

Jan. 27, 1959

W. A. RINGLER  
CARTON

2,870,952

Filed Oct. 24, 1955

2 Sheets-Sheet 1

FIG-1

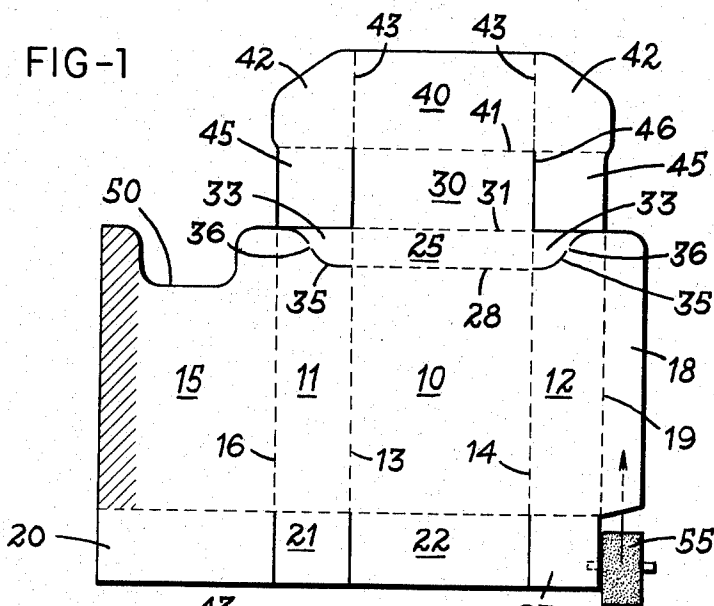


FIG-2

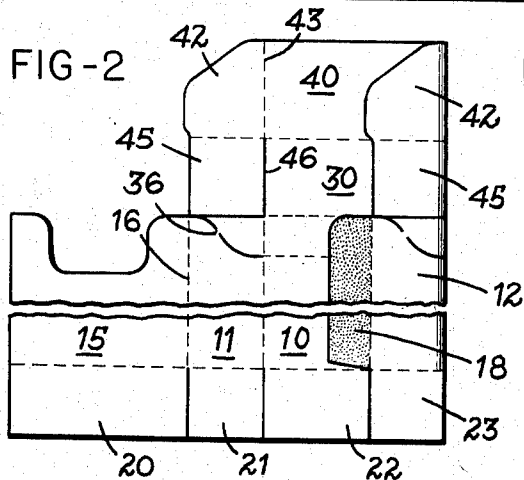


FIG-3

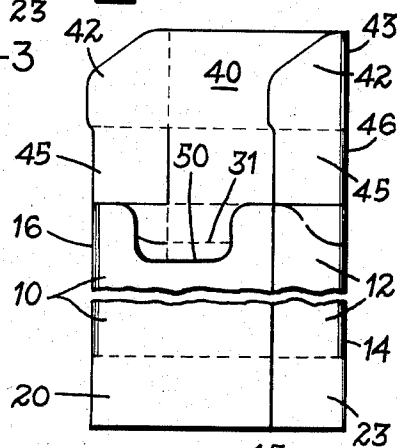


FIG-4

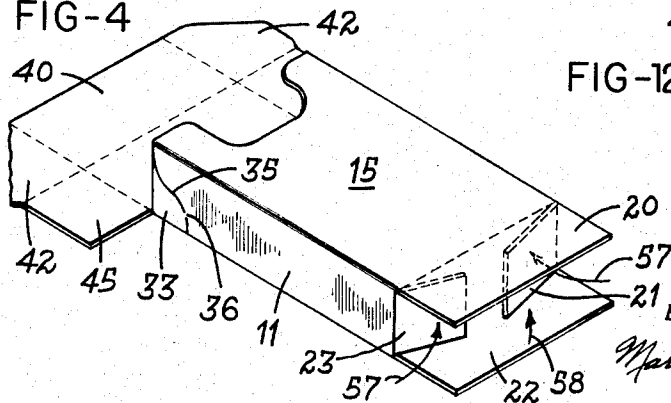
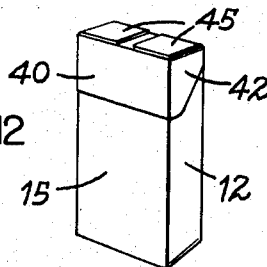


FIG-12



INVENTOR.

