Dec. 6, 1960 J. G. NAUMAN 2,963,213

CARTON

Filed March 28, 1956 3 Sheets-Sheet 1

FIG-1

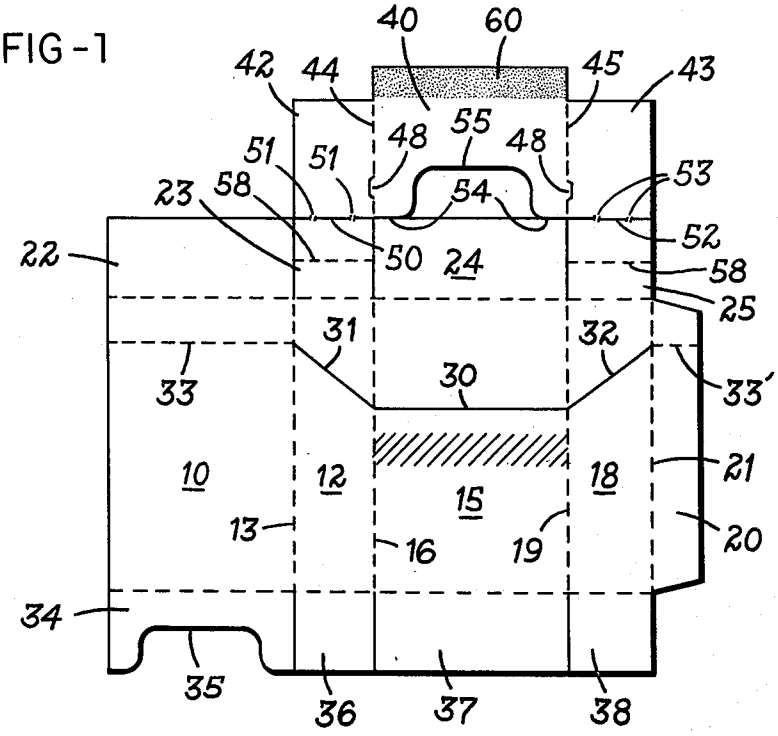
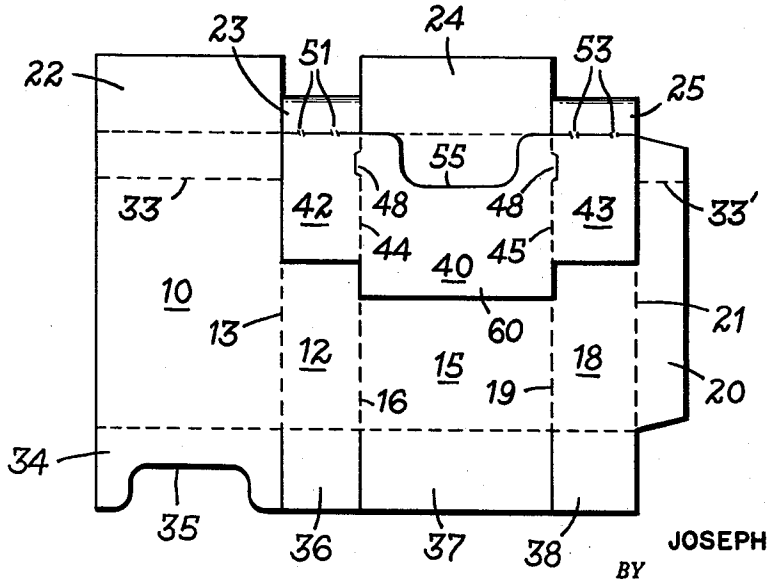


