

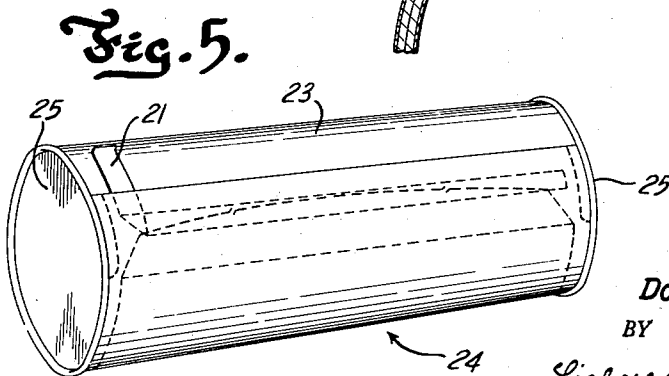
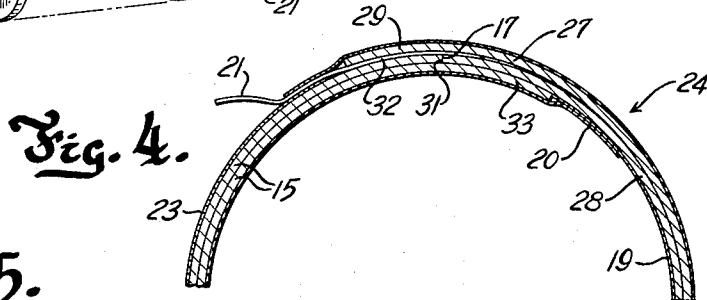
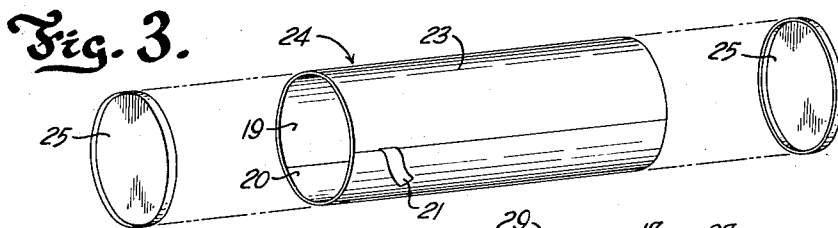
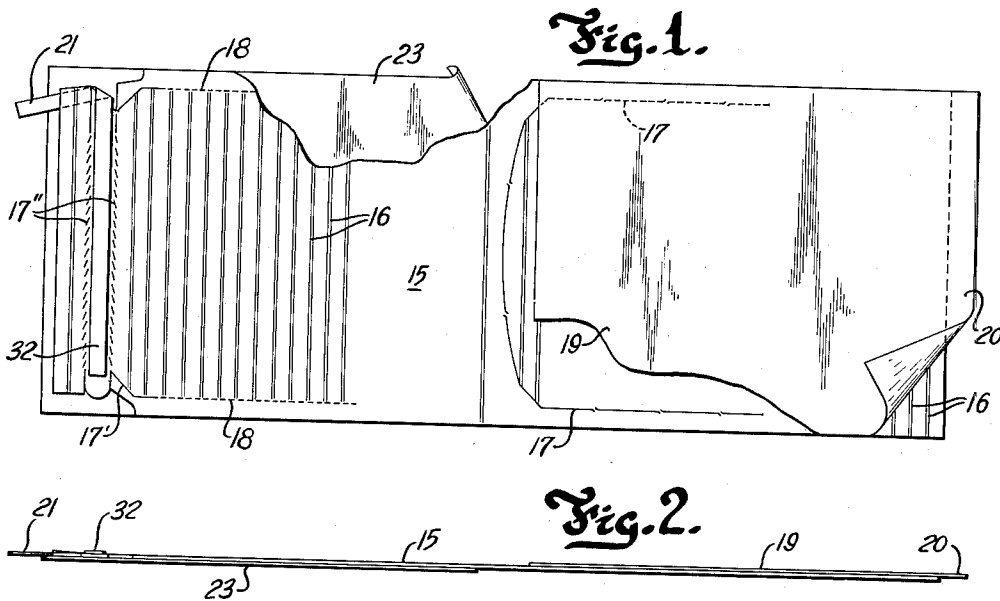
July 3, 1962

