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LINED CARTON AND METHOD OF MAKING THE SAME

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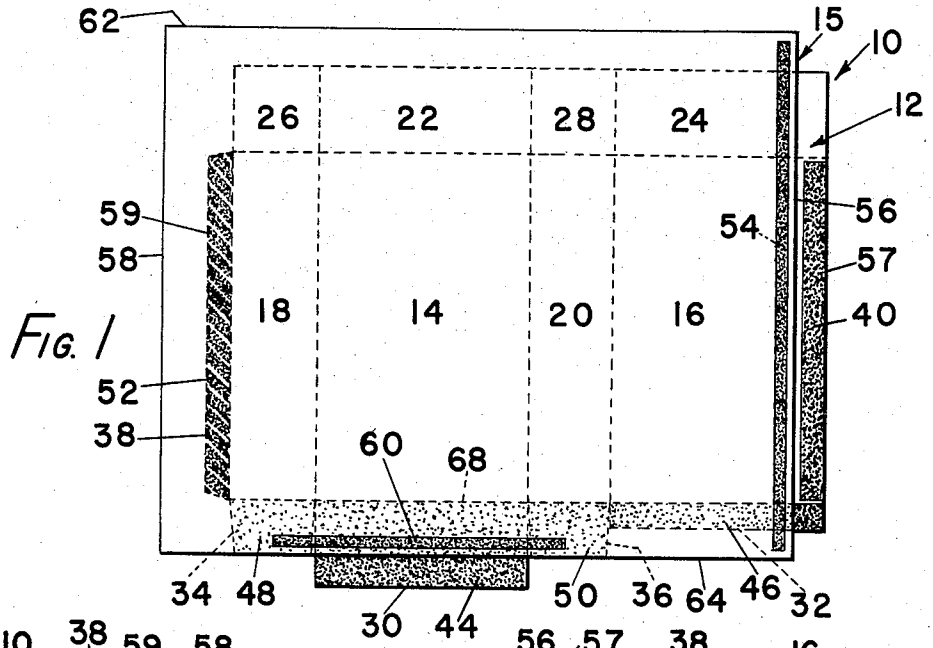


FIG. 1

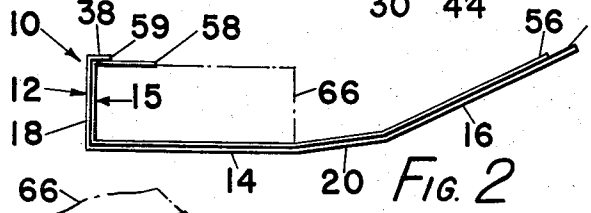


FIG. 2

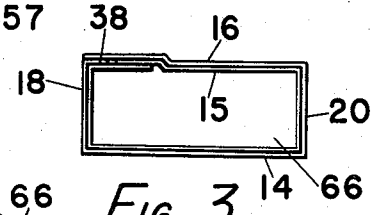


FIG. 3

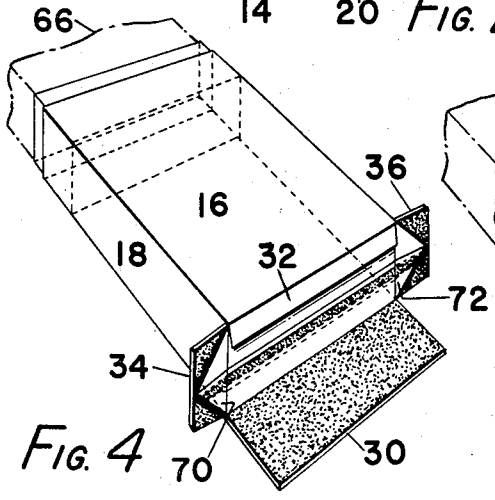


FIG. 4

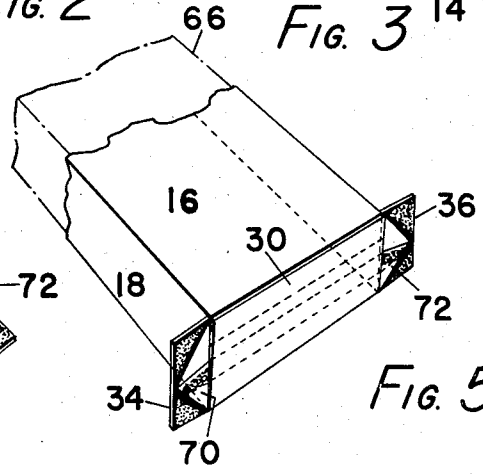


FIG. 5

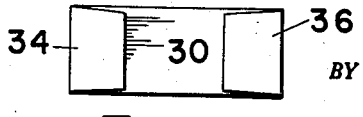


FIG. 6

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LINED CARTON AND METHOD OF MAKING THE SAME

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5 Claims. (Cl. 229—14)

This invention relates to a lined carton and to a method of making the same.

