May 11, 1937. H. J. REITER 2,079,875

PAPER CONTAINER

Filed July 18, 1936

Fig. 1.

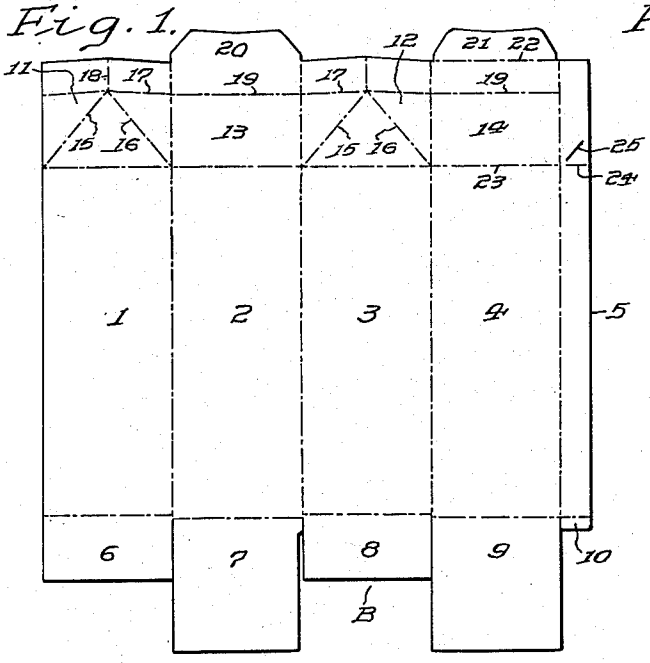


Fig. 2.

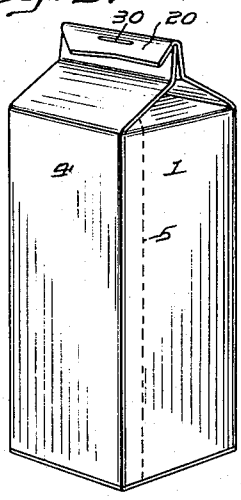


Fig. 7.

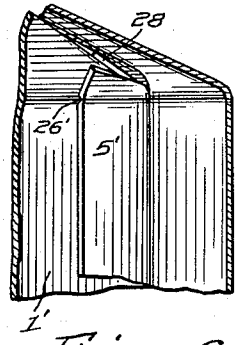


Fig. 4.

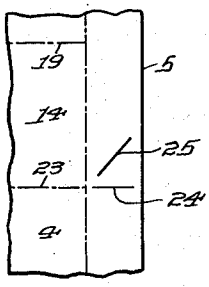


Fig. 3.

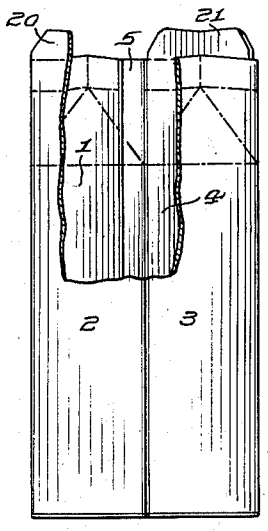


Fig. 6.

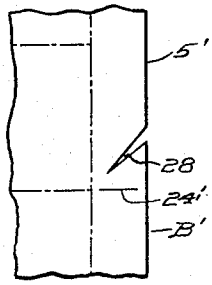
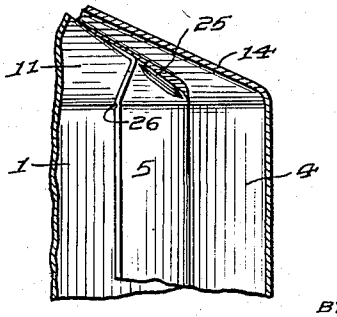


Fig. 5.



