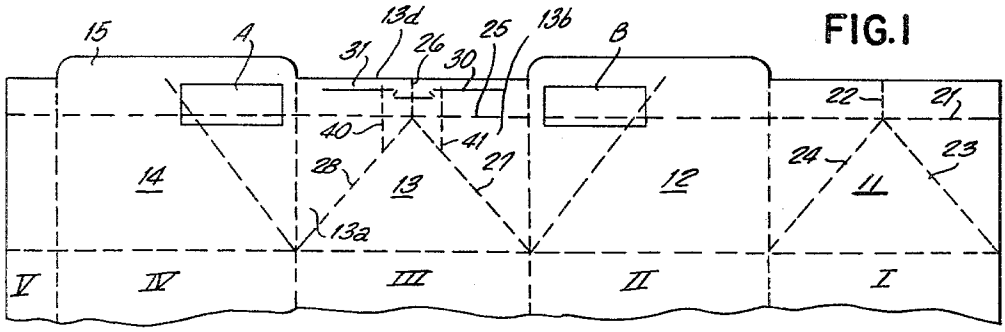
April 13, 1965 L. S. TOBIAS ETAL 3,178,089

GABLE TOP CONTAINER

Filed Oct. 18, 1962 2 Sheets-Sheet 1

FIG. 1



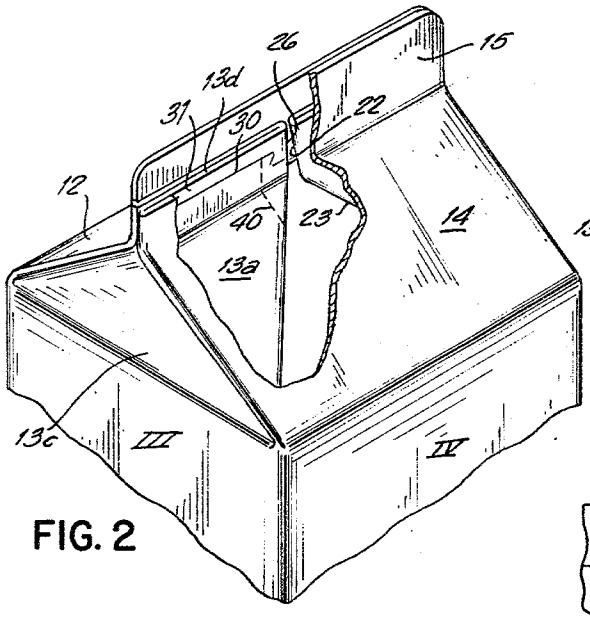


FIG. 2

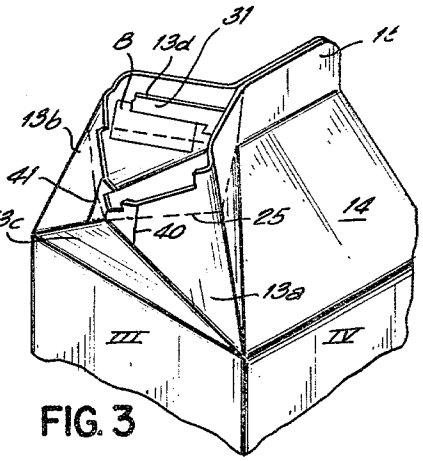


FIG. 3

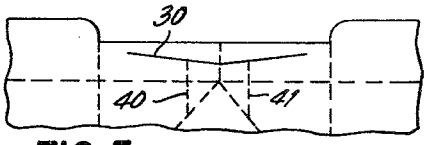


FIG. 5

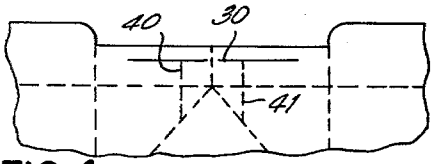


FIG. 4

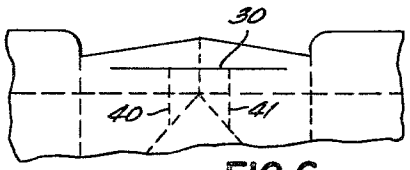


FIG. 6

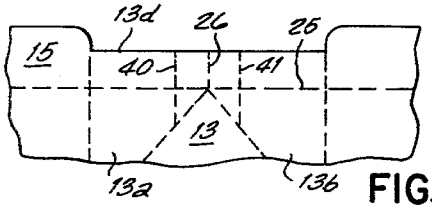


FIG. 7

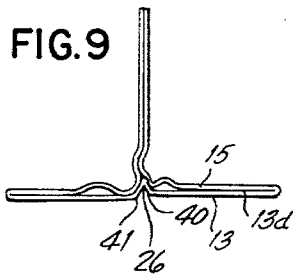
INVENTORS
LAWRENCE S. TOBIAS
ROBERT P. ANNICK
BY
ATTORNEY