D. P. SMITH
COMPOSITE CONTAINER

3,042,285

Filed April 11, 1960

2 Sheets-Sheet 1



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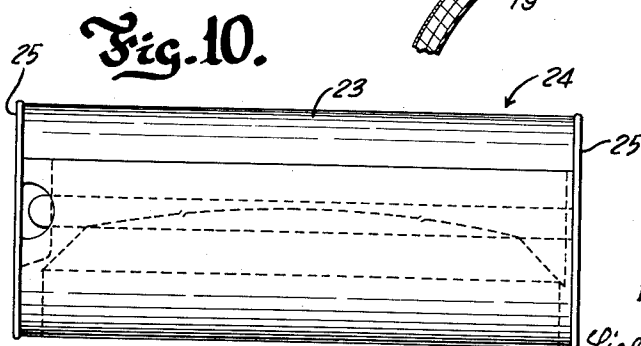
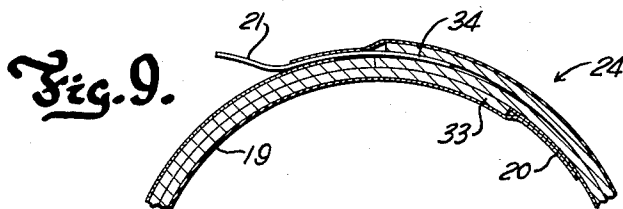
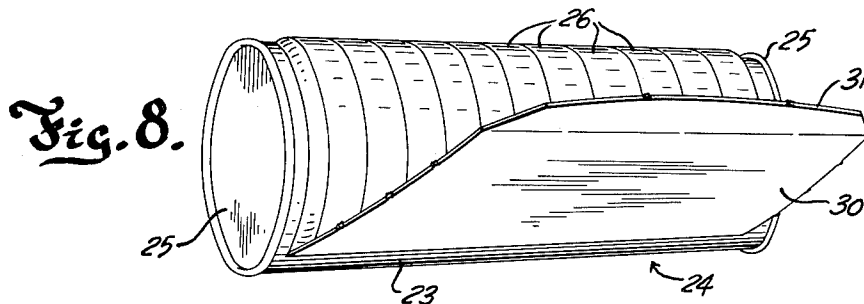
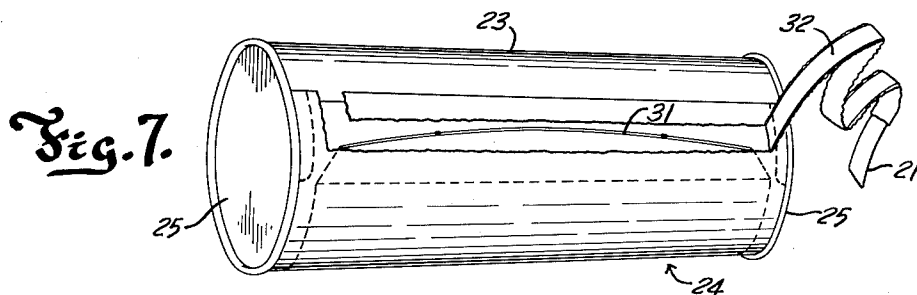
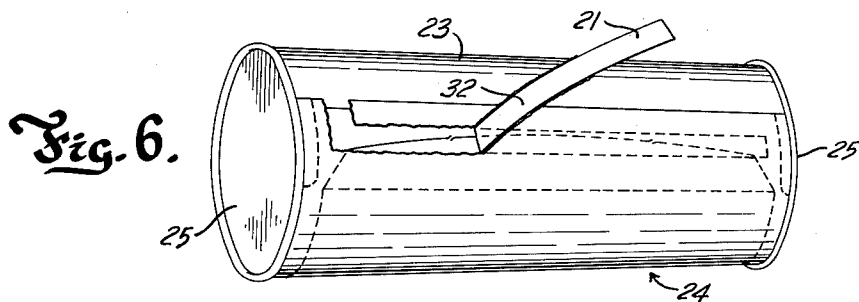
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2 Sheets-Sheet 2



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1

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COMPOSITE CONTAINER

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5 Claims. (Cl. 229—51)

The present invention relates generally to improvements in the art of packaging, and relates more particularly to the provision of an improved tubular container embodying novel means for obtaining access to the packaged commodity.

