Feb. 26, 1963 P. CHERRIN 3,079,060

CARTON AND LINER ASSEMBLY

Filed March 10, 1960 3 Sheets-Sheet 1

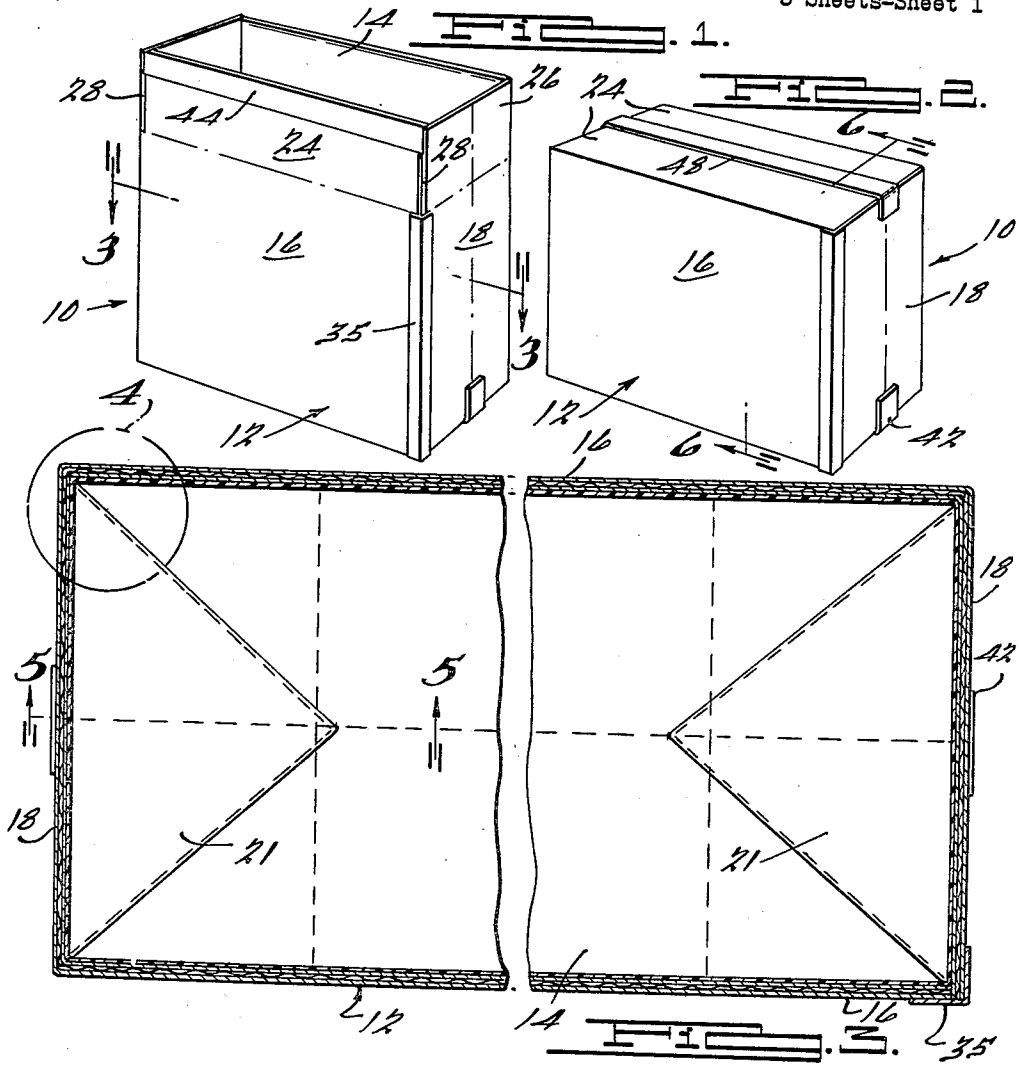


FIG. 1.

FIG. 2.

FIG. 3.