FIG-2



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CARTON

Filed March 28, 1956 3 Sheets-Sheet 2

FIG-3

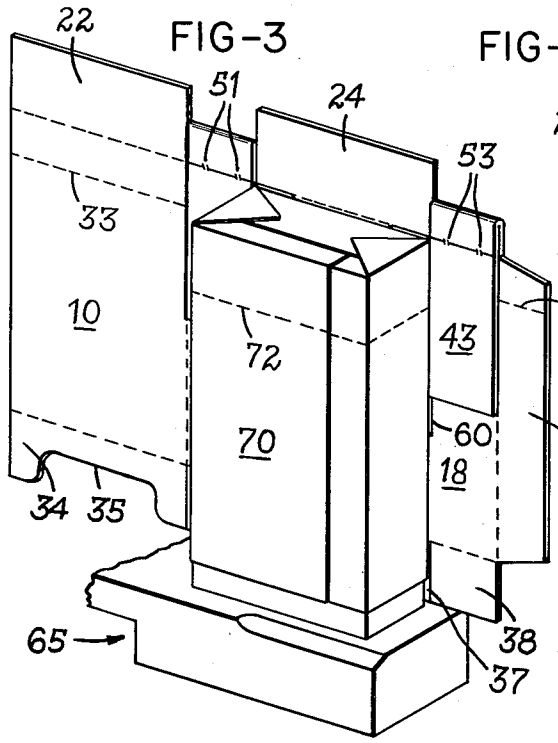


FIG-5

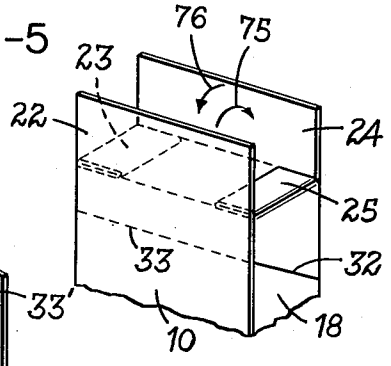


FIG-6

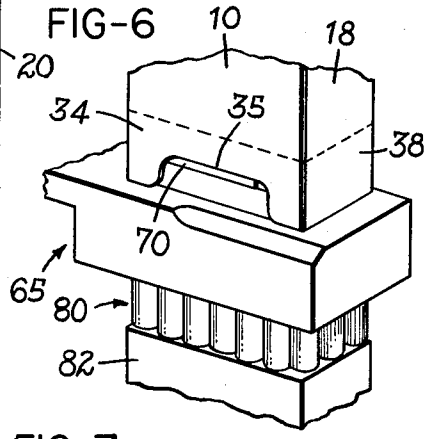


FIG-4

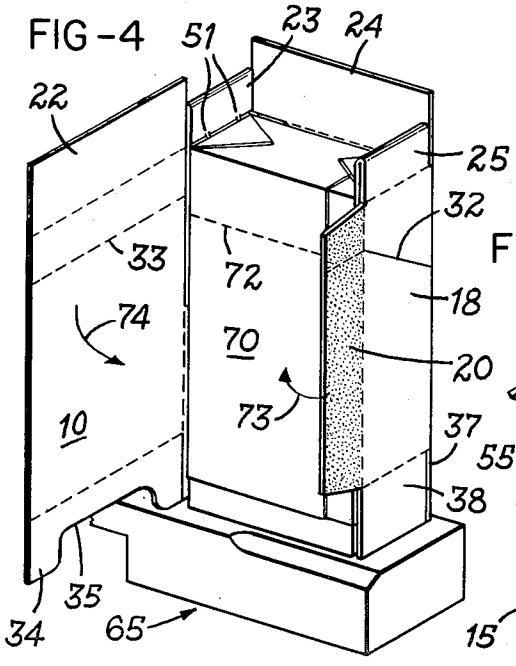


FIG-7

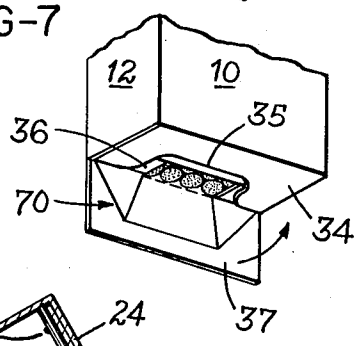
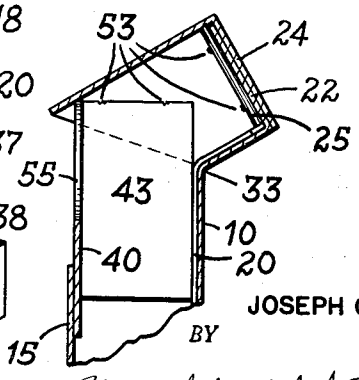


FIG-8



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Dec. 6, 1960 J. G. NAUMAN 2,963,213

