May 22, 1962 C. D. MULLINIX 3,035,756

RIGID END PACKAGE AND METHOD OF MAKING SAME

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FIG. 1.

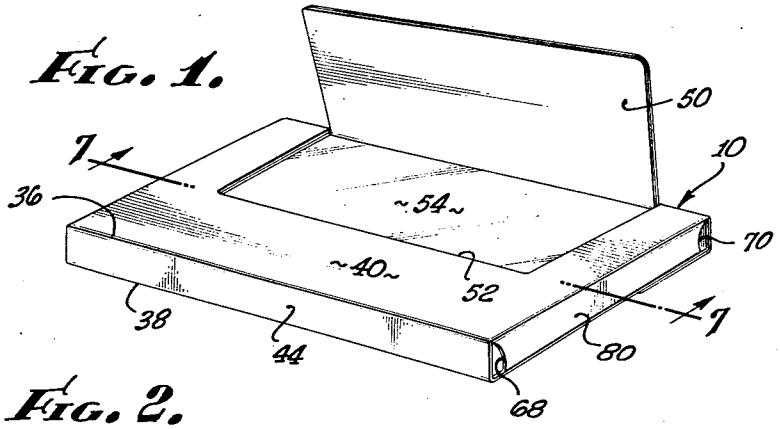


FIG. 2.

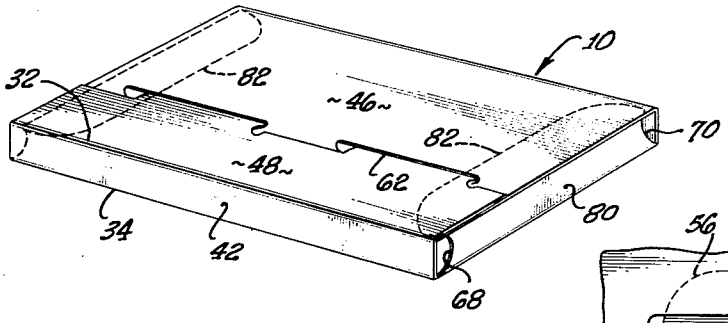


FIG. 4.

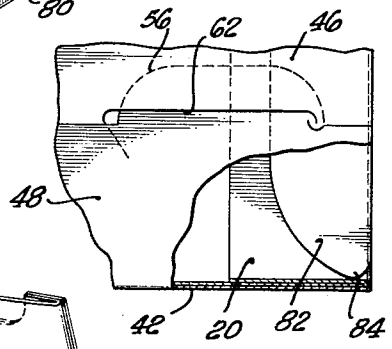
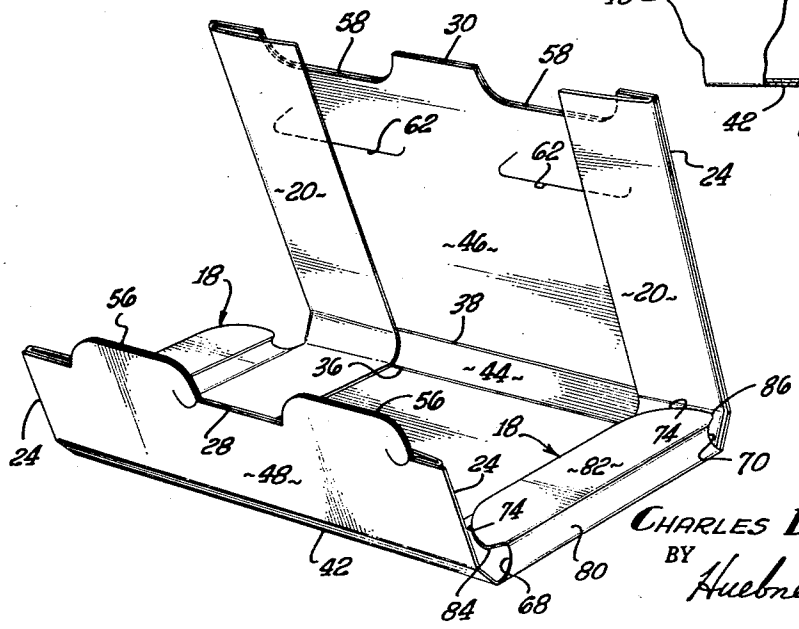


FIG. 3.



