The present invention relates generally to the packaging field and, more specifically, to a gable topped container of the general type disclosed in U.S. Patent No. 2,025,477, issued December 24, 1935 to Henry T. Scott, and in copending applications of Carroll R. Alden, No. 139,628, filed January 20, 1950, now Patent No. 2,751,137, and Serial No. 331,021, filed January 13, 1953, now Patent No. 2,750,095. The invention finds particular, but by no means exclusive, utility in disposable containers adapted for distribution of milk and other dairy products.

A container of the foregoing character is customarily erected from a flat blank of sheet stock which has been impressed with an appropriate pattern of score lines, the latter defining a plurality of side panels together with corresponding upper and lower panel extension flaps or closures. The usual procedure in setting up such a container is to form the blank into a polygonal tube open at both ends and then to close the lower or bottom panel extensions, retaining them in place by means of a suitable adhesive. The exposed surfaces of the container may then be coated or impregnated with a barrier film by immersion in a paraffin bath, for example. Following this operation, the container may be filled with the particular product to be contained therein and the top sealed.

The general aim of the present invention is to provide a container of the character set forth and having incorporated into its top end closure an extensible, sealably protected, pouring spout which may be opened with ease for precise, dripless dispensing of the contents of the container.

A more specific object of the invention is to provide a gable topped container of the foregoing type wherein the pouring spout is of pitcher-like form and is rendered accessible as a result of partial disintegration of the top end closure.

A further object is to provide a gable topped container as specifically described above and yet possessing sufficient strength to permit normal handling of the container pilot and after initial opening by the user.

Another object of the invention is to provide a blank capable of being fashioned into a container of the type set forth.

Other objects and advantageous features will become apparent from the following detailed description, taken together with the accompanying drawings, in which:

FIGURE 1 is a fragmentary perspective view showing the upper portion of an illustrative container embodying the present invention.

FIGS. 2, 3, 4, 5 and 6 are fragmentary perspective views similar to FIG. 1 but showing sequentially various steps in opening the container and placing the pouring spout in operative condition.

FIG. 7 is a plan view detailing the inside face of a flat blank from which the illustrative container of FIGS. 1 to 6 may be constructed.

While the invention is susceptible of various modifications and alternative constructions, a particular embodiment has 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 form disclosed, but on the contrary, the intention 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 more specifically to the drawings, there is shown in FIGURES 1 to 6 an exemplary container 10 embodying the present invention. The container 10 is formed from paper or other suitable sheet material and is self-sustaining in shape, being coated or impregnated with a suitable substance to render it fluidtight and capable of holding liquids such as milk. The container 10 comprises a tubular body 11 which, in the present instance, happens to be of substantially square cross section. At its base, the body 11 is provided with a suitable bottom closure (not shown), the details of which are of no immediate concern here. The upper end of the body 11 terminates in what will be recognized as the familiar gable top end closure 12 which is supported by a central laminar rib or truss 14. The top end closure 12 has incorporated therein a novel arrangement for dispensing the contents of the container.

Preferably, the container 10 is fashioned from a flat blank 15 of heavy paper stock or other suitable sheet material, the inside face of such blank being illustrated in FIG. 7. By means of an appropriate pattern of score lines, the blank 15 is divided into a plurality of panels and areas which are utilized for the walls of the container and the closure parts when the container is erected.

The central and major area of the blank 15 becomes the body 11 of the container and is designed by spaced apart transverse score lines 16, 18 running in substantially parallel relation from edge to edge of the blank. Intersecting the lines 16, 18 at spaced intervals therealong are a series of perpendicular score lines 19, 20, 21 and 22 which define, in the central and major area of the blank, side panels 24, 25, 26 and 27, together with a fractional side panel or glue flap 28. When the container is erected, the latter is adhesively secured in overlying relation with the inside face of the side panel 24. Connected to the lower edges of the side panels along the lower transverse score line 18 are fold-back panel extensions or bottom closure flaps 29, 30, 31 and 32 which may be of well-known form.

Integral with the upper ends of the side panels but separated therefrom by the transverse score line 16 are a plurality of panel extensions which give the top of the container 10 its characteristic gable shape. Such extensions include a transverse score line 34 generally parallel to the score line 16 and spaced between the latter and the top edge of the blank 15. The areas below the line 34 define the roof panels and end panels of the top closure 12, while the areas above the line 34 define the parts of the central laminar rib 14.