CARTON

Filed March 28, 1956 3 Sheets-Sheet 3

FIG-9

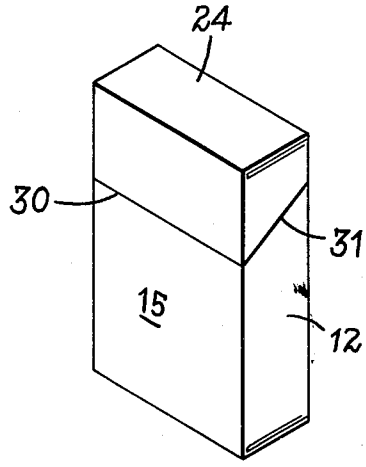


FIG-11

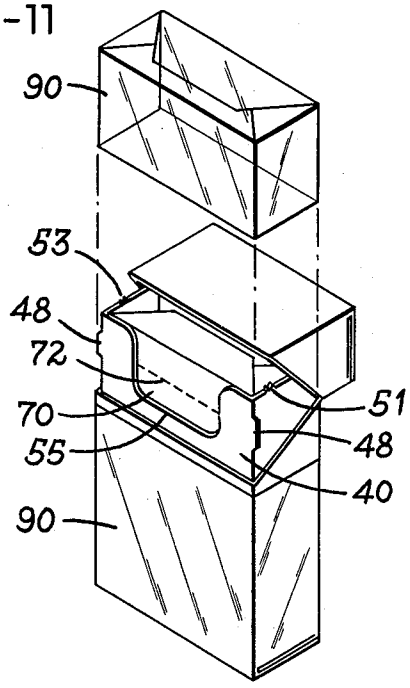


FIG-13

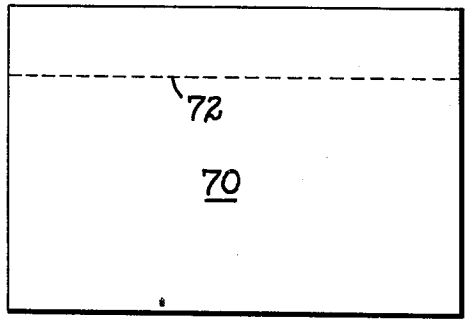


FIG-10

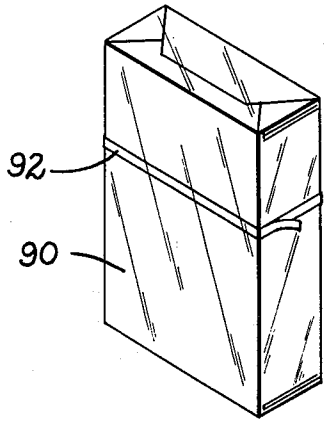
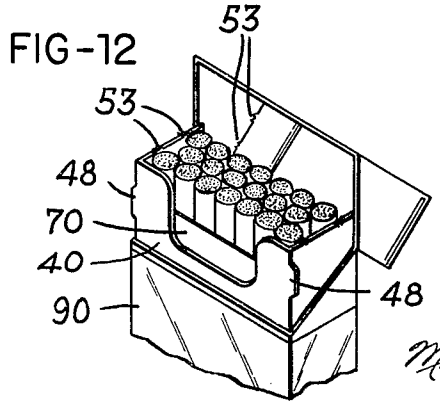


FIG-12



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United States Patent Office

2,963,213

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2,963,213

CARTON

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3 Claims. (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 may 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 carton type of package.

Accordingly, 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.

Another object of the present invention is to provide such a carton blank including an inner member having an integral folding connection to at least one of the main outer panels of the blank at the upper edges thereof providing for folding of the inner member onto the outer panels prior to assembly of the blank into tubular form, and wherein such folding connection includes a frangible portion adapted to be severed when the lid is first opened to separate the integral connection between the inner member and the remainder of the carton and leave the inner member in position therewithin during subsequent opening and closing of the lid.

A further object of the invention is to provide such a carton blank which may be formed from a minimum of sheet material and thereby to reduce the cost of manufacture of such blanks.

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

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 folded blank in Fig. 2 preparatory to folding thereof about a mandrel on a high speed machine for packaging cigarettes and the like;

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

Fig. 5 is a partial perspective view showing the 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 partial perspective view illustrating closing of the bottom flaps on the carton;

Fig. 8 is a partial section through the top of the assembled carton showing the severance of the frangible connections between the inner and outer members of the blank as the lid is initially opened;

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

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

Fig. 11 shows the package of Fig. 10 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 rear panel 10 at one end thereof having an outer side panel 12 hinged to one side of panel 10 along the score line 13. An outer front panel 15 is connected to the opposite side of panel 12 along line 16, and the other outer side panel 18 is attached to the opposite side of panel 15 along 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 30 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 32, and a score line 33′ is also provided across glue flap 20, intersecting the end of slit portion 31 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.

At the bottom of rear panel 10 is an independently hinged bottom flap 34 having a central cutaway or relieved portion 35 at its free edge. The purpose of such relieved portion will be apparent from the following description of the folding operations by which the bottom flaps are assembled to form a bottom wall on the carton. Similarly, bottom flaps 36, 37 and 38 extend,

independently of each other, from the lower edges of panels **12**, **15** and **18**, respectively.

