton is shown with the lid swung to its open position. The cut-away portion **55** provides an access opening in the upper frontal edge of the open top box portion of the carton. The height of panel **40** is such that the free upper edges thereof at the corners of the box intersect the arc through which the front wall of the lid swings above hinge line **33**, and thus a certain amount of force is required to slide the front wall of the lid over the upper edge of the box. In addition, tabs **56** engage the front corners of the lid and assist in retaining it in its normally closed position.

The present invention has been described in connection with cigarette package machines, but it is to be understood that the cartons provided by the invention are adaptable to use in any number of high speed packaging machines. For example, the blank as in Fig. 2 can be assembled into flat folded tubular form for shipping and/or storage, and in this form the blanks are adaptable to use in high speed packaging machines which erect the flat tubed blank, form the bottom wall thereon, fill the erected carton, and finally form the top wall from the top flap thereof. Such folding of the blank into flat folded or flat tubed form may be readily accomplished in conventional high speed gluing and folding machines by applying a suitable adhesive with a glue roll or the like to the under surface of glue flap **20**, as viewed in Fig. 2, then folding the glue flap and connected side panel **18** over onto front panel **15** and inner front panel **40** along fold lines **19** and **44**, and finally folding over rear panel **10** along fold line **13** onto the glue flap for adherence thereto.

The carton provided by the invention is particularly adapted to the packaging of cigarettes, and Fig. 10 illustrates such a cigarette package in which the closed carton is covered with an outer wrapper **90** of regenerated cellulose, cellophane, or similar suitable transparent material. A tear strip **92** is preferably incorporated in this wrapper in the usual manner, and is located in the completed package to extend across the central slit portion **30** and around the periphery of the carton at the same level as slit **30**. Thus, when the tear strip is pulled the portion of the

outer wrapper above this strip may be removed, as shown in Fig. 11, and the lid of the carton opened. The inner foil wrapper **70** is provided within the carton to enclose the cigarettes, and this foil includes the weakened or perforated line **72** extending around its entire periphery, as shown in the blank illustration of the foil in Fig. 13. Perforations **72** are located to extend across the upper end of the package, preferably approximately midway between the upper and lower ends of access opening **55**. Thus, the upper section of the foil wrapper above perforation line **72** may be removed to provide access to the cigarettes, the resultant open package of cigarettes being shown in Fig. 12. The reclosable lid for the carton provides easy access to the cigarettes at all times, yet keeps them enclosed and thus relatively fresh. Furthermore, the stiff stock from which the carton component of the package is made is resistant to crushing and affords ample protection to the cigarettes during normal handling. This protection is particularly important in the packaging of cigarettes having special tips incorporating filters and the like, since such tips usually are of greater stiffness than the remainder of the cigarette and thus subject to breaking off from the cigarette when the package is crushed in such a way as to bend the cigarettes.

Thus, the present invention provides a carton having a reclosable lid which is simple and economical to manufacture and assemble, and which is particularly adaptable to use with high speed folding and packaging machines now in general use. As a specific example, the carton may be utilized in packaging operations with machines such as the AMF 3–79 Standard Cigarette Packer, without requiring any extensive modification of the machine. These machines can operate at a rate of approximately 120 packages per minute when packaging cigarettes or similar articles. The present invention, therefore, provides a carton which is readily adaptable to present day packaging operations.

Also, since the outer front panels of the carton blank are continuous across the slits **30**, there is no problem of registry between adjacent portions of the box portions and the lid portions of the cartons when it is desired to print upon the outer surface of the blanks.

While the form of article herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of article, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claim.

What is claimed is:

A blank for forming a carton with a reclosable lid for packaging of cigarettes and similar articles comprising, an outer member including outer rear, side, front and side panels and a glue flap connected in that order in side by side hinged relation, said outer panels having flaps extending from the upper and lower edges thereof for forming top and bottom walls on the carton, a slit extending transversely of said outer side and front panels spaced below the upper edge thereof, a score line across said rear panel spaced below the upper edge thereof and intersecting that end of said slit in the adjacent side panel, a three panel inner member providing inner front and side panels connected side by side and of widths slightly less than the corresponding outer front and side panels, said inner panels all being of a height substantially less than said outer panels, a spacing tab corresponding in width to said glue flap and connecting one of said inner side panels with said glue flap, said tab positioning said inner panels in aligned face to face relation with the corresponding outer front and side panels and covering said slit therein, and said inner panels being free of direct connection with the corresponding outer panels as said inner panels are superimposed on said outer panels providing for relative movement therebetween during folding of the blank into tubular form.

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