INVENTOR.
CHARLES D. MULLINIX
BY Huebner & Worrel
ATTORNEYS

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FIG. 5.

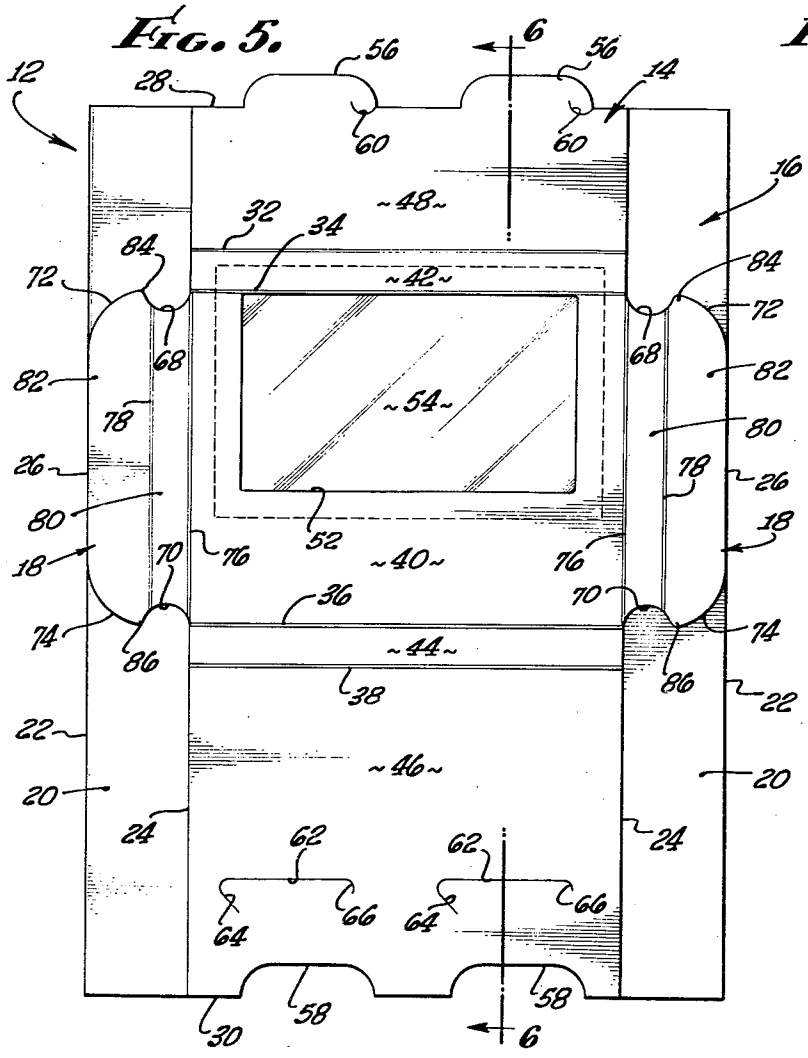


FIG. 6.

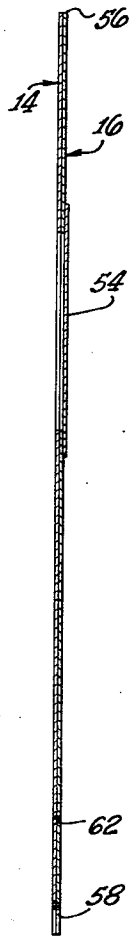
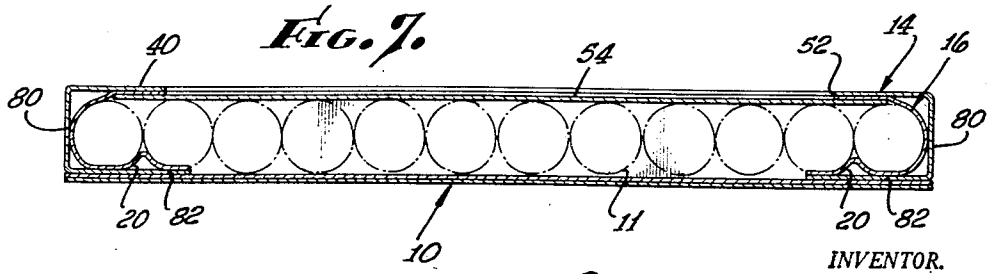


FIG. 7.