WILLIAM A. RINGLER

BY

Marshall, Biebel, Brund & Berg  
ATTORNEYS

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FIG-5

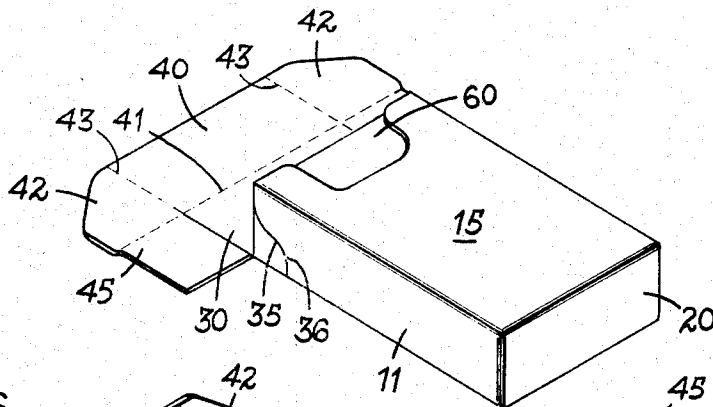


FIG-6

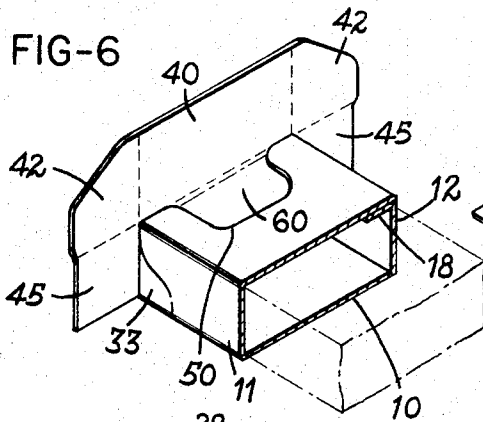


FIG-7

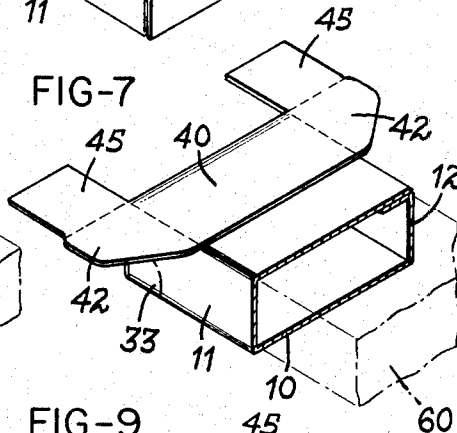


FIG-8

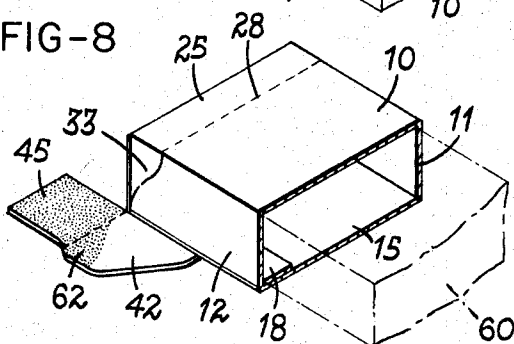


FIG-9

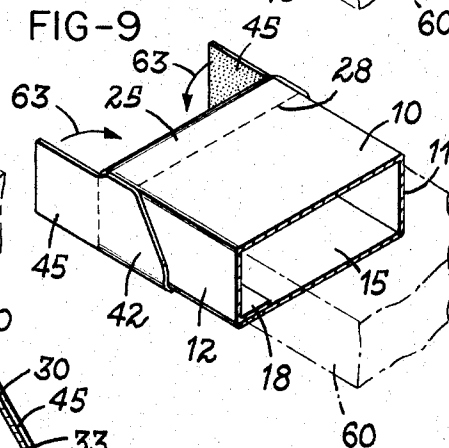


FIG-10

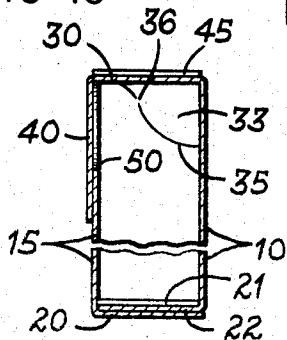
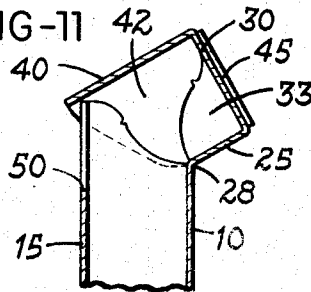


FIG-11



INVENTOR.  
WILLIAM A. RINGLER

BY

*Marchal, Bieler, French & Bugg*  
ATTORNEYS

1

2,870,952

CARTON

William A. Ringler, Wayne, Pa., assignor, by mesne assignments, to Diamond Gardner Corporation, a corporation of Delaware

Application October 24, 1955, Serial No. 542,439

2 Claims. (Cl. 229-44)

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

The primary object of this invention is to provide a carton, and particularly a blank for forming a carton, which is readily adaptable to use in a number of high speed packaging machines, for use in packaging a great variety of materials, especially for packaging those materials wherein a dispensing type of package is desirable.

Another object of the invention is to provide such a carton including a reclosable lid as an integral part of the carton, the lid and the carton being designed so that the lid is normally retained in closed position but will swing into an open position when pressure is intentionally applied.

Another object of the invention is to provide such a carton utilizing a blank which requires a minimum of sheet material and which is therefore economical as well as practical in manufacture.

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 from which the carton of this invention is formed;

Figs. 2 and 3 are somewhat schematic illustrations showing the progressive steps of folding the blank into a flat folded tube;

Fig. 4 shows bottom flap folding operations which may be performed by a high speed packaging machine;

Fig. 5 shows a partially completed carton with the article to be packaged in the carton;

Figs. 6 and 7 illustrate progressive steps in forming the reclosable lid of the carton;