At the upper edge of the main portion of the blank a series of three inner panels are provided for forming an inner member within the completed carton. This inner member includes an inner front panel **40** and inner side panels **42** and **43** connected to opposite sides of panel **40** along fold lines **44** and **45**, respectively. Portions of fold lines **44** and **45** are interrupted by offset slits providing tabs **48** on panel **40**. The top flaps **23** and **25** form part of integral folding connections between the inner and outer members of the blank which provide for superposition of the inner member upon the outer member, extending over the slit. Thus, panel **42** is severably connected to the outer edge of top flap **23** along a slit **50** which is interrupted at at least one point, as indicated at **51** in Fig. 1, to provide frangible integral connections between panel **42** and flap **23**. Similarly, panel **43** is connected to flap **25** along a slit **52** interrupted by frangible integral portions **53**. The adjacent parts of top flap **24** and panel **40** are completely separated along slits **54**, and a cutaway or recessed portion **55** is preferably provided in the edge of panel **40** adjacent top flap **24**.

The flaps **23** and **25** are divided by fold lines **58**, preferably located about half-way between the connections of these flaps to the side panels **12** and **18** and to the inner side panels **42** and **43**. These fold lines **58** provide for an initial folding operation on the blank such as shown in Fig. 2, wherein the inner panels **40**, **42** and **43** are superimposed upon the corresponding outer side and front panels extending over the slits **30**, **31** and **32** therein. The height of the inner panels is substantially less than the height of the corresponding outer panels, and yet is such that the inner front and side panels can extend from adjacent the upper edges of the outer panels across the slits as shown in Fig. 2. Prior to folding over of the inner member a suitable adhesive is preferably applied to the inner front panel along the extended tab portion **60** thereof, and as indicated by the stippled portions on this tab in Fig. 1. The area on the surface of panel **15** to which tab **60** adheres is indicated by cross hatching in Fig. 1.

The inner side panels **42** and **43** are somewhat shorter than inner front panel **40**, the difference in height being approximately equal to the height of the tab **60**, and accordingly if it is desired to assemble the blanks into the folded form shown in Fig. 2 prior to their use in the above mentioned cigarette packaging machines, then high speed folding and gluing machines utilizing glue rollers may be used to apply the adhesive to tab **60** and to fold the blank into the position shown in Fig. 2.

It is desirable that only one of the inner panels, be secured to the main portion of the blank, since during the folding of the blank of Fig. 2 into open tubular form about the mandrels of the AMF 3–79 packing machine there will be a certain amount of relative sliding movement between the inner and outer panels, and it is therefore preferable that the inner and outer side panels be free from positive connection to each other.

The integral folding connections between the inner and outer members, as provided by top flaps **23** and **25** and by the severable connections along the frangible portions **51** and **53** provide for prefolding of the inner member into indexed superimposed position upon the outer member as shown in Fig. 2. From this folded condition, a series of only four folds is 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 upper edges of the inner panels are positioned immediately below the upper edges of the corresponding outer panels, providing continuations of the front and side panels of the open top box referred to above which extend into the lid of the carton.

The sequence of steps shown in Figs. 3–7 illustrates the forming of a carton from the blanks shown in Figs. 2 and 10. These steps may be performed by high speed packaging machines, for example, of the type shown in above mentioned United States Patent 1,926,192. Fig. 3 shows a hollow mandrel **65** of the type shown in that 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 of the foil, opposite from the overlapped edges thereof. 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 side panels, but since they are not fixed to each other 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 of the carton 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 carton, foil and cigarettes off the hollow mandrel.

The lower side flaps **36** and **38** are next tucked inwardly over the bottom of the carton, folding the adjacent portions of the foil with them, and 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 **37** is folded over across the bottom of the carton, carrying with it the remaining portion of the foil. Flaps **37** and **34** are secured together by a suitable adhesive (not shown) to complete the forming of the carton. Due to the provision of cutaway portion **35** 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 **37** is folded over the foil folded in by this movement contacts the foil uncovered by the cutaway 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 partially opened, illustrating the severance of the integral connection between the inner and outer members of the carton blank upon initial opening of the lid. As noted above, the inner panels provide continuations of the open top box or main body portion of the carton and extend into the lid in the closed position thereof. The front upper corners of the box provided by the free upper front corners of the inner member panels **40**, **42** and **43** intersect the arc through which the front wall of the lid swings about 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 **48** engage the front corners of the lid and assist in retaining it in its normally closed position, as will be apparent from inspection of Fig. 12. Thus, once the lid of the assembled carton has been opened for the first time, the frangible portions **51** and **53** are broken or severed, as shown in Fig. 8, and the inner panels **40**, **42** and **43** are freed of connection with the lid, and are supported in position due to the adherence of tab portion **60** to the inner surface of outer front panel **15**, as described above.