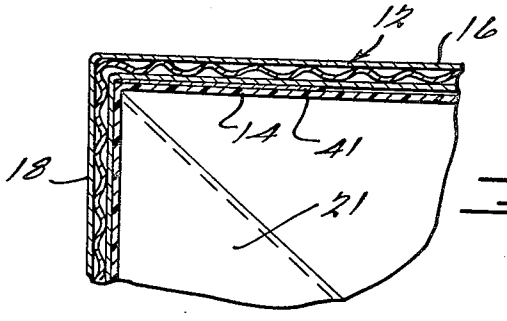


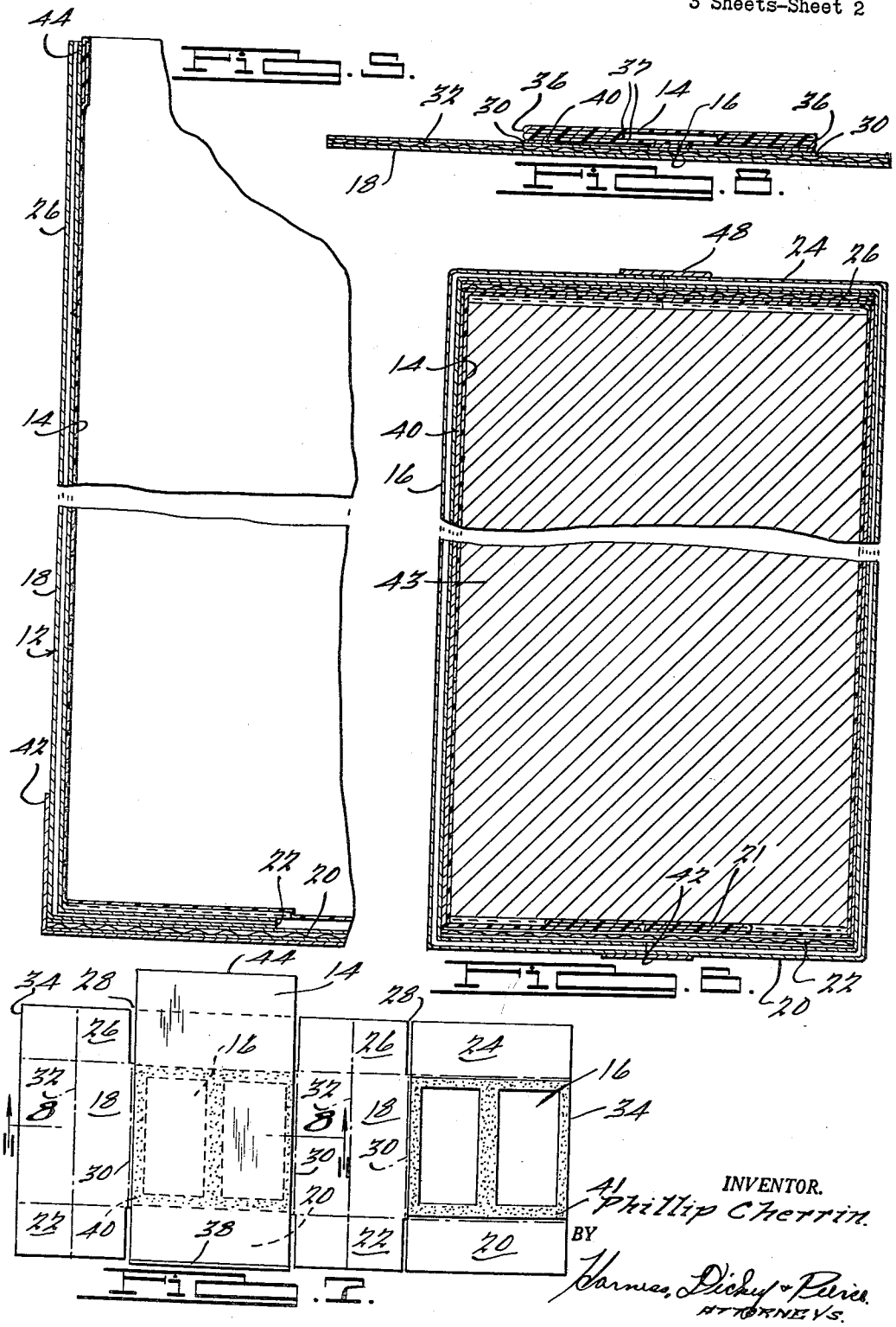
FIG. 4.