Figs. 8 and 9 show further steps in the lid forming operation, following the steps of Figs. 6 and 7, and with the carton inverted from the position of Fig. 7 to more clearly illustrate the top side wall and flap folding steps;

Fig. 10 is a broken vertical section through the completed carton showing the lid in its closed position;

Fig. 11 is a partial section similar to Fig. 11 showing the lid being opened; and

Fig. 12 is a perspective view of the completed carton.

Referring to the drawings, which illustrate a preferred embodiment of the present invention, the blank in Fig. 1 includes a rear panel 10 and side panels 11 and 12 hinged to the rear panel along score lines 13 and 14, respectively. A front panel 15 is connected along line 16 to the opposite side of side panel 11, and a glue flap 18 is hinged at 19 to the other edge of side panel 12. At the bottom of the blank a series of bottom flaps 20, 21, 22 and 23 are independently hingedly connected to the lower edges of panels 15, 11, 10 and 12, respectively. These flaps are foldable to provide a bottom wall for the completed carton, as will presently be described.

The blank also includes an internal series of walls and flaps for forming a lid for the carton. These include a rear wall 25 which is hinged to the upper edge of rear panel 10 along a score line 28, and a top wall 30 con-

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nected at 31 to the other side of wall 25. The opposite sides of rear wall 25 are integrally connected to flap members 33 which are separated from the upper edges of the side panels 11 and 12 by slits 35 which slope from an intersection between hinge line 28 and the score lines 13 and 14, upwardly from the rear panel 10 toward the upper edges of the front panel 15 and the glue flap 18. A temporary connection is provided between flaps 33 and panels 11 and 12 by severable portions 36 which interrupt the continuity of the slits 35 to provide for concurrent movement of the flaps 33 and panels 11 and 12 during certain of the folding operations, as will be described below.