The invention has for an object to provide a novel and improved lined carton characterized by a novel end closure adapted to produce a strong and substantially leakproof lined carton.

A further object of the invention is to provide a novel and improved method of forming a lined carton of the character specified.

With these general objects in view and such others as may hereinafter appear, the invention consists in the lined carton and in the method of making the same as hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention:

Fig. 1 is a plan view of a composite carton blank and lining sheet;

Fig. 2 is an end view illustrating a step in the sequence of wrapping the composite blank about a mandrel;

Fig. 3 is a similar view showing the composite blank completely wrapped about the mandrel providing a tubular structure open at both ends;

Figs. 4 and 5 are perspective views illustrating the sequence of forming the end closure; and

Fig. 6 is an end view of the completed end closure.

In general the present invention contemplates a novel lined carton adapted to be produced at relatively high speeds on automatic carton forming machines and whose structure is such as to provide a relatively strong, tight and substantially leakproof lined carton. In accordance with one feature of the present invention the present lined carton is formed from a composite blank comprising a prescored carton blank having side and end panels and closing flaps coextensive with said panels, and a lining sheet secured to the carton blank so that in practice the composite blank may be fed directly into the carton forming machine to perform simultaneous forming and folding operations on the carton blank and lining sheet. It will be apparent that such procedure eliminates the requirement of separate feeding and folding apparatus for the lining sheet and the carton blank and is thus conducive to more economical production. In practice it is preferred to arrange the lining sheet in offset relation to the carton blank so that when the composite blank is wrapped about a mandrel or forming block the overlapping portions of each blank and sheet occur in spaced relation to form separate adhesively secured side seams.

In accordance with another feature of the present invention a novel end closure or bottom closure is provided which includes an elongated lining bottom fold wherein opposed side walls of the extended lining are folded inwardly and adhesively secured in overlapping relation and the opposed end walls of the lining are folded outwardly to provide triangular end tabs coextensive with the end flaps of the carton. The side flaps of the carton are then folded down into overlapping relation and adhesively secured to each other and to the lining bottom fold, whereupon the end flaps of the carton are folded inwardly together with the triangular lining flaps and adhesively secured on top of the previously folded side flaps. This structure of bottom fold in a lined carton provides a relatively strong and tight and substantially leakproof closure in a rapid and efficient manner.

Referring now to the drawings, **10** represents a composite carton blank and liner comprising a flat prescored carton blank **12** and a liner sheet **15** wherein the carton blank **12** may comprise any of the usual relatively stiff carton board materials and which is provided with side wall panels **14, 16** and end wall panels **18, 20** provided with top and bottom closing flaps extended from the panels. The top closing flaps may comprise the usual side flaps **22, 24** and end flaps **26, 28**, each top closing flap being of a length substantially equal to the width of the end wall panels **18, 20** which corresponds to the thickness of the assembled container. The bottom closing flaps include a side flap **30** extended from the side wall panel **14** which may also be equal in length to the thickness of the assembled container, a second and relatively short side flap **32** extended from the side wall panel **16**, and end flaps **34, 36** extended from the end wall panels **18, 20** respectively which may and preferably will be of an intermediate length as shown. As illustrated in Fig. 1, the carton blank **12** is also provided with a relatively narrow marginal sealing panel or flap **38** extended laterally from the end wall panel **18**.

In practice the flat prescored carton blank **12** is preferably provided with pressure sensitive adhesive along the selected portions of the inner face thereof prior to assembly with the liner, such adhesive being of the type which is non-adhering until pressure activated. As herein shown, the side wall panel **16** is provided with a relatively narrow strip of pressure sensitive adhesive **40** along the marginal edge thereof for overlapping sealing engagement with the outer face of the sealing flap **38** during the formation of the lined carton. All of the bottom closing flaps **30, 32, 34** and **36** are provided with a pressure sensitive adhesive as indicated at **44, 46, 48** and **50**. The inner face of the sealing tab **38** is preferably provided with a liquid adhesive strip **52** for immediate sealing engagement with the lining sheet **15** to maintain the carton and liner in composite relation during the subsequent formation of the composite blank to produce a lined carton.

