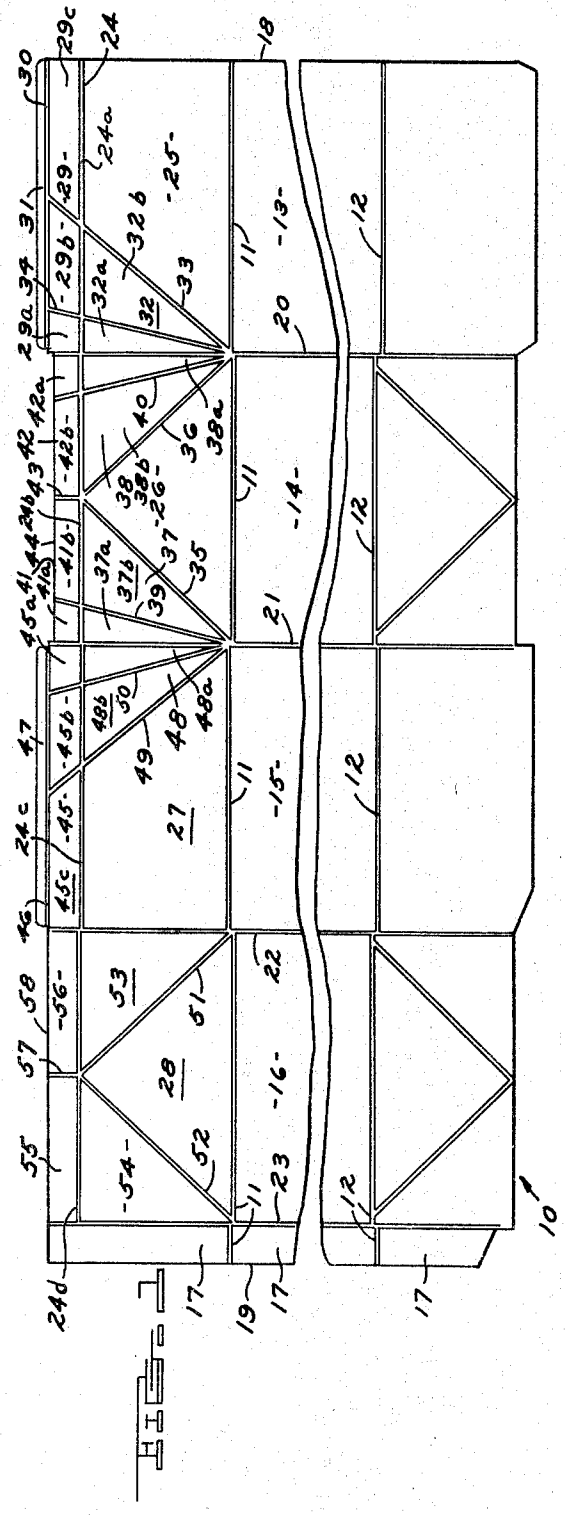
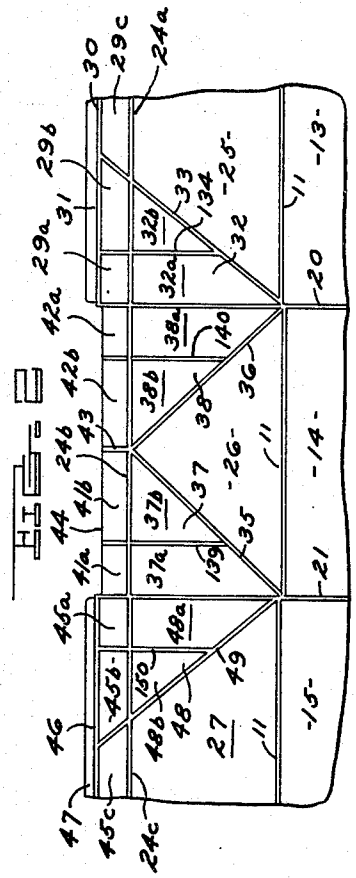
May 25, 1965 E. A. THOMAS 3,185,375

CONTAINER WITH A GABLE TOP CLOSURE

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CONTAINER WITH A GABLE TOP CLOSURE