April 13, 1965 L. S. TOBIAS ETAL 3,178,089

GABLE TOP CONTAINER

Filed Oct. 18, 1962 2 Sheets-Sheet 2

FIG.9



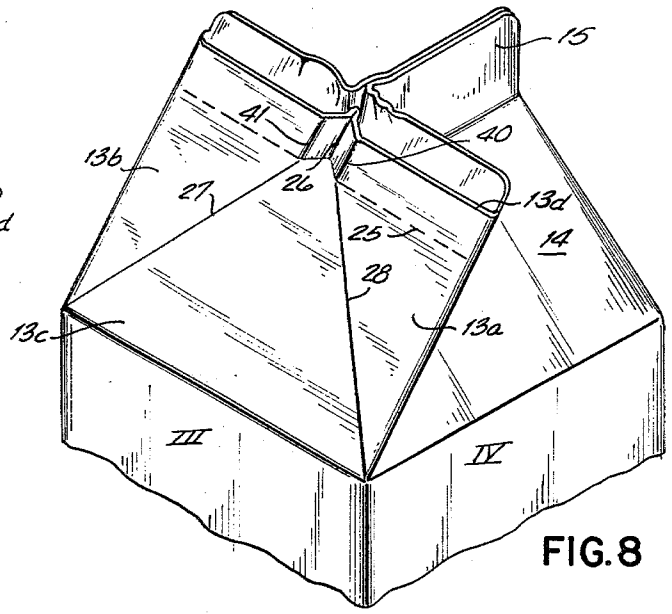
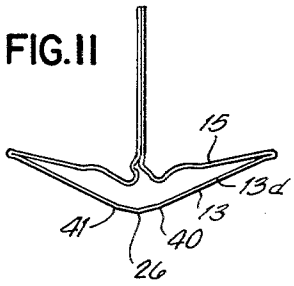


FIG.8

FIG.11



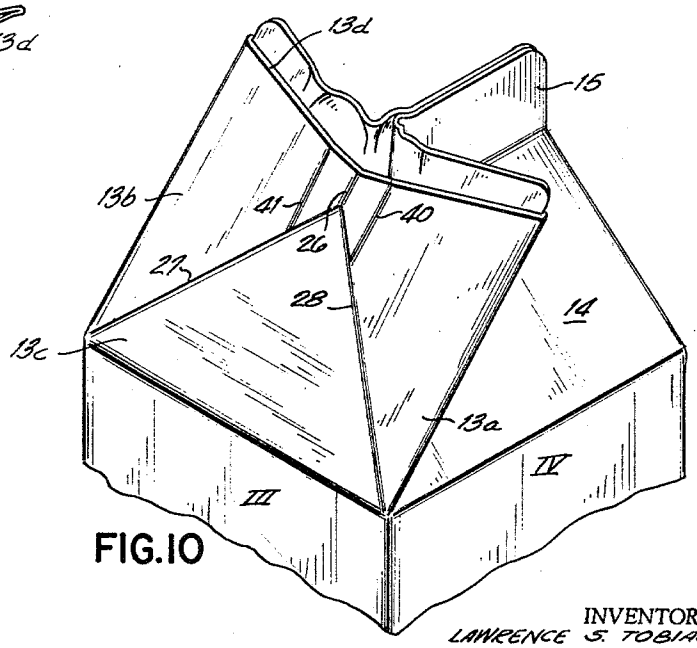


FIG.10

INVENTOR.
LAWRENCE S. TOBIAS
ROBERT P. ANNICK
BY Walter Thomas Gilinski
ATTORNEY

United States Patent Office 3,178,089
Patented Apr. 13, 1965

3,178,089

GABLE TOP CONTAINER

Lawrence S. Tobias, Valley Stream, N.Y., and Robert P. Annick, Rutherford, N.J., assignors to International Paper Company, New York, N.Y., a corporation of New York

Filed Oct. 18, 1962, Ser. No. 231,532
2 Claims. (Cl. 229—17)

This application is a continuation-in-part of co-pending application Serial No. 201,899, filed June 12, 1962.