The carton lining sheet **15** which may comprise any of the usual or preferred relatively thin and flexible lining materials comprises a rectangular sheet which may also be provided with pressure sensitive adhesive along selected portions of the inner face thereof prior to assembly with the carton blank. As herein shown, the lining is provided with a pressure sensitive strip of adhesive **54** extended longitudinally adjacent the marginal side edge **56** thereof for overlapping sealing engagement with the opposed marginal side edge **58** of the lining during subsequent formation of the lined carton. The lining sheet **15** is provided with a second pressure sensitive adhesive strip **60** extended transversely adjacent a portion of the lower marginal edge thereof for overlapping sealing engagement with an opposed extending lining portion during the subsequent formation of the lining bottom closure.

In the production of the present lined carton the preformed carton blank **12** is first provided with adhesive, as described, and thereafter a rectangular sheet of lining paper, preferably withdrawn from a supply roll thereof is provided with adhesive, severed to length and positioned on top of the carton blank and adhesively secured thereto by the adhesive strip **52** on the carton blank. As illustrated in Fig. 1, the lining sheet **15** is

preferably placed on the carton blank in an offset position so that the marginal edge **56** defining one side of the lining sheet is offset inwardly from the adjacent marginal edge **57** of the carton blank, and the opposed marginal edge **58** defining the other side of the lining sheet extends beyond the adjacent marginal edge **59** of the carton blank. The upper marginal edge **62** of the lining sheet may extend above the top closure flaps as shown, and the lower marginal edge **64** of the sheet may and preferably will be aligned with the outer or free marginal edges of the intermediate length end closing flaps **34** and **36**.

The composite carton blank and liner **10** thus prepared may then be advanced into operative relation to an elongated forming block or mandrel **66** which is rectangular in cross section, and the composite blank is then wrapped about the forming block in the manner indicated in Figs. 2 and 3 wherein the panel **18** is placed against a narrow side of the block, the sealing flap **38** is folded over the upper edge of the block, and the panel **14** is folded against the bottom of the forming block. It will be observed that the marginal edge **58** of the lining thus folded about the block with the carton blank extends over the upper edge of the block a substantial distance beyond the marginal edge **59** of the carton blank. The folding operation is then continued about the block, as shown in Fig. 3, wherein the marginal edge **56** of the lining sheet is placed in overlapping relation to the marginal edge **58** and the marginal edge **57** of the carton blank is placed in overlapping relation to the sealing flap **38**. Pressure may then be applied along the spaced or offset overlapping portions of the carton blank and liner sheet respectively to effect adherence of the overlapped portions by virtue of the pressure sensitive adhesive strips **54** and **40**.

The composite blank and liner thus wrapped about the forming block and secured together along the overlapped marginal edges of the carton and the lining forms a rectangular tubular structure open at both ends. In practice the composite blank is disposed relative to the forming block so that the outer end of the block is aligned with the bottom score line **68** of the carton blank whereby the bottom closing flaps and the adjacent portions of the lining extend beyond the end of the block in position to be folded over the end of the block to form the bottom end closure.

Referring now to Fig. 4, the first step in the formation of the bottom end closure comprises folding of the extended lining portions to form an elongated fold having triangular end portions on tabs **70**, **72** as shown in Fig. 4. This may be accomplished by folding the extended narrower end wall portions of the lining outwardly while simultaneously folding the extended wider side wall portions of the lining inwardly into overlapping relation, the overlapping portions of the liner being then subjected to pressure to secure the same together by virtue of the pressure sensitive adhesive strip **60**. Simultaneously therewith, or immediately thereafter, the relatively narrow side flap **32** is folded down and secured to the folded down lining by pressure to set the pressure sensitive adhesive **46**.

The next step in the formation of the bottom end closure comprises folding of the wider side flap **30** inwardly on top of the folded down lining and in overlapping relation to the folded down narrow side flap **32** as shown in Fig. 5. Application of pressure against the side flap **30** will effect adherence of the same to the lining and the side flap **32** by virtue of the pressure sensitive adhesive **44**. The end flaps **34**, **36** are then folded inwardly together with the triangular tabs **70**, **72** of the elongated lining fold so that in the completed lined carton the end portions **70**, **72** of the lining are interleaved between the wide side flap **30** and the end flaps **34**, **36** respectively. Application of pressure will set the pressure sensitive adhesive to secure the end flaps

34, **36** in their folded position. The lined carton thus produced may then be stripped from the forming block and transferred to a conveyer for delivery to carton filling and closing mechanism.