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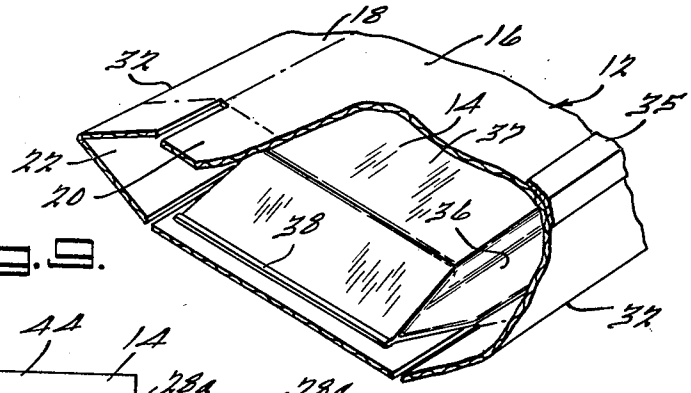


FIG. 9.

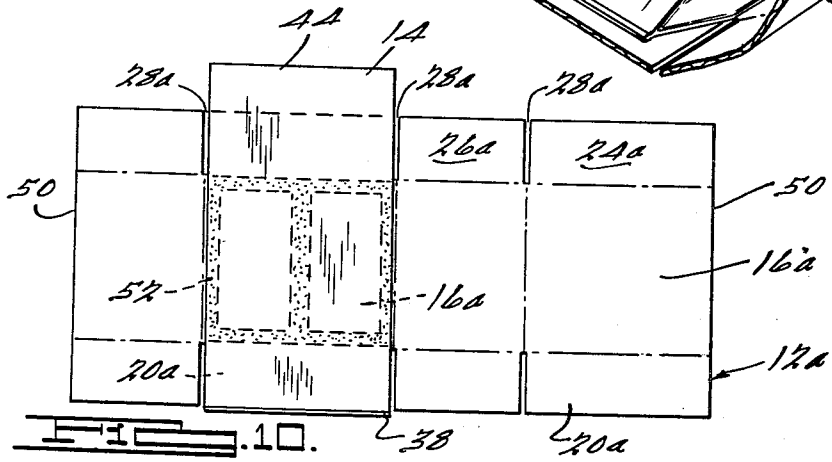


FIG. 10.

FIG. 11.

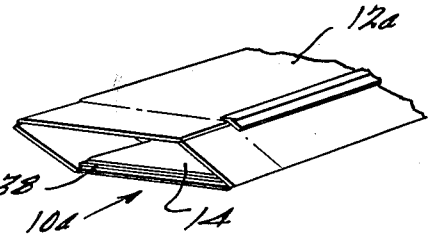
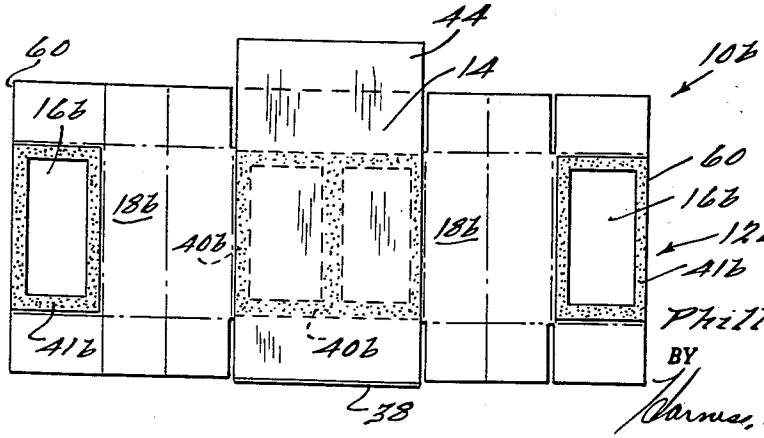


FIG. 12.



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CARTON AND LINER ASSEMBLY

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1 Claim. (Cl. 229—14)

This invention relates generally to foldable containers and more particularly to a corrugated cardboard carton having a collapsible inner liner secured thereto.