The blank also includes a front wall 40 hinged at 41 to top wall 30, and side walls 42 hinged at 43 to opposite sides of front wall 40. Flaps 45 are hinged to the edges of side walls 42, extending in continuity with the connecting score line 41, and these flaps 45 are separated from top wall 30 and flaps 33 by L-shaped slits 46 provided in the blank.

The upper frontal edge of panel 15 preferably includes a cutaway portion 50 which extends partially across the upper free edge of panel 15 to provide an access opening in the completed carton. This opening is not absolutely necessary but does facilitate removal of the contents, particularly when the carton is used for packaging cigarettes and similar rod-like articles.

Referring to Figs. 2 and 3, these illustrations show the folding or tubing of the blank of Fig. 1 into a flat folded assembled form for storage or shipping. From this form the carton is readily assembled by a number of high speed packaging machines now in general use, as will presently be described. The tubing operation may also be performed on a high speed gluing and folding machine which applies glue or other suitable adhesive to the outer surface of glue flap 18, as by a roller 55 indicated diagrammatically in Fig. 1. Glue flap 18 and handle 12 are then folded over along line 14, and also the flap members 33 and side walls 42 are folded over along line 43 at the same time, and finally the rear panel 10 and side panel 11 are folded as a unit along score line 13 to bring the free edge of panel 10 into overlying relation with the adhesive on the glue flap. In this form, as shown in Fig. 3, the carton blank is prepared for feeding from a magazine of a high speed packaging machine.

The general operating sequence of such machines provides for opening of the flat folded carton blank into an open tubular form, followed by folding of the bottom flaps to form a bottom wall on the carton. Thus, in Fig. 4 the end wall formation is begun by inward folding or tucking of bottom flaps 21 and 23 in the direction of arrows 57 in Fig. 4, and when these flaps are folded across the open bottom of the carton, flap 22 is folded upwardly, as indicated by arrow 58, over flaps 21 and 23, and finally flap 20 is folded on top of flap 22 with suitable adhesive being applied between the contacting faces of these flaps to cause them to adhere and complete the bottom wall of the carton.

After the bottom of the carton has been closed it is filled with the articles or materials to be packaged, the articles extending to the upper edges of front panel 15 and side panels 11 and 12. Reference numeral 60 in Fig. 5 indicates the general location of the material to be packaged. The formation of the reclosable lid on the carton is then begun by the machine. This folding operation may follow a number of different sequences, depending upon where it is desired to locate the flaps 45 on the finally assembled carton.

One example of forming the carton lid is shown in Figs. 5-9. It is to be noted that flaps 33 are folded upwardly with panels 11 and 12, due to the severable

connections 36, and therefore flaps 33 are not involved in the lid forming sequence of operations.

The lid walls are folded upwardly as a unit along line 31, as shown in Fig. 6, and the front wall 40 and side walls 42 and flaps 45 are folded upwardly across access opening 50, as shown in Fig. 7. Next, the side walls 42 are folded downwardly along lines 43 to overlies the upper ends of side panels 11 and 12 and the flaps 33. Suitable spot gluing is applied to the portion of walls 42 which register with flaps 33, as indicated by the stippled portions 62 in Fig. 8, as well as to the adjacent faces of flaps 45. Thus, when the side walls 42 are folded upon side panels 11 and 12 they are adhered to flaps 33. Finally, the flaps 45 are folded inwardly and adhered to the top wall 30, as indicated by arrows 63 in Fig. 9.