The present invention relates to pour spouts for containers. More particularly, it relates to a pour spout for a plastic-coated gable topped overlap container for fluids including milk and other beverages.

Broadly, overlap containers made from paperboard or the like are circular or square in their lateral cross section and, in the latter case, they are formed from a blank scored or given foldlines which define four, rectangular larger panels and a fifth, smaller panel thereon. Each of the four larger panels adjoins at least one of the others along one of its longer sides as defined by a score or a foldline and it, when the blank is formed into the container, constitutes one of the normally vertically disposed side walls of the container. The fifth, smaller panel or side seam flap extends from the fourth, larger panel along the longer side thereof not connected by a score or foldline to the third, larger panel. A score or foldline separates the fourth and fifth panels. Then, in the finished, erect container, the outside of the side seam flap and that area of the first panel adjacent to its edge are bonded together with the aid of glue or some other adhesive. It is the lapping of the inside of such first panel over the outside of the fifth panel, usually to the locus of the foldline between the fourth and fifth panels, which gives these containers their name.

Questions of structural and material strength arise with all disposable containers made of paperboard or the like, particularly when the goods sought to be packaged are wholly or partially liquid, since any rupture, break or delamination in the structure, whether caused by having undue stresses designed into the container or placed upon the container and the blank therefor during the converting operation or normal handling, or inherent penetrability in the material leads to a loss of the goods. Heretofore, answers to these questions have been sought in the technique of basic stock coating. It has been suggested to coat the finished containers with various agents such as waxes by dipping them into tanks thereof and it has been suggested to precoat the stock before the containers are formed therefrom with, for example, polyethylene. However, the use of such coatings has not been found to answer the questions fully in a number of critical areas. "Areas" is used advisedly here, since one problem not solved by the coating technique is precisely in the area of the overlap container's score or foldlines and the area of its side seam. A solution of this problem is supplied by co-pending application Serial No. 61,886, filed October 11, 1960, now Patent No. 3,137,436. Another problem not solved by, and, indeed, largely created by, the coating technique is in the area of an ultimately free edge provided for in many overlap containers, e.g., those bearing the "Pure-Pak" trademark of Ex-Cell-O Corporation. This problem involves, broadly, the delamination of the edge due to its undesirable, but heretofore unremedied, bonding to the container coating and the consequent debilitation of the edge structure and destruction of its normally clean and attractive appearance. Co-pending application Serial No. 201,899, filed June 12, 1962, overcomes this problem and affords other advantages. Illustrative of the type of problem met and conquered is one which arises in the manufacture of gable topped overlap

containers having integral pour spouts of the general type shown in expired U.S. Pat. No. 2,198,119, when a paperboard stock is used which has laminated thereto, usually by means of the extrusion method, a thin film of a thermoplastic material such as polyethylene for purposes of protective coating. It occurs because heat is used to achieve the sealed closure of the gable top and such heat can have the deleterious side effect of causing the pour spout edge to be bonded to the thermoplastic coating of the container. Such bonding, which is not necessary to afford a good container closure, leads to a delamination when the container is opened and the delamination spoils the pourability of the spout and the attractiveness of the container.

The overlap container blanks here in question have the general configuration of those shown, for instance, in expired U.S. Patent Nos. 2,218,670 and 2,329,797 and include four upper end closure panels connected along and by means of lateral score or foldlines to the four larger panels of the blank hereinbefore discussed. Two of such end closure panels which can be connected to the first and third larger, side panels of the container blank often have only one or more additional lateral score and foldlines and, in the finished or erected container, form the roof surfaces of the gable top therefor. The other two end closure panels which can be connected to the second and fourth larger, side panels of the container blank have, for example, a lateral, a vertical, and two convergingly diagonal score or foldlines defining several triangles on such end closure panels and, in the completed container, form the gable surfaces of the gable top therefor. Upon the erection of the containers from the blanks as described, triangular portions of the triangulated end closure panels are brought into an abutting relation with inside portions of the roof surface end closure panels. Then, in the hands of the container's user, such triangular portions of one of the triangulated end closure panels are brought out of the abutting relation with some portions of the roof surface end closure panels and beyond to form a pour spout, the edge of which was and is the outer lip of such triangulated end closure panel of the container blank.