Many different products must be stored and shipped in moisture proof containers. Examples of such products are confections, cottage cheese, frozen foods and the like. A corrugated carton having an inner polyethylene liner is ideal for this purpose, but it is difficult to position a liner in a cardboard carton, on an efficient production line basis, so that the capacity of the liner and carton are fully utilized. It is an object of this invention, therefore, to provide a corrugated cardboard carton and a collapsible bag liner therefor which are assembled during construction of the carton so that the act of unfolding and setting up the carton also sets up the bag liner so that it can readily be filled. The bag is initially secured to the carton so that when the carton is set up the lower end of the bag is positioned at the bottom of the box so that when the lined carton is filled, the pressure of the contents is applied to the carton and not the bag. The length of the bag is such that when the carton is set up with the top flaps extending upwardly from the side and end panels, the upper end of the bag extends beyond the top flaps a distance sufficient to permit the upper end of the bag to be doubled over upon itself and inserted in the slots formed between adjacent top flaps. As a result, the upper end of the bag is maintained in a fully opened position to facilitate filling of the carton and the bag is of a length such that it can easily be tied with a wire, rope or the like, to seal the upper end of the bag.

Further objects, features and advantages of this invention will become apparent from a consideration of the following description, the appended claims and the accompanying drawing in which:

FIGURE 1 is a perspective view of the carton and liner assembly of this invention, in a position in which the top end thereof is open for filling;

FIGURE 2 is a perspective view of the carton and liner assembly of this invention, illustrated similarly to FIG. 1, showing the top end of the carton closed;

FIGURE 3 is an enlarged sectional view looking substantially along the line 3—3 in FIG. 1;

FIGURE 4 is an enlarged fragmentary view of the portion of FIG. 3 indicated by the circle 4;

FIGURE 5 is a fragmentary foreshortened sectional view looking substantially along the line 5—5 in FIG. 3;

FIGURE 6 is a foreshortened sectional view looking along the line 6—6 in FIG. 2;

FIGURE 7 is a developed plan view of the carton and liner assembly shown in FIG. 1;

FIGURE 8 is an enlarged sectional view as seen along the line 8—8 in FIG. 7;

FIGURE 9 is a fragmentary perspective view of the bottom end of the assembly of this invention, showing the positions which the bottom ends of the bag and liner assume when the carton is initially opened up;

FIGURE 10 is a developed plan view of a modified form of the carton and liner assembly of this invention;

FIGURE 11 is a fragmentary perspective view of the bottom end of the assembly shown in FIG. 9;

FIGURE 12 is a developed plan view of another modified form of the carton and liner assembly of this invention which is in all respects similar to the assembly shown in FIG. 7 but has the seam located intermediate the ends rather than at one end of a side panel.

With reference to the drawing, the carton and liner assembly of this invention, indicated generally at 10, is illustrated in FIGURE 1 as including a corrugated cardboard carton 12 and a bag liner 14 which may be formed of any suitable collapsible or foldable material. The corrugated cardboard carton 12 is of a generally rectangular shape in cross section having side panels 16 and end panels 18. A pair of bottom closure flaps 20 (FIG. 7) are integrally formed with the lower ends of the side panels 16 and similar bottom closure flaps 22 are integrally formed with the end panels 18. A pair of top closure flaps 24 are formed integral with the upper ends of the side panels 16 and similar top closure flaps 26 are formed integral with the upper ends of the panels 18. The bottom and top closure flaps 20 and 24 are of a length to extend half the distance between the side panels 16 in the opened position of the carton 12. It is to be understood that the terms "side," "end," "top" and "bottom" are used herein to facilitate the description of the carton 12 and are not to be construed as limiting either the shape or the position which the carton 12 must assume.

As shown in FIG. 7, the closure flaps 20, 22, 24 and 26 are all of substantially the same length and adjacent flaps are separated by a slot 28 formed in the corrugated cardboard blank which is scored and then folded to form the carton shown in FIG. 2. The blank shown in FIG. 7 is scored along the lines 30 so that when the blank is folded along the lines 30 a carton is formed which is rectangular in cross section and has the score lines 30 at the corners of the carton 12. In addition, the end panels 18 and the top and bottom closure flaps 22 and 26 are formed with median score lines 32 for a purpose to appear presently.

To form the carton 12 from the blank shown in FIG. 7, the end panels 18 are folded along the median score lines 32 and the side panels 16 are positioned in substantial alignment with each other. With the blank thus folded, the ends 34 of the blank are in an abutting relation at what will eventually be a corner of the carton 12. A length of tape 35 is then applied so that it overlaps the blank ends 34 to form the seam which is necessary to complete the carton 12. The advantage of folding the blank along the median score lines 32 in the end panels 18 is that it provides for an initial alignment of the side panels 16 which is maintained during the setting up of the carton 12.