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 flat 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 claims.

What is claimed is:

1. A blank for forming a carton having a lid as an integral part thereof, said blank comprising an outer member including outer rear, front, and side panels integrally joined in side by side relation, a glue flap at one side of said outer member for adherence to the panel at the opposite side of said outer member on the interior of said carton to retain the blank in open tubular form, flaps extending from the upper and lower edges of said outer panels for forming top and bottom walls on the assembled carton and including a top front flap extending the full width of said outer front panel, said outer front and side panels having a continuous slit therein spaced from the upper edges thereof, said rear panel having a transverse score line therein spaced below the upper edge thereof and intersecting one end of said slit for providing a hinged connection between the lid and the remainder of the assembled carton, an inner member including inner front and side panels all of substantially less height than said outer panels, connecting parts integral with said inner member and integrally foldably connected to the upper edges of said outer panels providing for folding of said inner member into superposition on said outer member and extending from adjacent the upper edges of said outer panels across said slit, said connecting parts extending on opposite sides of said top front flap, said inner member having a portion adapted for adherence to said outer member on the opposite side of said slit from the upper edges of said outer panels, and said integral connecting parts including frangible portions separable upon initial opening movement of the lid on the assembled carton to provide for retention of said inner member in fixed relation with respect to the main box portion of the carton during opening and closing movements of the lid.

2. A blank for use in forming a paperboard carton of the character described including a lid as an integral part thereof, said blank comprising an outer member including a series of panels connected in side by side relation to each other to provide outer rear, front and side panels, a glue flap extending from one side of said blank for adherence to the panel at the opposite side of said blank to retain said outer member in open tubular form, said outer front and side panels having slits therein spaced from the upper edges thereof and arranged to provide a continuous separation between upper and lower portions of said outer panels in the assembled said carton, said rear panel having a transverse score line therein spaced below the upper edge thereof and adapted to connect the opposite ends of said slits in the assembled said carton, flaps extending from the lower edges of said outer panels for forming a bottom wall on the carton, an inner member including inner front and side panels connected in side by side relation, integral hinged connections between said inner member and the upper edge of said outer panels providing for folding of said inner member into superposition on said outer member with said inner panels extending across the slitted portions thereof, flaps extending from the upper edges of said outer panels for forming a top wall on said carton and cooperating with adjacent portions of said outer panels between the upper edges thereof and said score line and said slits to form a lid on the assembled said carton, that flap extending from the top of said outer front panel being hinged thereto along

the full width thereof, and said hinged connections extending around opposite sides of said top front flap separated therefrom by slits in the blank and including frangible portions separable upon opening movement of the lid on the assembled carton to provide for retention of said inner panels in fixed position with respect to the carton during opening and closing movements of said lid.

3. In a blank for forming a carton having a lid as an integral part thereof, a unitary sheet of paperboard material scored to provide an outer member including outer rear, side, front and side panels connected in that order in side by side relation, a glue flap connected to said last mentioned side panel for adherence to said rear panel at the opposite side of said outer member to retain the blank in open tubular form, flaps extending from the upper and lower edges of said outer panels for forming top and bottom walls on the assembled carton and including front flaps extending from the full width of said outer front panel, said outer front and side panels having a continuous slit therein including a transverse portion extending across said outer front panel below the upper edge thereof, said slit also including side portions extending on a bias across said side panels from opposite ends of said transverse portion of said slit and terminating below the upper edges of said outer side panels at the respective connections of said outer side panels to said rear panel and said glue flap, said rear panel having a transverse score line therein spaced below the upper edge and intersecting the end of said slit in the adjacent said side panel for

providing a hinged connection between the lid and the remainder of the assembled carton, an inner member including inner front and side panels, integral folding connections between said inner side panels and the upper edges of said outer side panels extending around the flap at the top of said outer front panel providing for folding of said inner member into superposition on said outer member with said inner panels extending across said slit, a second slit separating said folding connections from the flap at the top of the top of said outer front panel providing for folding of said inner member independently of that top front flap, and said integral folding connection including frangible portions separable upon initial opening movement of said lid on the assembled carton to provide for retention of said inner member in fixed relation with respect to the main box portion of the carton during opening and closing movements of the lid.

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