A primary object of the invention is to provide an improved composite commodity container of tubular formation which is adapted to effectively protect the confined commodity while permitting ready access to and removal of the contents without mutilation thereof.

In the packaging of certain commodities, a container is required which possesses rigidity so as to withstand considerable abuse and retain its shape as well as that of the confined product, and which is moreover adapted to be tightly sealed to protect the packaged product against possible deterioration and leakage. These containers must furthermore be readily openable for access to the packaged commodity by the consumer without need for undue physical exertion, mechanical skill and mental ingenuity. Examples of some of the commodities requiring special rigid containers are such food products as refrigerated biscuits and other bakery products, frozen fruits and juices, molded meat products, molded salads and desserts and other foods which are packed while in a semi-fluid condition and subsequently assume a definite shape within the container, as well as such other products as polishes and dressings, putty, waxes and the like.

Many containers have heretofore been proposed in efforts to fulfill these requirements and provide a suitable packaging expedient. Among such containers are various metal cans requiring use of special openers for obtaining access, specially constructed metal cans having a built in tear strip requiring a slotted key for removing the strip, fiber cans or tubular containers of the convolute-wound type having a glued overlap seam and an extending gripping tab adapted to be pulled to separate the seam, tubular fiber containers which are either scored or have a tear tape embedded in the side wall and extending longitudinally of or circumferentially around the side wall for severing the same along a predetermined line, spiral-wound fiber containers having a tear string adapted to split the side wall between the spirally-wound ribbons of paper board, and spiral-wound fiber containers in which the outer layer of paper board is loosely glued so as to permit the spirally-wound side wall ribbons to be manually unwound and separated.

While some of these previously proposed containers have enjoyed a considerable amount of commercial acceptance and success, all of them possess certain disadvantages and objections, particularly when used in the packaging of bakery products such as refrigerated oven ready biscuits. These biscuits are cut to the desired form and are placed in their packaging containers after the dough has partially risen. The containers are then hermetically sealed, and the rise of the dough is completed in the packages with the development of considerable pressure. The internal pressures developed in the sealed packages during storage run as high as thirty pounds per square inch, and it is therefore imperative that the joints and seams of the container be tightly sealed to prevent outward extrusion of the product and of sufficient strength to withstand the high internal pressures. In addition, special precautions must be taken to provide for quick and uniform opening of a substantial portion of the container in order to permit release of the internal pressure built up in the

2

package, since the dough will otherwise extrude through the opening or any small cracks in the seam and thus cause deformation and distortion of the biscuit. Furthermore, the access opening must be so located and must be of sufficient size as to permit removal of the expanded biscuits without need for unnecessary handling by the consumer and possible resultant damage to the product.

None of the presently available containers known to me meet all of the requirements above set forth. The metal cans are expensive and require special opening devices of one type or another. Furthermore, in the opening of metal cans, an initial penetration, puncture or tear in the container wall must be made with the opening thereafter being made progressively larger, and the biscuit dough would therefore extrude immediately through the initial hole or slit and cause deformation. In addition, access for removal of the product is difficult, if not impossible, without damage to the commodity through the type of openings heretofore provided. As for the available fiber or paper board containers, those which have an overlapped glue seam and are adapted to be opened by breaking or separating the seam are difficult to cap effectively at the ends because of the extra thickness of the tubular side wall at the seam portion. Furthermore, in this type of container, the glue seal must be weak enough to permit it to be broken during the opening process and yet strong enough to prevent inadvertent breaking of the seal by the internal pressures which build up in the package, and it is therefore very difficult to provide just the right seal. As for the presently available fiber containers embodying a tear tape or the equivalent, the opening likewise is progressive and begins with a small initial slit or tear through which the biscuit dough will extrude, and the opening defined in these prior containers likewise does not permit ready access to the product for removal thereof without damage in handling. The spiral wound fiber containers are likewise objectionable because of the progressive opening which permits extrusion of the dough when internal pressures are released, and convenient access to the packaged commodity is also difficult without considerable handling and damage.