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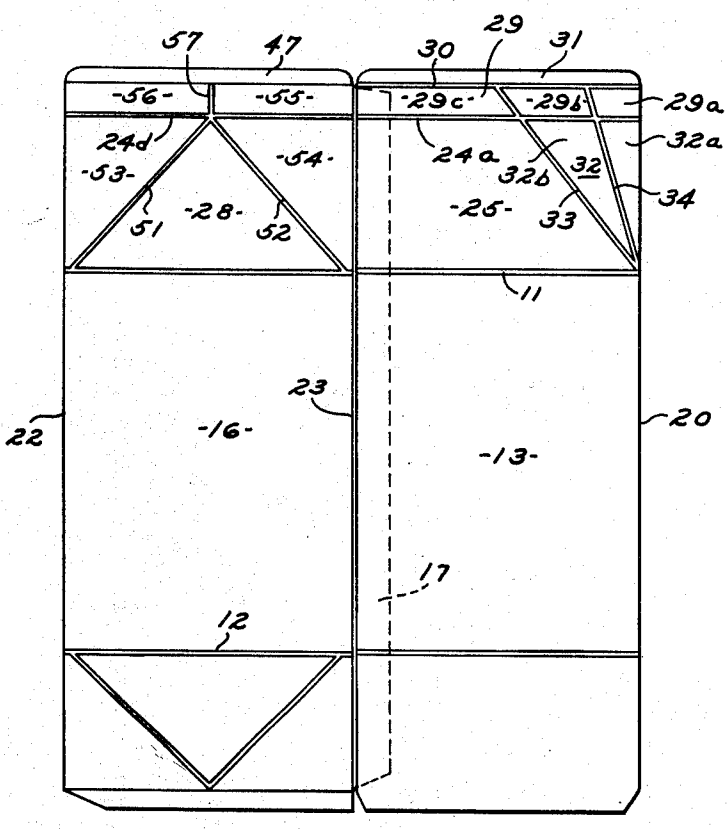