The liner 14 which may be of any collapsible or foldable material such as paper or plastic, and which is illustrated as being moisture proof polyethylene, is initially in a flat form having a first pair of opposite flat sides 37 and a second pair of sides which are in the form of side pleats 36 that are folded inwardly so that the bag 14 is initially of a width corresponding substantially to the width of a side panel 16, as shown in FIGS. 7 and 8. The bottom end of the bag 14 is closed by a seam 38, formed usually by heat sealing opposite sides of the bag, which is initially aligned with the terminal end of one of the bottom closure flaps 20, as also shown in FIG. 7. Adhesive 40 is applied to one of the side panels 16 and the bag 14 is placed on the adhesive so as to adhere one side 37 of the bag 14 to the carton 12. Adhesive 41 is applied to the other side panel 16 so that when it is folded over into alignment with the other side panel 16 and pressed into engagement with the other side 37 of the bag 14, this side of the bag is also secured to the carton 12. The pleats 36 in the bag 14 are of a width corresponding to the width of a carton end panel 18 so that when the carton 12 is opened up the bag 14 will be coextensive in size with and form a liner on the inside of the carton 12.

With the carton 12 and the bag 14 thus assembled, the

bag and carton assembly is readily opened or set up by merely moving the score lines 32 toward each other to straighten the folded end panels 18. This action provides for movement of the side panels 16 away from each other to a final position spaced apart a distance equal to the widths of the end panels 18. When the bag 14 is set up the pleats 36 form triangular gussets or reinforcing sections 21 at opposite ends of the bottom of the bag 14. The gussets 21 are secured to the bag bottom at the seam 38 and are of double thickness as shown in FIG. 6.

Because the bottom flaps 20 are of a length to extend half the distance across the bottom of the carton 12, the positioning of the bottom end of the bag 14 so that it is located at the terminal end of a closure flap 20 automatically provides for a location of the bottom end of the bag at the bottom ends of the carton side panels 16 when the carton is set up. The bottom closure flaps 20 and 22 are then folded inwardly to close the lower end of the carton and a tape member 42 or the like is applied to the bottom end of the carton.

The bag 14 is of a length such that the top end 44 thereof extends substantially beyond the terminal ends of the top closure flaps 24 and 26. As a result, when the carton is in a flat folded condition with the side panels 16 flat against each other so that the slots 28 on opposite sides of the box are lined up and the upper end 44 of the bag 14 can be turned outwardly and doubled over upon itself and then inserted in the slots 28 between the top closure flaps 24 and 26, as shown in FIG. 1. When the carton 12 is set up by moving the fold lines 32 toward each other, the bag 14 is unfolded so that the upper end thereof is fully open, as shown in FIG. 1, without requiring any further attention to the bag. This arrangement also maintains the upper end of the bag 14 fully open so that the assembly 10 can easily be filled on a production line basis without any danger that the bag 14 will be in the way. After the bag 14 has been filled so that the contents, indicated at 43 in FIG. 6, are not above the upper ends of the side and end panels 16 and 18, the upper end of the bag 14 is closed with a wire, string or the like (not shown), or heat sealed, following which the top closure flaps 24 and 26 are folded inwardly to positions closing the upper end of the carton 12 and a closure tape 48 is applied to the flaps 24.

The primary advantage of the carton shown in FIGS. 1–8, which has the median fold lines 32 in addition to the corner fold lines 30 that are provided in a regular corrugated cardboard carton, is that the side panels 16 are in continual alignment thereby making it possible to adhere both sides of the bag liner 14 to the side panels 16 of the carton 12 and insert the upper end 44 of the bag in the slots 28 so that when the carton is set up the bag 14 is automatically unfolded with the top end thereof open. As a result, when the carton 12 is set up the bag 14 is automatically also unfolded and set up so that it forms an inner liner for the carton 12. For this reason, the carton 12 is preferred in the assembly 10 which is particularly suited for assembly line production. The corrugated cardboard blank is placed flat on a conveyor which feeds it into the machine which folds it and applies the seam tape 35. Prior to entry of the blank into the machine, the adhesive 40 and 41 is applied and the bag 14 is placed on the adhesive 40 as shown in FIG. 7. The machine then folds the blank so that the side panels 18 are moved into alignment and the bag and adhesive 41 are moved into engagement.