Therefore, another important object of my present invention is to provide an improved strong and durable fiber board container which obviates all of the objections and disadvantages attendant prior containers of this general type and which meets all of the requirements hereinabove specified.

A further object of this invention is to provide an improved tubular container especially adapted for, but not limited to, the packaging and merchandising of oven ready bakery products such as refrigerated biscuits and which embodies a novel side door opening therein for obtaining ready free and easy access to the contents without need for handling the same while assuring simultaneous opening of the container side wall along its entire length to equalize the release of pressure from within the package, thus preventing distortion of the biscuits.

Still another object of the invention is to provide an improved commodity package of tubular formation and having novel access means whereby the container may be conveniently opened along its entire side wall without need for using any separate opening devices whatsoever.

An additional object of the present invention is to provide an improved method of producing a novel tubular commodity container having a fibrous side wall provided with a built-in door or access opening and capped at the ends to effectively seal the container and confine the commodity.

These and other objects and advantages of the present invention will become apparent from the following detailed description, reference being made to the accompanying drawings in which:

3

FIG. 1 is a plan view of a fiber board blank for the tubular side wall of a typical composite container embodying the invention, the blank having the flexible inner liner and flexible outer label material secured thereto with parts being broken away for the sake of clarity;

FIG. 2 is an end view of the blank and its components;

FIG. 3 is an exploded perspective view showing the blank formed to tubular shape and illustrating the end caps which are applied after filling;

FIG. 4 is a transverse section through the formed tube;

FIG. 5 is a perspective view of the completely assembled and sealed package;

FIG. 6 is a similar perspective view of the assembled package with the outer convolution or overlying layer of the tubular side wall partially severed by the tear string;

FIG. 7 is another perspective view of the package with the outer convolution of the container wall entirely severed across its full length by the tear strip and showing the edge of the intermediate layer or access door partially pulled away in the initial door opening stage;

FIG. 8 is still another perspective view of the package with the side wall opening or door of the container extended to fully opened condition to reveal the contents;

FIG. 9 is a fragmentary transverse section similar to FIG. 4 but taken through a somewhat modified container; and

FIG. 10 is a side view of still another modified container in which the tear strip is formed directly from the tube forming stock.

While the improvements are shown and described herein as being embodied in a tubular container of cylindrical configuration having a foil liner and an outer foil cover or label and as being especially adapted for packaging refrigerated oven ready biscuits, it is not intended to thereby unnecessarily limit the invention since the container may be of polyhedron cross-section with materials other than foil being utilized for the liner and cover, or with the cover omitted entirely and the tube merely overprinted, and with the container being used for packaging other commodities.

Referring to the drawings, a blank 15 of fiber or paper board is first provided, the blank being preferably scored lightly as at 16 in a direction extending lengthwise of the final tube to facilitate forming the same to tubular shape while adding rigidity thereto. The blank 15 is then die cut along the lines 17, 17', 17'' to define the inner door or access opening, the fastening tabs, and the separable latch area as will hereinafter more fully appear. At the same time, the outer door or access opening may be defined, depending upon the type and weight of the materials utilized and consequently the need for weakening the outer layer of the tube, by proper scoring or perforation along the lines 18. The inner liner 19, preferably of an impermeable material such as foil, is thereafter laminated or adhered to the face of the blank 15 over the entire area of that portion which ultimately becomes the inside of the finished tube, the liner being of sufficiently light weight and flexible material as to tear upon opening of the door formed in the fibrous side wall, and in applying the liner 19, it is important that the marginal edge be extended beyond the marginal edge of the blank 15 as at 20 to form a loose flap. The next step is to adhesively apply the tear strip 21 which is adapted to facilitate opening of the latch as will also hereinafter appear, and while this separate strip may be eliminated by properly scoring the blank 15 as at 17'', use of a tear string or tape insures dependable and reliable operation. Where it is desired to use an outer printed cover or label over the tubular body, such label or cover 23 is next adhesively secured or laminated to the side portion of the blank which is to ultimately become the exterior of the tube, but as indicated, this outer cover may be eliminated where it is desired to directly overprint the blank 15. Finally, the blank 15 and its components is rolled to tubular formation about an axis parallel to the scoring

4

16 which contrary to normal practice, is also parallel to the direction of the web from which the blank 15 is formed, it being understood that successive blanks may be formed in a continuous manner from a roll of web stock with the liner and outer cover being likewise supplied from rolls. The formed tube 24 is then ready for filling and application of the end caps 25, as illustrated in FIG. 3.