The completed carton is shown in Fig. 12, and a section through the carton in Fig. 11 illustrates the overlapping relation of the lid with respect to the remainder of the carton. Thus, the panels 10, 11, 12 and 15, together with the bottom wall formed by the bottom flaps, provide an open top box to which there is integrally hinged a lid including front, rear, side and top walls. The hinged connection along line 28 is below the top of the box, since the upper frontal edges of panel 15 and panels 11 and 12 extend vertically above the hinge line. This is clearly seen in Fig. 11, wherein the lid has been swung to a partially open position. The severable connections 36 are thus broken on the first opening of the lid, and are no longer necessary in retaining the lid in its closed position. The sole purpose of these connections is to provide for upward folding of flaps 33 along with the side panels as described above.

The arc through which front wall 40 passes during opening and closing movement of the lid is such that the inner surface of walls 40 slides against the upper edges of front panel 15 and a certain amount of intentional pressure is required to open and shut the lid to overcome the resistance thus provided to opening and closing movement. This resisting force is sufficient to retain the lid in its normally closed position without the use of any other elements. Furthermore, the flaps 33 have their lower free edges sloped complementary to the sloped upper edges of panels 11 and 12, the latter extending from the upper edge of front panel 15 downwardly toward the upper edge of rear panel 10 which is defined by the hinge line 28. Thus, flaps 33 assist in locating the lid in its closed position and tend to prevent movement of the entire lid forwardly of the carton under a crushing force. This arrangement overcomes to a great extent the tendency of score line 28 to wear or tear after the package has been used and carried for some time.

It will thus be seen that the present invention provides a carton having a reclosable lid which is simple and economical to manufacture and which is readily adaptable to use in standard packaging machines, both by reason of its single flat blank design and because of the adaptability of its folding operations to the mechanisms now used in those machines.

Also, this carton can be adapted to use in such machines as the AMF-3-79 standard cigarette packer which operates on the basic principles shown in Patent No. 1,926,192, and which can operate at a rate of approximately 120 packages per minute with cigarettes, and at comparable high speeds with similar articles. In connection with this machine the carton blanks provided by this invention may be fed from the machine magazine

in the form of a completed flat blank, as in Fig. 1, and the carton blanks may be folded about the mandrel such as shown at 63 in Figs. 35-37 of Patent 1,926,192, rather than supplying the carton blanks to the machine in flat folded assembled form such as shown in Fig. 3.

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 adapted to be formed by high speed machine operations into a carton having a reclosable lid, said blank comprising front, rear and side panels and a glue flap all attached for lateral folding about an arbor to provide an open ended tube, flaps on the bottom edges of said panels for assembly into a bottom wall to convert said tube into an open top box, said front panel being substantially greater in height than said rear panel, said side panels having the upper edges thereof sloped from the upper edge of said front panel to the upper edge of said rear panel, lid forming means for the carton including a rear wall hinged to the upper edge of said rear panel, top, front and side walls on said lid integral with said rear wall and dimensioned to cover the open top of said box and the upper portions of said front and side panels, and flaps extending from the sides of said rear wall and adapted to be adhered to the inner surface of said side walls, said flaps having a sloped lower edge complementary to the sloped upper edge of said side panels for abutment therewith in the closed position of the lid.

2. A carton blank adapted to be folded by high speed machine operations into a carton having a reclosable lid, said blank including front, rear and side panels, flaps on said panels for forming a closed bottom, said panels and said flaps being foldable to provide an open top box, said front panel being of greater height than said rear panel, a lid for said box including a rear wall integrally hinged to the upper edge of said rear panel, said side panels having slits in their upper ends extending from the upper front corner thereof and sloping toward the hinged connection between said rear panel and said rear wall of said lid, the portions of said side panels above said slits providing flaps integral with opposite sides of said lid rear wall, a top wall integral with the remaining edge of said rear wall, front and side walls integrally attached to said top wall and including flaps for adherence to one of said walls to retain said top and front walls substantially at right angles with respect to each other, said front wall being dimensioned to overlap the upper frontal portion of said front panel in the closed position of said lid, and said side walls being adapted to overlap the sloped upper ends of said side panels in the closed position of said lid, the portions of said side panels above said slits being attachable to and movable with said lid for seating upon the sloped edges of said side panels in the closed position of said lid.

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