FIG. 3

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FIG. 4

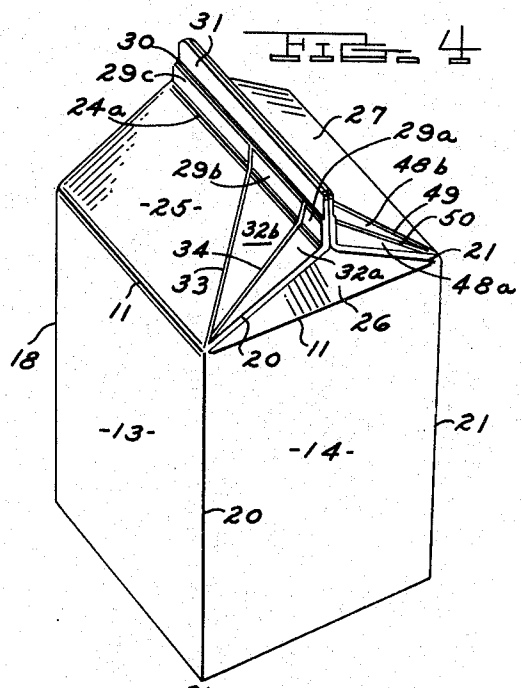


FIG. 5

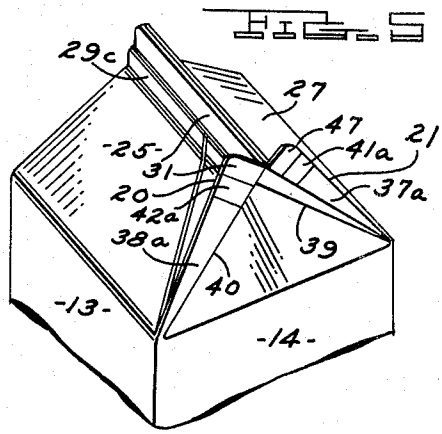


FIG. 6

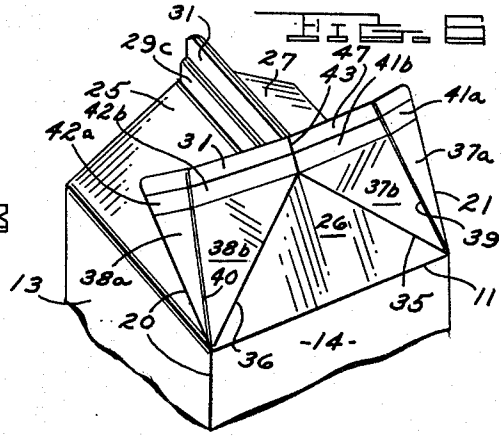


FIG. 8

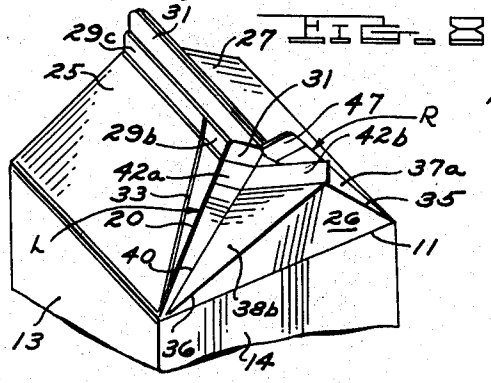


FIG. 7

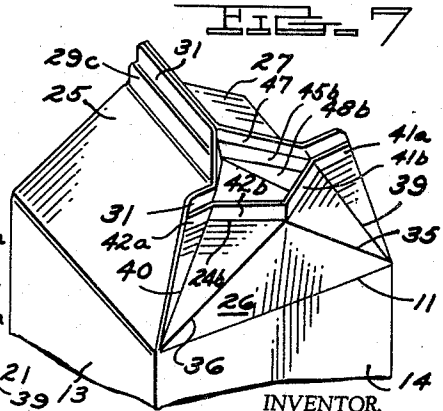
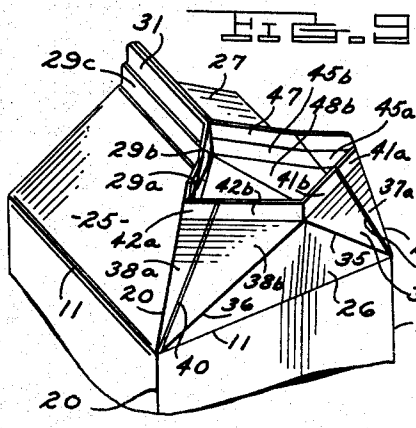


FIG. 9



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United States Patent Office 3,185,375 Patented May 25, 1965

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CONTAINER WITH A GABLE TOP CLOSURE

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Filed Sept. 28, 1962, Ser. No. 226,837
3 Claims. (Cl. 229—17)

This invention relates to paperboard containers in general and, in particular, to improvements in the gable top closure style of containers.

Coated paperboard containers are being used in increasing quantities as fluid containers in place of other commonly used means. For a period of time paraffin coated containers have been quite successful commercially. Now, with the advent of the thermoplastic coated containers, there is an ever increasing demand for new and various sizes of containers.

As the demand for new and various sizes of containers continues to increase, certain characteristics of the container must be modified to give satisfactory results. One of the problems that arose in the industry was the difficulty in opening a heat sealable container without causing delamination of the opening surfaces. This problem has been partly overcome by the use of "print-on" adhesives and the application of protective surface materials at the opening areas.

It is the object of this invention to provide a new and improved gable top container which includes a sanitary extensible pouring spout, which can easily be released and extended by the consumer's fingertips without the necessity of employing an opener device when it is desired to open the container and dispense its contents

Another object of this invention is to provide a container which includes a sanitary extensible pouring spout completely protected within the container closure, and capable of accomplishing these objectives with a minimal material and fabrication cost while providing a reliable container of simple and rugged construction.

A further objective is to provide a container with a sealed integral foldable pouring spout that may be unfolded with ease into pouring position while maintaining the sanitary quality of the spout.

Other objects and advantages of the present invention will become apparent from the following detailed description, and from the appended claims, when considered in connection with the accompanying drawings.

FIG. 1 is a layout view of an inside surface of a container blank showing the inventive structure;

FIG. 2 is a partial layout view of an inside surface of a container blank showing an alternate score line arrangement;

FIG. 3 is a flat side seamed blank made from the blank shown in FIG. 1 and showing the outside surface thereof;

FIG. 4 is a perspective view of a container fabricated from the blank shown in FIG. 1; and

FIGS. 5, 6, 7, 8 and 9 are fragmentary perspective views illustrating sequentially the various steps in opening the top closure of the container of FIG. 4.