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UNITED STATES PATENT OFFICE

2,079,875

PAPER CONTAINER

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Application July 18, 1936, Serial No. 91,353

8 Claims. (Cl. 229—37)

The present invention relates to paper containers for fluids and more particularly to paper milk bottles and the like which are rendered fluid tight and non-absorbent by the application of a fluid waterproofing agent during or after their manufacture and before they are placed in service.

The invention provides a sanitary, serviceable paper milk bottle which preserves its impermeability to moisture for a relatively long period and which may be manufactured sufficiently cheaply to conform with modern trade requirements.

It will be understood that bottles of this character, to be practical, must remain impermeable to their fluid contents for a sufficiently long time after they have been filled with milk or cream, sealed and delivered to the customers, to permit them to be used for storage of their contents until entirely consumed, even though this require several days, and many complaints have been received from consumers to the effect leaks in bottle heretofore used have developed before their contents have been entirely used, while others which have been found relatively satisfactory in this respect have been so expensive as to render their use prohibitive in cost.

In that type of paper bottle to which this invention particularly relates the first of these disadvantages only has heretofore been present for the cost of their manufacture is so low that they may be placed on the market at very reasonable prices, and I have found that in most instances where leaks have developed in the bottles, they have occurred in the region of the joint formed by the glue lap which retains the flat blank from which the bottle is made in formed up condition for use. More particularly, certain points at which the glue lap and the bottle wall to which it is secured have been bent in forming the top closure or seal for the bottle, are especially susceptible to leaks of this kind, which can not be entirely prevented even by the exercise of greatest care to insure a perfect joint between the glue lap and wall since the folding of these parts in sealing the bottle sets up excessive strains in the material by reason of the sharpness in the angularity of the folds and the combined thicknesses of the layers of material being folded. Thus, while but little difficulty is experienced at points at which folds are made in but a single thickness of the material, the necessity of providing a double thickness thereof throughout a narrow strip lengthwise of the bottle at the glue lap to permit the bottle to be held together when formed up, has heretofore been substantially unavoidable.

The flat blanks from which the bottles are made, after being cut from a suitable paper stock and scored along the lines of the folds to be made therein, are usually formed up and glued at the joints, and then dipped in or otherwise treated with a waterproofing material such as paraffine so as to provide a thin waterproof film on all their exposed surfaces. The waterproofed bottles are next chilled to set and solidify this film, and then delivered to filling apparatus where they may be filled with milk or other fluid prior to closing and sealing of the top. The folding of the bottle incident to the latter operation thus occurs while the waterproof film is in a non-fluid state, and a break or separation in the film at or adjacent the glued joint, where a double thickness of the blank material is folded, may result, or the folding cause the laminations of the stock in the glue lap to separate, in either case exposing a surface of the stock not coated with the waterproofing agent, thereby permitting the bottle contents to be absorbed and thus eventually soaking the paper and ultimately causing the bottle to leak, while in some instances the strain of folding causes an immediate separation of the glued joint at the point of the fold, developing a leak immediately.

The principal object of the present invention, therefore, is to provide a bottle of this character so constructed that the folding of the top places substantially no undue strain on the glue lap whereby breaking of the waterproofing thereon at the fold, separation of its laminations and separation of the glue lap from the side of the bottle to which it is secured are minimized or prevented entirely, thereby inhibiting permeation of the bottle contents through the paper of which the bottle is made or their leakage through the joint formed by the glue lap.

A further object of the invention is to provide a milk bottle of the character described so constructed and arranged as to provide for access of the waterproofing agent into the fibers of the glue lap adjacent the points at which folds are subsequently to be made in sealing the bottle, whereby the waterproofing of these parts remains fully effective after the bottle has been sealed.

Another object is the provision in a milk bottle of the character mentioned of means inhibiting the setting up of undue strain on the glue lap and adjacent parts tending to cause their separation from each other or tearing apart of the stock

of which they are made when the folds incident to closing and sealing the bottles are produced.