Accordingly, alternate side panels 24, 26 have respectively connected therewith inclined roof panels 35, 36. The latter, in turn, are connected with outer rib panels 38, 39 terminating, respectively, in tuck-in flap 40 and fold-over flap 41. Similarly, alternate side panels 25, 27 have connected therewith along the transverse score line 16 triangular end panels 42 and 44. The end panel 42 is flanked by triangular fold-back panels 45, 46 connected along converging score lines 48, 49 which start at the intersections between the corner score lines 19, 20 and the transverse score line 16, converging upwardly and intersecting at the transverse score line 34. Inner rib panels 50, 51 are connected to the panels 45 and 46 along the score line 34 and are connected to each other along short vertical score line 52 which runs from the apex of the end panel 42 to the top edge of the blank. By the same token, the end panel 44 is flanked by fold-back panels 54, 55 connected along converging score lines 56, 58. Fold-back panels 54, 55 are connected to inner rib.
The glue flap 28 also has panel extensions 62, 64 integral therewith. When the container 10 is erected, the extensions 62, 64 respectively overlie the marginal edge portions of the inside faces of the roof panel 35 and closure panel 38.

Provision is made for building into the top end closure of the container 10 an extensible, sanitarily protected pouring spout 65 of pitchler-like form (FIGS. 5 and 6) and for rendering such spout accessible as a result of panels that are partially disassembled of the central rib 14. In accomplishing such objective, advantage is taken of the angular arrangement of score lines defining the triangular end and fold-back panels of the top closure. Referring once more to FIG. 7, it will be noted that the roof panel 35 has an angular score line 66 starting at the intersection of the score lines 16, 19, 48 and terminating at a point on the score line 34 situated midway between the score line 19 and the left-hand edge of the blank. The line 66 thus defines in the roof panel 35 a triangular sub-panel 65 substantially identical in shape and size to the fold-back panel 45. In like manner, the center of the panel 36 has an angular score line 60 starting at the intersection of the lines 16, 20, 49 and ending on the line 34 at a point midway between the score lines 20 and 21. The line 69 defines in the roof panel 36 a triangular subpanel 70 of substantially the same size and shape as the fold-back panel 46. With the arrangement thus far described, it will be appreciated by those skilled in the art that the panel areas 42, 45, 46, 60 and 70 define the lower portion of the pouring spout 65, which is situated below the rib 14, while panel areas 51 and adjacent portions of the rib panels 38, 39 define the upper portion of the spout 65.

In addition, the pouring spout 65 is easily accessible to the user and yet maintain adequate strength and sanitary protection in the top end closure, resort is had to a novel arrangement for effecting partial disintegration or partial disassembly of the central rib 14. As shown partially in FIG. 7, the rib panel 38 is provided with a transverse tear line 71 which extends about halfway along the fold line of the tuck-in flap 40 and terminates at the intersection of the score line 19 with the top edge of the blank. In addition, the rib panel 39 is formed with a relatively short tear line 72 which extends from the center of the panel 39 upwardly to the top edge of the blank, bisecting the fold-over flap 41. Apart from the tear line 72, the panel 39 and fold-over flap 41 remain imperforate. In the present instance, the tear lines 71 and 72 happen to be defined by perforations but those skilled in the art will appreciate that such lines may also be defined by other equivalent expedients.

To transform the blank 15 into the completed container shown in FIG. 1, the blank is first folded upon itself to form a flat tube and the glue flap 28 together with its extensions 62, 64 is adhesively secured to the inside faces of the panels 24, 35 and 38 adjacent the left marginal edge thereof. The flat tube is then erected into one of square cross section and the bottom closure is completed. If not moistureproofed earlier, the open container is coated or impregnated, as by dipping in a paraffin bath. The container is then filled and its top closure parts are infolded into gable-like form. During the course of such action, the tear line 48 is cut releasing the tuck-in flap 40 in interlocking relationship with the infolded rib panels 51, 59 and the rib panel 39, reinforcing the rib 14. By the same token, the flap 41 is folded down against the outer face of the rib panel 38, thus constituting the outer ply of the rib 14. This leaves in the outer ply of the rib a flexed imperforate area connecting the central rib 14, the rib panel 39, such flexed imperforate area overlapping the tear line 71 of the tuck-in flap 40. The rib parts are then sealed in closed position by the application of heat and pressure against the outside faces of the rib 14. Such structure may be further reinforced by means of a staple 74 situated in the non-disintegrable portion of the rib 14.

Refering more specifically to FIGS. 1 to 6, the steps in opening the container 10 and activating the pouring spout 65 are there illustrated sequentially. Starting with the container in the unopened condition of FIG. 1, the first step involves pulling up upwardly on the pour-off and imperforate portion 41A of the fold-over flap 41 which forms an outer ply on the disintegrable portion of the rib 14. The portion 41A separates from the stapled portion along the tear line 72 and, when fully raised as shown in FIG. 4, a squeezed area on the back-folded panels applied at the score lines 19 and 20 will distend the pouring spout 65 into operative position, as shown in FIG. 5. Pouring may readily be initiated by inclining the container 10 to the desired angle as shown in FIG. 6.