While the invention is susceptible of various modifications and alternative constructions, certain illustrative embodiments have been shown in the drawings and will be described below in considerable detail. It should be understood, however, that there is no intention to limit the invention to the specific forms disclosed, but on the contrary, the invention is to cover all modifications, alternative constructions and equivalents falling within the spirit and scope of the invention as expressed in the appended claims.

Referring now to the drawings, and more particularly to FIG. 1, the inside surface of flat blank **10** is shown with a pattern of appropriate score lines. The container

is separated into three groups by staggered score lines **11** and **12**. The portion of the container blank below score line **12**, as seen in FIG. 1, is the bottom closure group. A discussion of the bottom closure is not necessary in the disclosure of the present invention; however, a complete description is given in United States Letters Patent No. 3,120,333 issued February 4, 1964. The material between score lines **11** and **12**, as seen in FIG. 1, is the body group and comprises four side panels, **13** through **16**, and a side seam flap **17**. The blank **10** is defined on the sides by edges **18** and **19**, and with the panels being separated by score lines **20** through **23**. Integral with the upper ends of the side panels, but separated therefrom by the transverse score line **11**, are a plurality of panel extensions which give the top of the container **10** its characteristic gable shape. These panels include a transverse score line **24**, generally parallel to score line **11** and spaced between score line **11** and the top edge of the blank **10**. The areas between score lines **24** and **11** define the roof panels **25**, **27**, and the end panels **26**, **28** of the top closure, while the areas above score line **24** define the parts of the central laminar rib, as shown in FIG. 4. Score line **24** includes the portions **24***a*, **24***b*, **24***c* and **24***d*, which correspond respectively to the panels **25**, **26**, **27** and **28**.

The roof panel **25** is defined by score lines **11**, **20**, **24***a* and edge **18**. An integral portion of the roof panel **25** is the outer rib panel **29** connected therewith along score line **24***a*. The outer rib panel **29** is defined by score lines **24***a*, **20**, **30** and edge **18**, and is connected along the transverse score line **30** to the sealing flap **31**. Embodied in the roof panel **25** is the triangular shaped fold-back panel **32**, which is defined by score lines **20**, **30** and **33**, and is divided into two sections **32***a* and **32***b* by score line **34**. Score line **34** is shown in FIG. 1 extending from score line **30** to the intersection of the transverse score line **11** and score line **20**. It is not necessary, however, for score line **34** to extend the entire distance. The reason will become apparent when the function of this score line **34** is described later.

Side panel **14** has connected therewith along the transverse score **11** a triangular end panel **26**, which is defined by score line **11** and converging score lines **35** and **36**. Score lines **35** and **36** start at the intersection of score line **11** and score lines **21** and **20** respectively, and converge upwardly intersecting at the approximate midpoint of transverse score line **24***b*. The end panel **26** is flanked by two triangular fold-in panels **37** and **38**, connected along converging score lines **35** and **36**. Fold-in panel **37** is defined by transverse score line **24***b*, score line **21** and score line **35**. Fold-in panel **38** is defined by transverse score line **24***b*, score line **20** and score line **36**. Fold-in panel **37** is divided into two sections **37***a*–**37***b* by score line **39**, and fold-in panel **38** is divided into two sections **38***a*–**38***b* by score line **40**. Score lines **39** and **40** are shown in FIG. 1 as extending to the intersection of score lines **21**, **11** and **20**, **11** respectively. It will be shown later that it is not necessary for these score lines **39**, **40** to extend the entire distance. Fold-in panels **37**, **38** are connected to a pair of inner rib panels **41**, **42** along the transverse score line **24***b*, the panels **41**, **42** being connected with each other along score line **43**. Rib panel **41** is divided into two sections **41***a*, **41***b* by score line **39**, and is defined by score lines **21**, **24***b*, **43**, and edge **44**, whereas rib panel **42** is divided into two sections **42***a*, **42***b* by score line **40**, and is defined by score lines **20**, **24***b* **43** and edge **44**.