However, it often occurs that, because of misplaced pressure by the one opening the container, stiffness of the container material, imperfect score or foldlines, or the like, the triangular portions are slow to separate from contact with the inside portions of the roof surface end closure panels or the edge seems to be locked in its closed container position, and does not readily pop out from under such roof surfaces to form the pour spout. The result is that one opening the container may have to insert his finger into the container along the edge to get the spout and may thereby contaminate the contents of the container and the edge.

Now, it has been found that, by a surprisingly simple modification of the blanks for gable topped overlap containers of this type, pour spouts which are unexpectedly strong and rigid, clean looking, and not subject to undesirable opening lag or unsanitary handling in either the conversion operation or the container filling operation can be achieved. Such modification consists of forming by conventional means a pair of short scores or foldlines in one or both of the gable surface or triangulated end closure panels and vertically across a part of it during the die cutting of the blank. Preferably, such scores are disposed generally parallel to and on either side of the vertical score or foldline of such panel and, for example, a distance of from about 3/16" therefrom. Such measurement, of course, depends to some extent on the size of the container involved. When used with the improvement described and claimed in co-pending Serial No. 201,899, filed June 12, 1962, the pair of scores preferably runs between the slit described therein and the diagonal scores of the panel in question. There, they afford the

consumer or the user of the container's contents a spout having an assured and relatively lasting operability and one theretofore untouched by human hands.

It has also been found that the present invention has, for example, particular applicability in the milk and fruit drink industry and in connection with gable topped overlap containers like those described and shown in U.S. Patent No. 2,750,095, but polyethylene-coated, which are filled and closed at high speeds. However, its utility is not exclusively limited to such applications.

For a better understanding of the present invention, reference should be had to the attached sheet of drawings in which—

FIGURE 1 shows a plan view of a blank for a gable topped overlap container modified in accordance with the invention;

FIGURE 2 shows a sectional isometric view of the upper end of the closed container formed from the blank of FIGURE 1;

FIGURE 3 shows an isometric view of the upper end of the opened-for-pouring container formed from the blank of FIGURE 1;

FIGURES 4, 5, 6, and 7 show sections of plan views of different blanks for gable topped overlap containers modified in accordance with the present invention;

FIGURE 8 shows an isometric view of the upper end of a partially opened container formed from the blank of FIGURE 7;

FIGURE 9 shows a plan view of the upper end of the container of FIGURE 8;

FIGURE 10 shows an isometric view of the upper end of the container of FIGURE 8 at the instant when its pour spout takes shape; and

FIGURE 11 shows a plan view of the upper end of the container of FIGURE 10.

The usual panels of a rectangularly cross-sectioned overlap container blank made from polyethylene-coated paperboard stock are partially shown in FIGURE 1 and identified by numerals I, II, III, IV, and V. The upper end closure panels of the gable top of the container to be made from the blank are numbers **11**, **12**, **13**, and **14** and **11** and **13** are shown with the conventional lateral, vertical, and diagonal scores or foldlines **21** to **28** and with the vertical scores or foldlines **40** and **41** which are contemplated by the present invention. Areas A and B thereon are printed with one of the commercially available adhesive materials such as General Electric Silicone No. SS4076, Dow Corning Syloff No. 23, and International Printing Ink Co. Adhesive No. 42440.

As shown in FIGURE 2, panel **13** is folded in between panels **12** and **14**, below panel extension **15**, in the erection, filling and closing of the container formed from the blank of FIGURE 1. Triangular portions **13***a* and **13***b* are, at this time, folded toward each other over triangular portions, **13***c* and so that their insides at least approach the insides of panels **12** and **14**. The lip **13***d* of panel **13** actually abuts panels **12** and **14** and, when heat is applied to seal the entire closure of the thermoplastic coated container, it plows into the molten polyethylene coating above adhesive areas A and B and becomes bonded to such panels. The upper edges of areas A and B are purposely positioned so that they lie approximately even with a line laterally bisecting the narrow strip **31** above slit **30** (which is more fully described in co-pending Serial No. 201,899, filed June 12, 1962); this has the added advantage of keeping the adhesive materials from interfering with the proper heat sealing of the container. This is seen more clearly in FIGURE 3 and once the container is opened for pouring.