The pouring spout 65 may be collapsed and the container resealed by the user in a very simple manner. This can be done by pushing inwardly upon the end panel 42 and then reversing the back-folding manipulations of the panels 46, 70 and 45, 68 by which the container was opened. The raised portion 41A of the fold-over flap may then be folded down into its original position and conveniently utilized to maintain the pouring spout 65 in reclosed condition.

Upon reflection, it will be noted that there has been provided a container which eminently fulfills the objectives set forth earlier herein. The container is easy to open and reclose by the application of light finger pressures, and the pouring spout is readily accessible to the user. Although some of the parts of the top closure are deliberately weakened to facilitate opening, the top closure possesses ample mechanical strength and fluid-tight integrity to preclude accidental opening or leakage during handling or transit prior to its use.

The free upper edge 75 of the pouring spout 65, and which is traversed by the fluid poured from the container 10, provides excellent pouring and cut-off characteristics. Moreover, the edge 75 and its adjacent marginal areas remain sealed within the structure of the top rib 14 and hence subject to complete sanitary protection up to the time the container is opened by the user.

I claim as my invention:

1. A gable top container of paper board or the like and comprising, in combination, a tubular body having a bottom closure thereon, a pair of opposed inclined roof panels overlying said body, a pair of opposed triangular end panels in-folded between said roof panels, a pair of triangular fold-back panels flanking each said in-folded triangular end panel and folded against the undersides of said roof panels, a plurality of inner and outer rib panels surrounding said body, a pair of tuck-in end and fold-back panels, a tuck-in flap connected along a hinge line to one of said outer rib panels and disposed in interlocking sandwiched relation between another one of said outer rib panels and said inner rib panels, a fold-over flap connected to said other outer rib panel and disposed in overlying relationship with the fold-over flap 41, a tuck-in flap connected to said other outer rib panel, said tuck-in flap being connected by a flexed imperforate area, said rib panels and said tuck-in and fold-over flaps together defining a central laminar rib surmounting
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roof panels, a sanitarily protected extensible pouring spout housed in collapsed condition within said container and having an extensible portion defined by one of said triangular end panels and an adjacent pair of said fold-back panels and an adjacent pair of said inner rib panels, means defining a perforation line between said tuck-in flap and said outer rib panel, said perforation line extending longitudinally of said rib from one end thereof to the central portion of the same and being situated in sealed underlying and abutting relation with said flexed imperforate area, means defining a perforation line in said fold-over flap, said latter perforation line extending substantially from the top central portion of said rib to the depending edge of said fold-over flap, and means situated in that portion of said rib remote from said pouring spout and said perforation line of said tuck-in flap for rigidly fixing together said tuck-in flap, said fold-over flap, said outer rib panels and those of said inner rib panels not included in said pouring spout while leaving said pouring spout free of engagement with said fixing means.

2. A gable top container of paperboard or the like and comprising, in combination, a tubular body having a bottom closure thereof, a pair of opposed triangular roof panels overlying said body, a pair of opposed triangular end panels in-folded between said roof panels, a pair of triangular fold-back panels flanking each said in-folded triangular end panel and folded against the undersides of said roof panels, a plurality of inner and outer rib panels surmounting said roof panels and said triangular end and fold-back panels, a tuck-in flap connected along a hinge line to one of said outer rib panels and disposed in interlocking sandwiched relation between another one of said outer rib panels and said inner rib panels, a fold-over flap connected to said other outer rib panel and disposed in interlocking relation with the outer fold of one said outer rib panel, a tuck-over flap and said other outer rib panel being connected by a flexed imperforate area, said rib panels and said tuck-in and fold-over flaps together defining a central laminar rib surmounting said roof panels, said rib and its parts being sealed together with a leakproof film, a sanitarily protected extensible pouring spout having its mouth defined by a pair of said inner rib panels, means defining a perforation line between said tuck-in flap and said one outer rib panel, said perforation line extending longitudinally of said rib in sealed overlapping relation with said mouth of said pouring spout and in sealed abutting relation with said flexed imperforate area between said fold-over flap and said other outer rib panel, and a mechanical fastener disposed in positive engagement with that portion of said rib remote from said pouring spout and said perforation line of said tuck-in flap, said fastener leaving that portion of said fold-over flap adjacent said pouring spout un-engaged except for said leakproof film, whereby a deliberately applied outward and upward pressure tending to turn back said roof panels in the region of said pouring spout will result in shearing of the leakproof film under said adjacent portion of said fold-over flap and permit progressive severance of said perforation line so as to provide access to said pouring spout.