Roof panel **27** is a "mirror image" of roof panel **25** and is defined by score lines **11**, **21**, **24***c* and **22**. An integral portion of roof panel **27** is the outer rib panel **45** connected therewith along score line **24***c*. The outer rib

panel 45 is defined by score lines 24c, 22, 46 and 21, and is in turn connected to the sealing flap 47 along score line 46. An integral portion of the roof panel 27 is the fold-back panel 48 which is defined by score lines 24c, 49 and 21, and is divided into two sections 48a–48b by score line 50. Score line 50 is shown as extending from score line 46 to the intersection of score lines 11, 21 and, as previously mentioned, this complete extension is not always required.

Connected to side panel 15 along the transverse score line 11, is the triangular end panel 28, which is defined by converging score lines 51, 52 and score line 11. The converging score lines 51, 52 start at the intersections of score lines 11, 22 and 11, 23 respectively, and converge upwardly intersecting at the approximate midpoint of transverse score line 24d. The triangular end panel 28 is flanked by triangular fold-in panels 53, 54 connected along score lines 51, 52 respectively. A pair of inner rib panels 55, 56 are connected to panels 54, 53 respectively, along the score line 24d, and are connected to each other along a vertical score line 57. Panel 55 is defined by score lines 23, 24d, 57 and edge 58, whereas panel 56 is defined by score lines 22, 24d, 57 and edge 58.

To form a container as shown in FIG. 4, the blank 10 in FIG. 1 is used; however, the blank is first side-seamed as viewed in FIG. 3. This is accomplished by having panel 16 and the side seam flap 17 folded about score line 22 until their inside surfaces contact the inside surfaces of panels 15 and 14 respectively. Then, panel 13 is folded about score line 20 until its inside surface contacts the inside surface of panel 14 and the outside surface of the side seam flap 17. The inside surface of panel 13 along edge 18 will contact the outside surface of side seam flap 17, and these areas may be heated to activate their coatings, for side seam heat sealing or bonding material may be applied to one surface to accomplish the side seam. The blank 10 is then opened into a tubular form, substantially square in cross-section, and the bottom closure is completed as described in United States Letters Patent No. 3,120,333. When the container has been erected and the bottom closure sealed, it is then filled with the desired product

To make the container top closure, the panels thereof are infolded into a gable form. During the course of such action, score lines 35, 36, 51 and 52 are broken by infolding the triangular end panels 26, 28 towards each other. By the use of selective heating, the polyethylene thermoplastic coating is directly adhesively activated on the inside surfaces of the outer rib panels 29, 45, and the sealing flaps 31, 47, on the outside surfaces of the inner rib panels 41a, 42a, and on the inside and outside surfaces of the inner rib panels 55, 56. The inside and outside surfaces of the inner rib panels 41b, 42b are indirectly heated to a lesser degree. The container top is then closed as described in a copending application, U.S. Serial No. 122,571, filed on July 7, 1961.

Referring now to FIGS. 4–9, the steps in opening the container are illustrated sequentially. Starting with the container in the closed condition of FIG. 4, the first step involves the gripping of panels 38a, 32a, with the thumb and forefinger of the left hand respectively, and panels 37a, 48a, with the thumb and forefinger of the right hand respectively. By pushing upwardly and outwardly, panels 32a, 38a, and 37a, 48a are folded along score lines 34, 40 and 39, 50 respectively, thus resulting in the partial separation of the sealing flaps 31 and 47, and separation of inner rib panels 42a and 41a, as shown in FIG. 5. The panels 41a, 45a, and 42a, 29a, in this position afford substantial gripping areas which are easily grasped by the thumbs and forefingers. The next step is to pull outwardly and rearwardly, thus extending the separation between the sealing flaps 31, 47, an inner rib panels 41b, 42b, as shown in FIG. 6. It will be noted upon examining FIG. 6 that the gripping areas are extended further to the rear than score line 43, causing the panels 41, 42

to be formed into the general shape of an arc. Still grasping the gripping areas with the thumbs and forefingers, they are then pushed towards each other. The resultant force of this inward pushing acts on score line 43 in an outwardly direction, causing the inner rib panels 41b, 42b to separate from the outer rib panels 45b, 29b, respectively, and, as a result, causes the pouring spout to start distending as shown in FIG. 7. There is complete separation of inner rib panels 41b, 42b from outer rib panels 45b, 29b, respectively, before the gripping areas are pushed together, as shown in FIG. 8. A squeeze, indicated by arrows L and R on the gripping areas, applied at score lines 20, 21 respectively, as shown in FIG. 8, will separate the inner rib panels 42a, 41a from the outer rib panels 29a, 45a, respectively, and will completely distend the pouring spout into an open position, as shown in FIG. 9.