INVENTOR.
CHARLES D. MULLINIX
BY
Huebner & Worrel
ATTORNEYS.

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3,035,756
RIGID END PACKAGE AND METHOD OF MAKING SAME

Charles D. Mullinix, Santa Monica, Calif.
(2433 Via Campasina, Palos Verdes, Calif.)

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3 Claims. (Cl. 229—87)

This invention relates to packaging of articles in general, including but not limited to foods, and clothing, as for example, socks, handkerchiefs, neckties and the like, and the present invention is particularly advantageous for packaging perishable meat products such as sausages and bacon.

The present invention will illustrate and describe herein as the same may be embodied in a form particularly adapted for packaging sausages or other relatively fragile, perishable meat products.

In modern self-service food stores, a purchaser often picks up several food packages and inspects them before making his selection. Thus, a given package of sausages or the like may be handled and inspected by a number of purchasers before being finally selected for purchase. It is therefore important that the packages be so constructed that they will hold together under these conditions and will provide the required structural rigidity to minimize damage to the fragile meat contents. It is thus a primary object of the present invention to provide an improved package of the character described which will withstand such rough handling.

It is also important that packages for sausage and other perishable meat products be so constructed that they will maintain a correct balance of moisture loss and ventilation. For example, if a package of sausage is airtight, the sausage will in time become sour and slimy, because of the considerable quantity of moisture in the sausage when it is packed. On the other hand, if too much air is permitted to circulate in the package, the sausage will dry out or oxidize and become rancid. It is accordingly another object of the present invention to provide a package of the character described which, when employed for packaging perishable meat products, will maintain a satisfactory balance of moisture loss and ventilation for relatively long life of the packaged product.

A presently preferred method of manufacturing packages of the character described is to provide a long strip or roll of sheet material from which blanks are cut, these blanks being separated from each other by a force applied in the plane of the blanks. These blanks preferably include a lamination of two sheets of material, a relatively heavy sheet of paper or cardboard to provide the structural characteristics of the package, and a relatively light weight lamination which forms an inside closure portion for more completely wrapping the product in the package. In the presently preferred package a separate rigid end portion of the relatively heavy lamination is provided at each end of the package to hold the package in a structurally secure tabular form when it is closed. This rigid end portion of the relatively heavy lamination must be separated during manufacture from a marginal portion of the relatively light sheet so that this portion of the light sheet can be tucked about the ends of the product in the package. It is another object of the present invention to provide a new manufacturing method for separating these portions of the laminations and for processing them to remain separated so that they will be readily available for separate handling during the wrapping of the product within the package.

It is a further object of the present invention to provide novel recessed edge portions of the rigid end member which provide breather outlets enabling excess moisture inside the package to escape, without permitting too much air to reach the product wtihin the package. Also, these

recesses, preferably but not necessarily being generally half-round arcuate cuts in the edges of the rigid end members, provide openings to accommodate half-round bars employed in machine folding and closing of the package.

Further objects and advantages of this invention will appear during the course of the following part of this specification, wherein the details of construction of one embodiment thereof, and the manner in which packages are formed from blanks embodying the invention are described with reference to the accompanying drawings, in which:

FIGURE 1 shows a top perspective view of a completed package embodying the present invention.

FIGURE 2 shows a bottom perspective view of the package shown in FIGURE 1.

FIGURE 3 shows the package at a stage during the closing thereof.

FIGURE 4 is a fractional detail plan view showing the rigid end and locking portions of the package in the closed position of the package.

FIGURE 5 is a plan view of a blank for forming the package.

FIGURE 6 is a cross-section of the blank taken substantially on the line **6—6** in FIGURE 5.

FIGURE 7 is a cross-section of the package taken on line 7—7 of FIGURE 1.

Referring to the drawings more in detail, FIGURE 1 shows a package **10** of relatively thin and rectangular configuration made in accordance with the present invention. The package **10** is particularly suitable for accommodating cased sausages **11**, as illustrated in FIGURE 7. The package **10** is formed from a suitable blank **12** best shown in FIGURE 5.