3. A blank for forming a gable top container of paperboard or the like and comprising, in combination, a plurality of main side panels adapted to define the body of the container, a pair of opposed rectangular roof panels adapted to overlie the container body upon erection of the blank, a pair of opposed triangular end panels disposed in alternate relation between said roof panels, a pair of triangular fold-back panels flanking each said triangular end panel and connected with said outer fold of outer rib panels each connected with a respective one of said roof panels, a plurality of inner rib panels connected with said outer rib panels and with said triangular end and fold-back panels, a tuck-in flap connected along a hinge line to one of said outer rib panels, a fold-over flap connected to said other outer rib panel, said fold-over flap and said other outer rib panel being connected by an imperforate area which is adapted to flex upon erection of the blank, said rib panels and said tuck-in and fold-over flaps being adapted to define together said laminar rib surmounting said roof panels, one of said triangular end panels and an adjacent pair of said fold-back panels and an adjacent pair of said inner rib panels being adapted to define the extensible portion of a sanitarily protected extensible pouring spout, means defining a perforation line between said tuck-in flap and said one outer rib panel, said perforation line extending longitudinally from one end thereof to the central portion of the same, means defining a perforation line in said fold-over flap, said latter perforation line extending substantially from said imperforate area to the free edge of said fold-over flap, and means for securing said blank on itself to form a tubular container.

4. A liquid container of foldable, moisture-proof material comprising four side-walls scored at their upper ends along four first horizontal fold lines all at a common level to provide first horizontal fold lines embodying a pair of outer sealing members and a pair of inner sealing members arranged between said outer sealing members and cooperating therewith, each of said inner and outer sealing members having a second horizontal fold line extending across its upper portion to define an integral second sealing member associated with each of said sealing members above said second horizontal fold line, said second horizontal fold lines being on a common level, said inner sealing members each being inwardly folded, below its associated second horizontal fold line, solely on two symmetrically disposed, inclined fold lines intersecting each other, said associated second horizontal fold line being scored through the point of intersection of said inclined fold lines to form each inner sealing member with a single, inwardly and upwardly extending, triangularly shaped portion below said associated second horizontal fold line, said secondary sealing members being securely folded in nesting relationship with a first secondary sealing member associated with one of said outer sealing members being disposed outermost and being folded in surrounding relationship around the remaining secondary sealing members, a second secondary sealing member associated with the other of said outer sealing members being disposed next-to-outernost and being overfolded over and in snug locking interrelationship with the second secondary sealing members associated with said inner sealing members, staple means extending through opposite sides of said second secondary sealing member to restrain it against substantial spreading movement in vertical planes to normally maintain such interrelationship, at least one of said inner sealing members being free of restraining engagement with said staple means, and perforations extending partially along the top of at least said second secondary sealing member between the sides thereof and from the one end thereof associated with said at least one of said inner sealing members to enable ready tearing of said second secondary sealing member along its top from its said one end to make the secondary sealing member associated with said at least one of said inner sealing members readily releasable from said container and cooperating with each of said inner and outer sealing members having a second horizontal fold line extending across its upper portion to define an integral second sealing member
associated with each of said sealing members above said second horizontal fold line, said second horizontal fold lines being on a common level, said inner sealing members each being inwardly folded, below its associated second horizontal fold line, solely on two symmetrically disposed, inclined fold lines intersecting each other, said associated second horizontal fold line extending through the point of intersection of said inclined fold lines to form each inner sealing member with a single, inwardly and upwardly extending, triangularly shaped portion below said associated second horizontal fold line, said secondary sealing members being tightly folded in nesting relationship with a first secondary sealing member associated with one of said outer sealing members being disposed outermost and being folded in surrounding relationship around the remaining secondary sealing members, a second secondary sealing member associated with the other of said outer sealing members being disposed next-to-outermost and being overfolded over and in snug locking interrelationship with the secondary sealing members associated with said inner sealing members, gripping means extending through opposite sides of said second sealing member to restrain it against substantial spreading movement in vertical planes to normally maintain such interrelationship, at least one of said inner sealing members being free of restraining engagement with said gripping means, and a tear line of weakened cross-section extending partially along the top of at least said second secondary sealing member between the sides thereof and from the one end thereof associated with said at least one of said inner sealing members to enable ready tearing of said second secondary sealing member along its top from its said one end to make the secondary sealing member associated with said at least one of said inner sealing members readily releasable from said overfolded snug locking interrelationship independently of said gripping means.

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