The finally assembled package therefore includes, in general, a tubular fiber or paper board body 24 housing commodity such as a plurality of pre-formed biscuits 26 and being closed at its opposite ends by metal discs or caps 25 to hermetically seal the package. The tubular body 24 is formed with at least two layers or plies 27, 28 of body stock along a defined area extending longitudinally the full length thereof between the end caps 25 with the outer ply 27 being covered by an overlying sheet or ply 29 of rupturable material located within and extending across the defined area, the ply 29 consisting of either a separate sheet or an extending and overlapping portion of the same ply 27. The inner ply 28 of the tube contains the die cut portion 17 which defines a door or access flap 30, the cut line 17 extending longitudinally of the tube within the defined area to define the free outer edge 31 of the door and circumferentially of the tube adjacent to the capped ends thereof for at least one-half of the circumference of the tube to define the extent to which the door 30 may be readily opened. The tear strip 21 is located between the ply 27 and rupturable covering 29 immediately adjacent to the edge 31 of the door 30 formed in the inner ply 28 and also extends for at least the full length of the door edge 31 to permit gripping of this edge. The extending and overlapping portion or rupturable covering 29 is secured to the adjacent underlying surfaces of the tubular body within the defined area by means of a strip of suitable adhesive 32, and the ply 28 includes an inner edge portion 33 which extends beyond and underlies the edge 31 of the door 30. The inner surface of the tube is of course covered by the liner 19, and the extending marginal flap 20 of the liner protrudes beyond the end of the portion 33 and lies flat against the inner surface of the tube as shown in FIGS. 4 and 9.

In the preferred embodiment illustrated in FIGS. 1 to 8 inclusive, the plies 27, 28 as well as the rupturable overlying portion 29 and the underlying extending portion 33 are all formed integral and of the same paperboard blank, with the rupturable portion 29 and a portion of the ply 27 immediately adjacent to the edge 31 of the door 30 being secured by an adhesive strip 32 to the adjacent surface of the ply 28, and the entire tubular body is covered by the printed overwrap or label 23. However, in the modification of FIG. 9, the rupturable ply 29 is in the form of a separate sheet which may constitute the label per se, the rupturable ply being secured to the adjacent outer surface of the ply 28 and also to the outer surface of the ply 27 adjacent to the tear tape by the adhesive strip 32. In this embodiment the end of the ply 27 is also secured to the adjacent surface of the ply 28 by an adhesive strip 34 as shown. In either embodiment severance of the ply 29 by the tear strip 21 will not immediately effect release of the door 30, the outline of which is defined by the cut line 17 formed in the inner ply 28, and this door is held closed by the outer ply 27 which, at most, is merely perforated to define a weakened zone corresponding to the door. Severance of the ply 29 therefore only permits access to the edge 31, and to open the container and release the internal pressure as well as to obtain access to the commodity 26, it is therefore necessary to grasp the edge 31 of the door and pull the same outwardly to sever the weakened zone in the outer ply 27 and thereby cause the door 30 to open simultaneously over its entire length and equally release the internal pressure throughout the length of the container. In any modification of the invention, it is very desirable to provide the flexible extending flap 20 at the end of the inner ply 28 since this flap lies flat against the adjacent inner surface

5

and aids in sealing against release of the internal pressure until the door 30 is actually opened as aforesaid. The modification shown in FIG. 10 is exactly like the preferred form hereinabove described except for the elimination of the separate tear strip, the strip 21 in this case being merely formed integral with the outer side wall ply 27, and the opening operation is likewise identical.