Having chosen to illustrate the present invention in a form that is particularly well suited for packaging perishable meat products, a presently preferred construction of the package-forming blank is herein shown as being cut from laminated sheet material comprising a relatively heavy paper or cardboard sheet **14** and a relatively light or thin sheet **16**. The heavy sheet **14** is of relatively stiff paperboard or cardboard, preferably of sulphite or sulphate stock, while the light or thin sheet **16** is a thin glassine sheet. When forming the blank into a package, the heavy sheet **14** is normally disposed outside of the light sheet **16**, and the light sheet **16** forms a sanitary wrapper for the meat product in the package.

The relatively heavy sheet **14** comprises a generally rectangular sheet having transverse extensions **18** which form the rigid end members for the package as hereinafter more fully described. The relatively light sheet **16** is substantially wider than the rectangular body portion of the heavy sheet **14** to provide marginal portions **20**, the longitudinal edges **22** of which are spaced outwardly from the longitudinal edges **24** of the rectangular body portion of the heavy sheet **14**. The longitudinal edges **22** of the light sheet **16** may be coincident with the edges **26** of the extension **18** on the heavy sheet **14**.

The end edges of the blank are designated generally by the numerals **28** and **30**, the end edge configurations being described more fully hereinafter.

The blank is provided with four transverse score or fold lines **32**, **34**, **36** and **38**, along which the blank is folded to form the cylindrical body portion of the package of generally flat, rectangular cross-section. These fold or score lines **32**, **34**, **36** and **38** extend transversely of the heavy sheet **14** and are parallel to the end edges of the blank.

Score lines **34** and **36** define respective longitudinal edges of a top panel **40** of the package. The adjacent pair of score lines **32** and **34** define longitudinal edges of a narrow side wall **42** of the package, while the other ad-

jacent pair of score lines 36 and 38 define respective longitudinal edges of an opposite narrow side wall 44 of the package. Score line 38 and end edge 30 define a full flap 46, while the score line 32 and end edge 28 define the longitudinal edges of a flap 48 which is substantially less in width than the flap 46. The flaps 46 and 48, when locked together in the manner hereinafter described, constitute the bottom panel of the package.

To permit viewing of the contents of the package without opening the package, the top panel 40 of the package-forming blank has a window flap 50 formed therein by a cut 52 through the laminated sheets 14 and 16, and extending along three sides of the area of the flap 50, thus leaving the flap 50 hinged to the blank along a section of the score line 34. The actual window is provided by a sheet 54 of sealable, substantially transparent material, such as cellophane, which overlies the opening in panel 40 provided by cutting out the window flap 50, the window sheet 54 being bonded as with a suitable adhesive material around and outside the periphery of the flap 50, on the inside surface of one of the sheets 14 and 16. Thus, when the blank is formed into a package, the window flap 50 may be lifted to uncover a window through which the contents of the package may be viewed. The transparent sheet 54, which constitutes the window, prevents free circulation of air into the package, restricting the circulation of air through the package primarily to the channels provided in the rigid end portions of the package as hereinafter more fully described. The cover flap 50 protects the contents of the package from light when the contents are not being viewed.

The locking means for joining together the panels 46 and 48 to form the bottom panel of the package is more fully set forth in my said prior Patent No. 2,826,296. The locking means includes a pair of spaced locking tabs 56 provided on the end edge 28, these locking tabs resulting in corresponding notches 58 disposed in the opposite end edge 30. The locking tabs 56 are provided at one end with arcuate line cuts 60. Transverse slits 62 are provided in the panel 46 to receive the locking tabs 56, these transverse slits 62 having hook-shaped ends 64 to facilitate opening of the slits 62. The ends of the transverse slits 62 which correspond to the ends of locking tabs 56 having the arcuate line cuts 60, are provided with notches 66. The line cuts 60 in the tabs 56 engage in the notches 66 for correct alignment of the panels 46 and 48 when the tabs 56 are in the locked positions in slits 62.