However, some of the advantages of assembly and ease of filling obtained with the assembly 10 by locating the lower end of the bag 14 at the terminal end of a closure flap 20 and by extending the upper end 44 of the bag 14 substantially beyond the upper ends of the top closure flaps 24 are also obtainable in an assembly in which a regular carton is used. Such a carton is illustrated in FIGS. 10 and 11 and indicated by the numeral 12*a*. The carton 12*a* is identical to the carton 12 except that the median fold lines 32 are omitted, and numerals with the letter suffix "*a*" are used on the carton 12*a* to indicate parts like the correspondingly numbered parts of carton 12. As a result, when the carton blank shown in FIG. 10 is folded so that the opposite ends 50 thereof are adjacent each other, the carton side panels 16*a* are offset relative to each other. The bag 14 is assembled with the carton 12*a*, when the carton blank is flat, by locating the bottom seam 38 in the bag 14 at the terminal end of a bottom closure flap 20*a* with the top end 44 of the bag located substantially above the top closure flaps 24*a* and 26*a*. The side of the bag 14 adjacent the blank is secured by adhesive 52 to one of the carton side panels 16*a*. In the assembly 10*a*, after the carton 12*a* is set up, the bag 14 is independently opened up within the carton 12*a* and the top end 44 of the bag 14 is then folded over upon itself and inserted with the slots 28*a*. The top end 44 of the bag 14 may be doubled over and inserted in the pair of slots 28*a* which are located on opposite sides of the top flap 24*a* secured to the side panel 16*a* to which the bag is adhered, when the carton is in a folded condition to eliminate any necessity for reaching into the carton to grasp the upper end of the bag after the carton is set up. Following setting up of the carton the upper end of the bag 14 is readily doubled over and inserted in the remaining slots 28*a* to the fully open upper end of the bag.

A modified carton and liner assembly 10*b* is illustrated in FIG. 11 which is identical to the assembly 10, but which has the ends 60 of the blank which forms the carton 12*b* located so that the seam in the carton will be between the ends of a side panel 16*b* rather than at one end as in the carton 12. Numerals, with the letter suffix "*b*" added, are used in FIG. 11 to indicate parts which are similarly numbered in the assembly 10.

From the above description, it is seen that this invention provides carton and liner assemblies 10, 10*a* and 10*b*, which can be efficiently assembled on a production line basis to provide a lined corrugated cardboard carton which can then be efficiently filled with goods, also on a production line basis. Because the cartons are formed with a closure flap which extends across half the width of the bottom of the carton when the carton is set up and the bag is of a width corresponding to the width of the box bottom, the bag 14 is properly positioned with respect to the carton 12 when the bag bottom end is positioned at the terminal end of the bottom closure flap. By making the bag 14 of a length such that it can be folded upon itself over a pair of opposite top closure flaps, a fully open position of the bag during filling is insured. The pairs of top flaps 24 and 26 are not folded along the score lines which separate them from the panels 16 and 18 until after the bag 14 is filled. Consequently, either or both pairs are capable of providing the necessary rigid support for the upper end of the bag 14 during filling.

It will be understood that the specific construction of the improved carton and liner assemblies which are herein disclosed and described are presented for purposes of explanation and illustration and are not intended to indicate limits of the invention, the scope of which is defined by the following claim.

What is claimed is:

A container and liner assembly comprising a corrugated cardboard carton having side and end panels and bottom and top closure flaps, each of said end panels being foldable upon itself along a median fold line extending between the top and bottom of said carton, whereby said carton has the side panels disposed in substantial alignment in both the folded and setup conditions of said carton, a liner bag formed of a collapsible material and having sides and ends corresponding substantially in size to the size of said side and end panels, said ends being formed as inwardly extending pleats when said bag is

folded flat, said bag having opposite sides thereof secured to the inner faces of said container side panels so that the bottom of said bag is at the bottom of said carton when said carton is unfolded and the side edges of the sides of said bag are disposed along the corresponding edges of said side panels, said carton being formed from a scored blank which is folded so that opposite ends of the blank are arranged in an abutting relation intermediate the ends of one of said side panels in said carton, and means connecting said blank ends.

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