From the foregoing detailed description, it is believed apparent that the present improvements provide a novel container and commodity package which is exceedingly strong and tightly sealed and which may nevertheless be conveniently opened without need for utilizing any separate opener tools or opening devices. It is obvious that the tear tape merely provides access through the outer ply to the edge of the door formed in the inner ply. The edge of the door normally springs open from internal pressure, thus providing easy accessibility. During this slight opening the contents of the container are retained by the inner wall ply 33 and the marginal flap 20. The door is opened fully by bending the edge away from the initial opening. The initial expansion of the container contents is controlled by the marginal flap 20 so that no localized extruding causes distortion of the product. The door is therefore locked both circumferentially and linearly until the final opening operation which releases pressure simultaneously throughout the length of the package thereby eliminating the possibility of extrusion of the commodity through slits or lines of severance which are made progressively larger. The door may be made of any desired size, but to permit ready access to and removal of the packaged product from the container, it is preferable to extend the slits defining the door opening at least one-half of the distance about the circumference of the tubular body. The improved container may be readily produced on automatic equipment by following the method steps hereinabove outlined, and after formation of the tube, the product is placed within the tubular body which is then closed in a customary manner by means of suitable end caps.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A commodity package comprising, a tubular multiple-ply body of paperboard, a commodity having a shape corresponding to said tubular body housed therein, caps secured to opposite ends of said tubular body to seal said commodity therein, the inner ply of said body being scored circumferentially and longitudinally to define an access door concealed by the outer ply of said body, the longitudinal score line being exteriorly covered and concealed by a local rupturable portion of the outer ply of said body, a tear strip extending across said rupturable portion of said outer body ply for removing only said local rupturable portion to obtain access to said door, the inner ply of said body having an edge portion extending beyond and interiorly covering the longitudinal door defining score line therein, and a flexible liner secured to the inner surface of said inner ply and having a loose portion extending beyond said extending edge portion of the inner ply to provide a sealing flap.

2. A commodity package comprising, a tubular multiple-ply body of paperboard, a commodity having a shape corresponding to said tubular body housed therein, caps secured to opposite ends of said tubular body to seal said commodity therein, the inner ply of said body being scored circumferentially and longitudinally to define an access door concealed by the outer ply of said body and

6

the outer ply being provided with lines of weakening corresponding to and aligned with the circumferential score lines of said inner ply, the longitudinal score line being exteriorly covered and concealed by a rupturable portion of the outer ply of said body, a tear strip positioned between the inner and outer plies and extending across said rupturable portion of said outer body ply for rupturing the same to obtain access to said door, the inner ply of said body having an edge portion extending beyond and interiorly covering the longitudinal score line therein, and a flexible liner secured to the inner surface of said inner ply and having a loose portion extending beyond said extending edge portion of the inner ply to provide a sealing flap.

3. A commodity package comprising, a tubular multiple-ply body of paperboard, a commodity having a shape corresponding to said tubular body housed therein, caps secured to opposite ends of said tubular body to seal said commodity therein, the inner ply of said body being scored circumferentially and longitudinally to define an access door concealed by the outer ply of said body, the outer ply having a local rupturable portion overlying and normally concealing said longitudinal score line, and a tear strip positioned between the inner and outer plies and extending toward opposite ends of said body longitudinally across said local rupturable portion of said outer body ply for obtaining access to said longitudinal score line defining the free edge of said door.

4. A commodity package comprising, a tubular multiple-ply body of paperboard, a commodity having a shape corresponding to said tubular body housed therein, caps secured to opposite ends of said tubular body to seal said commodity therein, the inner ply of said body being scored circumferentially and longitudinally to define an access door concealed by the outer ply of said body, the longitudinal score line being exteriorly covered and concealed by a local rupturable portion of the outer ply of said body, a tear strip positioned between the inner and outer plies and extending across said rupturable portion of said outer body ply for removing only said local rupturable portion to obtain access to said door, and a flexible liner secured to the inner surface of said inner ply and having a loose portion extending beyond the terminal edge of the inner ply to provide a sealing flap.

5. A commodity package comprising, a tubular multiple-ply body of paperboard, a commodity having a shape corresponding to said tubular body housed therein, caps secured to the opposite ends of said tubular body to seal said commodity therein, the inner ply of said body being scored circumferentially and longitudinally to define an access door concealed by the outer ply of said body, the longitudinal score line being exteriorly covered and concealed by a local rupturable portion of the outer ply of said body, the inner ply of said body having an edge portion extending beyond and interiorly covering the longitudinal door defining score line therein, and a flexible liner secured to the inner surface of said inner ply and having a loose portion extending beyond said extending edge portion of the inner ply to provide a sealing flap.

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