If desired the transparent sheet 54 may be composed of a material which has a relatively high moisture breathing rate. When the package is set out in the retail store the bulk of the meat in the package tends to bow the top panel 40 outwardly, causing flap 50 to open slightly, thus permitting some of the moisture directly under the transparent sheet 54 to vaporize out through the sheet 54 to improve the appearance of the visible portion of the meat.

The presently preferred details of construction of the transverse extensions 18 of the blank 12, which provide the rigid end portions of the package, will now be described. The transverse extensions 18 of the blank are provided, adjacent to the longitudinal edges 24 of the heavy sheet 14, with opposed notches or ventilating openings 68 and 70, preferably formed by arcuate cuts. These notches 68 and 70 are preferably substantially semi-circular, although they may be provided in other shapes, if desired. Laterally outwardly of the notches 68 and 70 on the blank are oppositely directed cuts 72 and 74 which provide rounded corners on the transverse extensions 18 of the heavy sheet 14 of the blank. These cuts 72 and 74, although preferably arcuate, may be otherwise shaped to provide the desired tapered corners on the transverse extensions 18.

Longitudinal score or fold lines 76 are provided on the blank coincident with the respective longitudinal edges 24 of the heavy sheet 14, these score lines 76 defining the inner edges of the extensions 18, and defining the end transverse edges of the top panel 40 of the completed package.

Longitudinal score or fold lines 78 are provided on the extensions 18 outwardly spaced from the score lines 76, to provide rigid end walls 80 for the completed package. The portions of extensions 18 disposed outwardly of the end walls 80 comprise tongue members 82 that are adapted to be slipped just inside of the bottom panel of the package formed by the panel sections 46 and 48 when the packaging is completed. It will be understood, however, that if desired, the tongue members 82 may be adhesively secured to the outside of the bottom panel as by glue, heat seal or the like, or may be engaged to the bottom panel by tucking suitable tabs into slits in the bottom panel in much the same manner that the panels 46 and 48 are joined.

It will be noted that the width of the notches 68 and 70 is slightly greater than the depth of the rigid end walls 80. This causes the edge tabs 84 and 86 at the edges of tongue members 82 to be disposed substantially inwardly of the edges 24 when the tongue members 82 are tucked in at the ends of the completed package as in FIGURES 1, 2, 4 and 7. Thus, the curved corner cuts 72 and 74 of tongues 82 are disposed substantially inwardly of the edges 24 in the completed package, so that there will be no tendency for the tongues 82 to be cammed outwardly when the completed package is under forces tending to collapse it.

Thus, the rigid end walls 80 provide the desired structural rigidity for the completed package to minimize damage to relatively fragile meat products, such as sausages, contained in the package. The end walls 80 will support substantial loads, such as those provided by stacking a number of the packages together, and the edge tabs 84 and 86 on tongue members 82 will engage against the inside surfaces of the respective narrow side walls 42 and 44, respectively, to prevent relative lateral shifting of the top and bottom panels of the package and collapsing of the package.

This rigid end wall structural strength is permitted without interfering with the adaptability of my package for rapid automatic machine packaging and folding, by the provision of the notches 68 and 70, the notches 68 and 70 providing openings to accommodate a half-round bar which may be employed in machine folding and closing of the package, the flat side of the bar engaging against the inner surfaces of the narrow side walls 42 and 44 during the folding of the package.

It will be apparent that the entire marginal portions 20 of the thin glassine sheet 16 are available to be tucked in at the ends of the completed package for a secure sanitary wrapping of the product within the package. The inner sheet will hug tightly against the meat at the ends of the package, closely adhering to the naturally sticky surface of the sausage or other meat product. This "blanket wrap" or intimate engagement of the inner glassine sheet about the meat is important for the proper preservation of the meat, and preserves the meat much better than would a rigid box without this intimate inner wrapping, this being of particular importance for a rounded product such as sausages.

The marginal portions 20 of the inner sheet 16 are crimped at the corners of the package. The glassine material of the inner sheet is moisture absorbent, so that these crimped corner portions tend to wick excess moisture from within the package to the notches 68 and 70.

Also, when the packaging has been completed, extraction of the half-round bars of the packaging machine leaves longitudinal tunnels or passageways through the package adjacent the narrow side walls 42 and 44. These tunnels, which communicate at their ends with the notches or ventilating openings 68 and 70, thus provide additional channels for conducting excess moisture out of the package. These tunnels or passageways are of relatively small

cross section and each is of a length equal to the width of a folded marginal portion **20** of inner sheet **16**.