As shown in FIGURE 3, strip **31**, which lies between lip **13***d* and slit **30** in the blank, remains heat sealed and affixed to the insides of panels **12** and **14**, particularly as a result of the aforementioned plowing action and the placement of the adhesive areas; when foldable triangular portions **13***a* and **13***b* are so actuated as to open, with the assistance of scores **40** and **41**, the container along the line of slit score **30**, which is never involved in such plowing action, to form very readily a previously unhandled and, therefore, more sanitary, as well as firm and less susceptible to wetting, pour spout. Clearly, foldable portions **13***a* and **13***c* can also be so positioned to vary the size of the pour spout opening or to re-close it.

FIGURES 4 to 6 depict various other embodiments of the scores **40** and **41** of the present invention in one type of container panel in which they can be utilized. FIGURE 7 shows them in another type of container panel in which they can be used.

The operation of the present invention is further seen in FIGURES 8 to 11. With the application of pressure against triangular portions **13***a* and **13***c* in the closed container (as shown in FIGURE 2), they are brought into a single line or plane as suggested by FIGURES 8 and 9 or a little beyond as suggested by FIGURES 10 and 11. When the container is wax-coated, rather than thermoplastic-coated, and closed with the aid of a staple or the like, rather than heat-sealed, the pressure has been found in some circumstances to be sufficient to precipitate a toggle-like action, dependent upon the inherent stiffness of the paperboard container stock and the juxtaposition (suggested in FIGURES 9 and 11) of the several container gable top panel and foldline elements, which forces an outward motion of portions **13***a*, **13***b*, and **13***c* of panel **13** and the formation of the desired pour spout. See U.S. Patent 2,750,095.

However, particularly when the container is thermoplastic-coated and its lip **13***d* is plowed into the hot thermoplastic when the container gable top is being heat-sealed shut, the resultant bond has been found to be so sturdy that it can defeat the aforementioned toggle-like action unless means such as those comprehended by the present invention are included. How such means figure in overcoming this problem is, perhaps, explained by remembering that, for every action by thumb-pressure or the like on portions **13***a* and **13***c*, there is necessarily an equal counter-action operating in the opposite direction and that, at some time during the thumb-directed movement of portions **13***a* and **13***c* of panel **13**, the counterforce will take a path through, for instance, panel extension **15** and into the plane of foldline **40**. When this happens, it seems eminently reasonable that the result will be an outward buckling of panel **13** along foldline **40** which tends to whip that section of panel **13** between foldlines **40** and **41** and including foldline **25** outwardly, breaking the heat-sealed bond involving lip **13***d*. But, in any event and whatever the explanation, the advantageous effect of including foldlines **40** and **41** in the container are remarkable.

What is claimed is:

1. A thermoplastic-coated paperboard blank for gable topped four sided overlap containers for fluids having, in and as components of the gable top structure gable surface end closure panels with outer lips whereon triangles are defined by means of foldlines, means defining a pair of vertically disposed parallel scores beginning at said foldlines centrally in at least one of the gable surface end closure panels, means defining a single continuous slit limited in its length to lie solely in at least one of the gable surface end closure panels near the outer lip thereof and to which means the vertically disposed parallel score lines extend from the foldlines, and roof surface end closure panels.

2. A thermoplastic-coated paperboard gable topped, four sided, overlap container for fluids having, in and as components of the gable top structure, gable surface end closure panels with outer lips whereon triangles are defined by means of foldlines, means defining a pair of vertically disposed parallel scores beginning at said foldlines centrally in at least one of the gable surface end closure panels, means defining a single continuous slit limited in its length to lie solely in at least one of the gable surface

end closure panels near the outer lip thereof and to which means the vertically disposed parallel score lines extend from the foldlines, and roof surface end closure panels.

References Cited by the Examiner

UNITED STATES PATENTS

2,321,139	6/43	Gruger	229—17
2,329,797	9/43	Strack.	

FOREIGN PATENTS

225,010	3/59	Australia.

References Cited by the Applicant

UNITED STATES PATENTS

2,079,875	5/37	Reiter.
2,172,930	9/39	Bensel.
2,299,461	10/42	Clanon.
2,360,439	10/44	Monroe.
2,687,840	8/54	Innes.

FRANKLIN T. GARRETT, *Primary Examiner.*

GEORGE O. RALSTON, *Examiner.*