FIG. 2 illustrates an alternate method of arranging the score lines on a flat blank form 10. The score line arrangement is the same as that of the preferred arrangement, shown in FIG. 1, with the exception that score lines 134, 139, 140, 150 replace score lines 34, 39, 40, 50 respectively. The construction of the container is the same as that of the preferred model and presents similar gripping areas, but it should be noted, however, that score lines 134, 139, 140, 150 do not break to the intersections of score line 11 with score lines 20 and 21. If the score lines 134, 139, 140, 150 in FIG. 2 would break towards the intersections of score line 11 with score lines 20, 21, the gripping areas formed could become very small and difficult to work with on small containers, thus necessitating the need for an alternate score line arrangement.

The embodiment shown in FIG. 1 could be used on containers of the gallon and half-gallon sizes, whereas it is preferred that the embodiment shown in FIG. 2 be used on smaller size containers. To illustrate the typical sizes for the containers of the gallon and half-gallon variety, the distance between score lines 20 and 21 would be approximately 5.500 in. and 3.750 in. respectively, whreas in the quart container, this distance would be approximately 2.750 in.

I claim the following as my invention:

1. A container of paperboard or the like coated overall with thermoplastic material that becomes an adhesive when subjected to heat, said container comprising, in combination

(a) a tubular body having a bottom closure thereon,

(b) a gable top closure overlying said body and including a plurality of inner and outer rib panels surmounting a pair of opposed inclined roof panels and a pair of triangular end panels joined to the roof panels by a pair of triangular fold-in panels,

(c) an upstanding sealing flap integral and coextensive with each of said outer panels,

(d) said inner and outer panels being heat-sealed together to form a closure rib overlying said roof and end panels,

(e) said sealing flaps being heat-sealed together to form an upstanding sealing rib surmounting said closure rib,

(f) a first set of score lines on said roof panels to form part of a pouring spout,

(g) a second set of score lines on said roof panels to form part of an opening gripping area, and

(h) a third set of score lines on one pair of said fold-in panels adjacent roof panels having said second set of score lines to form part of said opening gripping areas.

2. A paperboard container coated overall with a thermoplastic material that becomes an adhesive when heated, said container comprising,

(a) a gable top closure including a plurality of inner and outer panels surmounting a pair of opposed in-

clined roof panels and a pair of end panels joined to said roof panels,

(*b*) said inner and outer panels being heat-sealed together to form a closure rib,

(*c*) a set of score lines on said roof panels to form part of opening gripping areas,

(*d*) a second set of score lines on one of said end panels to form part of opening gripping areas, and

(*e*) a third set of score lines on said roof panels to form part of a pouring spout.

3. A blank for a container of foldable material having overall surfaces of thermoplastic material that becomes adhesive when subjected to heat, said blank comprising, in combination,

(*a*) a plurality of side panels,

(*b*) a pair of roof panels connected to alternate ones of said side panels as extensions thereof,

(*c*) a pair of outer rib panels connected to said roof panels as extensions thereof,

(*d*) a pair of triangular end panels connected to additional alternate ones of said side panels as extensions thereof,

(*e*) a pair of triangular fold-in panels flanking each of said triangular end panels,

(*f*) a pair of inner rib panels connected to each of said pair of triangular fold-in panels,

(*g*) at least one pair of said inner rib panels being adapted to define a portion of a pouring spout in an erected container,

(*h*) a first set of score lines on said roof panels to form part of a pouring spout,

(*i*) a second set of score lines on said roof panels to form part of an opening gripping area,

(*j*) a third set of score lines on one pair of said fold-in panels adjacent to the end of the roof panels of an erected container having said second set of score lines for forming part of said gripping areas,

(*k*) a pair of sealing flaps connected to said outer rib panels as extensions thereof, and

(*l*) a side seam flap connected along one of said side panels.

References Cited by the Examiner

UNITED STATES PATENTS

2,158,097	5/39	Wentz	229—17
2,321,139	6/43	Gruger	229—17
2,362,862	11/44	Sidebotham	229—17

FOREIGN PATENTS

225,010	10/59	Australia.

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