It will thus be seen that the notches or ventilating openings **68** and **70** communicating with the passageways provide the desired amount of ventilating to establish the desired moisture balance in the package, the rigid end walls **80** preventing the uncontrolled circulation of air from one end of the package to the other. This ventilating will include the flow of air both into and out of the package. In the case of perishable meat products, such as sausages, which are moisture laden when packed, this ventilating is most important to permit the controlled escape of excess moisture. Also, in the case of perishable meat products, it is better to allow some air to reach the product unless it is vacuum packed. However, in the packaging of some other products, such as hygroscopic confections, ventilating is important to allow the entry of some moisture.

By thus combining the intimate wrapping of the inner glassine sheet about the meat at the ends of the package with the breathing characteristics of the notches **68** and **70** the meat will be properly preserved in the package. At the same time, the structural strength provided by the rigid ends prevents the meat from being squashed or otherwise structurally damaged. All of these features cooperate to provide a package that will substantially lengthen the storage life of perishable goods and will substantially lessen the likelihood of physical damage to the goods during storage and handling.

Although the presently preferred embodiment of my invention includes the notches **68** and **70**, it is to be understood that for some purposes it may be preferable to provide my package without the notches **68** and **70**.

In order to permit the marginal portions **20** of the thin paper sheet **16** to be employed separately from the extensions **18** of the heavy sheet **14** during the folding of the package about the product as hereinabove set forth, it is desirable to separate or delaminate these edge portions of the sheets during the manufacture of the blanks. My presently preferred method of accomplishing this is employed in connection with a step of the manufacturing process involving the immersion of the two sheets in a wax bath. As the two sheets progress through the wax bath, and before being chilled, they are run longitudinally over a roller, the result of which is to separate the two sheets from the longitudinal edges **24** (and longitudinal score lines **76**) outwardly so that when the wax hardens the extensions **18** of the heavy sheet **14** remain separated from the marginal portions **20** of the light weight sheet **16**. If desired, one or more plow shares may be employed to assist in this separation of the layers. Thus, the thin glassine marginal portions **20** may be employed as heretofore described by being wrapped around the sausage or other products at the ends of the package, while the extensions **18** of the heavy sheet are free to be employed as rigid end closures.

It has been found in practice that the points at the tips of the edge tabs **84** and **86** where the cuts of notches **68** and **70** meet the respective oppositely directed cuts **72** and **74** are points at which the light and heavy sheets have a natural tendency to separate, the heavy sheet tending to move straight out beginning at this point and the light sheet following the contour of the roll and hence breaking away from the heavy sheet.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A closed package generally impervious to the entry of foreign matter, of quadrangular cross section having a front panel, back panels, two side panels, and two end closures, said package being formed of a relatively heavy and stiff outer sheet and a relatively light and flexible inner sheet, said outer and inner sheets being laminated together at said front, back and side panels and having separated end portions at the package ends, the separated end portions of the inner sheet being folded back above themselves to form loose inner end wraps over the package contents and the separated end portions of said outer sheet being folded upwardly and inwardly and forming rigid outer end closure panels for said package, said back panels including panel portions extending from said two side panels and being folded thereover and secured together in a position wherein the folded back separated end portions of said inner sheet provide passages of relatively small cross section and relatively great length between the adjacent surfaces of said inner sheet adjacent the point where said inner sheet is folded back, and tend to obstruct the entry of foreign matter, ventilating openings in said outer sheet end portions aligned with said passages to provide longitudinal passageways extending from the exterior to the interior of the package whereby air may flow to and from the contents of said package through said passageways.

2. A closed package as defined in claim 1 wherein said end closure panels are generally rectangular in elevation and said ventilating openings are semicircular cut-out notches.

3. A closed package as defined in claim 1 wherein said outer and inner sheets are bonded together over their entire mutual surface area except for the separated end portions thereof, said loose inner end wraps being formed by folding across the entire width of said inner sheet at the opposite ends of said front panel and said rigid outer end closures being folded thereover.

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