From the above description it will be seen that the present lined carton may be economically produced in a rapid and efficient manner, wherein a preformed composite carton blank and lining sheet may be introduced to the package forming machine, thus eliminating separate feeding stations for the lining sheet and the carton blank. It will also be observed that the novel bottom end closure wherein the extended triangular lining portions **70**, **72** are interleaved between a side flap and their respective end flaps provides a strong and substantially leakproof end closure. The preapplied adhesive strips described herein as pressure sensitive to effect adherence may comprise any of the commercially available adhesives including the heat and pressure sensitive type of adhesive.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. A composite carton blank and lining sheet adapted to be assembled by wrapping the composite members about a forming block to provide a rectangular lined container having a bottom closure and open at the top, said composite members including a carton blank scored to provide side wall panels and end wall panels having bottom closing flaps coextensive with said panels and having a relatively narrow, longitudinal side seam flap extended from a marginal edge of one of said panels, a rectangular lining sheet adhesively secured to said lining blank along said longitudinal side seam flap only, the remainder of the sheet being free to move lengthwise relative to the carton blank during wrapping of the composite members against successive adjacent faces of the forming block, one of the bottom closing side flaps being relatively short and the opposing side flap being of a length equal to the width of an end wall panel, the short flap being adhesively secured to a portion of the lining bottom closure and the free end of the wider flap being adhesively secured to the remaining portion of the lining bottom closure and to the short flap providing a single thickness of carton material for a major portion of the bottom closure in the assembled container, said lining sheet being disposed in a laterally offset position relative to the carton blank whereby to provide individual spaced longitudinal side seams in the lining sheet and carton blank respectively of the assembled container, the lower edge of the lining sheet being aligned with the free ends of the bottom end closing flaps and folded to provide triangular end tabs in the assembled container of a length equal to said end flaps, said end flaps and triangular tabs being folded over the single thickness side flap in spaced and non-overlapping relation in the assembled container, said carton blank and said lining sheet being initially provided with pressure sensitive adhesive at selected portions thereof activated by pressure of the portions against the forming block during assembly of the container, the body portion of the assembled carton being free of adhesive connection between the carton blank and the lining sheet except at said marginal side seam flap.

2. The method of making a lined carton which consists in providing a prescored carton blank provided with closing flaps and having a relatively narrow side seam flap extended from a marginal edge of the blank, applying strips of pressure sensitive adhesive along selected marginal portions thereof and applying a strip of liquid adhesive to said side seam flap, providing a lining sheet with strips of pressure sensitive adhesive along selected marginal portions thereof, combining the sheet with the blank to secure a marginal edge of the lining sheet to the

adhesively coated side seam flap only leaving the remainder of the sheet free of the blank, then wrapping the composite blank about a rectangular forming block starting with the marginally secured portions thereof against one corner face of the block and progressively folding adjacent panels against adjacent faces of the block to present the opposed and unsecured marginal edges of the composite blank in overlapping relation to said secured portions, the unsecured portions of the lining sheet being free to move lengthwise during the wrapping operation, applying pressure to said overlapped portions to activate the pressure sensitive adhesive and form the side seam, forming a lining bottom closure while supported on the block and applying pressure to activate the pressure sensitive adhesive and seal overlapping portions thereof, and then forming a bottom closure while supported on the block and applying pressure to activate the pressure sensitive adhesive and seal the overlapping portions thereof.

3. A method of making a lined carton as defined in claim 2 wherein the lining sheet is secured to the blank to dispose the marginal side edges of the lining sheet in offset relation to the marginal side edges of the carton blank whereby to provide individual spaced lining sheet and carton blank side seams during the wrapping and pressure applying operation.

4. A method of making a lined carton as defined in claim 2 wherein the bottom closure is formed with portions of the lining closure interleaved between the carton closing flaps.

5. The steps in the method of forming a lined carton on a rectangular forming block which consists in adhesively securing a marginal edge of a lining sheet to a marginal edge only of a prescored carton blank, the remainder of the sheet being free of the blank, then wrapping the composite blank about the lining block starting with the secured marginal edges thereof folded against one face of the block and progressively folding adjacent portions of the composite blank against successive adjacent faces of the block to present the opposed and unsecured marginal edges of the composite blank in overlapping relation to said secured portions, the unsecured portions of the lining sheet being free to move lengthwise during the wrapping operation, and then adhesively securing said overlapping portions to provide a tubular structure adapted to be closed at one end to provide a lined carton.

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