Other objects, purposes and advantages of the invention will hereinafter more fully appear or will be understood fom the following description of certain embodiments thereof in which reference will be had to the accompanying drawing.

In the said drawing Fig. 1 is a plan view of a blank of preferred form embodying the invention and adapted to be formed up into a sanitary paper milk bottle.

Fig. 2 is a perspective view of a milk bottle formed from the said blank after closing and sealing its top.

Fig. 3 is a fragmentary diagonal elevation of the bottle prior to filling and closing.

Fig. 4 is a fragmentary detail of the blank on an enlarged scale.

Fig. 5 is a diagonal interior elevation of an upper corner of the sealed bottle shown in Fig. 2.

Figs. 6 and 7 are views generally corresponding to Figs. 4 and 5 but showing a modified embodiment of the invention.

In the several figures like characters are used to designate corresponding parts and scoring of the blank is indicated by dot and dash lines.

Referring now more particularly to the drawing, the blank B comprises four integral rectangular, substantially similar side panels 1, 2, 3 and 4 and a glue lap 5 extending along one edge of the panel 4, the panels and glue lap being defined from each other by scoring. The lower ends of the panels and glue lap respectively carry bottom flaps 6, 7, 8 and 9 and a glue flap 10, all of which are separated from each other by cuts and from the panels and glue lap by scores, these flaps cooperating in the usual way to complete the bottom of the bottle when formed up and glued together.

The upper ends of alternate panels 1 and 3 are provided with substantially similar extensions 11 and 12 adapted to be folded between other extensions 13, 14 of panels 2 and 4 when the bottle is closed and thus provided with divergent angular score lines 15 and 16 meeting at the center of a generally transverse obtusely angled score line 17, and from this center a short score 18 extends to the center of adjacent edge of the extension, which is also angled in substantial parallelism with the score line 17. The extensions 13 and 14 carried by the panels 2 and 4 are separated from extensions 11 and 12 on panels 1 and 3 by score lines, and are transversely scored at 19 in substantial alignment with the scores 17. These extensions also carry locking tongues 20 and 21, the latter of which is separated from the extension 14 by a score 22 and is somewhat shorter, transversely, than the width of the extension.

In prolongation of the score 23 separating the extensions from the panels, a knife score 24 extends transversely of the glue lap but terminates short of its opposite edges and is made in such a way that the fibers of the paper of the blank are cut through for an appreciable depth below one surface of the glue lap but not entirely through to its opposite surface. A full cut 25 extends angularly across the glue lap just above the knife score 24 at an angle generally corresponding to that of the scores 15 and 16 with respect to the score 23.

When this blank is formed up in making a milk bottle the glue lap 5 is pasted to the opposite edge of the panel 1 as the blank is folded on the scores at the sides of the several panels, with that surface of the glue lap the fibers in which are cut by the knife score 24 contacting the inner surface of panel 1 at its edge and the bottom flaps 6—10 are then folded in and glued together, these operations being carried out conveniently in exactly the same manner as heretofore in the forming of milk bottles of corresponding size and shape.

The formed up bottle, as usual, is then immersed in hot paraffin or otherwise waterproofed by being subjected to the action of a fluid waterproofing agent. During this treatment the knife score 24 and the cut 25 in the glue lap 5 offer for contact with the waterproofing agent small edge surfaces of the material, and as the latter is usually more absorptive in its edges than in its outer surfaces, the waterproofing material enters the cuts and is absorbed edgewise through the paper for an appreciable distance from the cuts.

After waterproofing and chilling or other setting of the waterproofing agent the bottles are usually immediately filled approximately to the level of the score line 23 in the side panels and are then closed by folding the extensions of the panels 1 and 3 inwardly between those of the panels 2 and 4 prior to final sealing and since the glue lap 5 has been glued to the panel 1, its upper portion is folded along substantially the same lines as that part of the extension 11 to which it is secured, and thus along the lines of the knife score 24 and the cut 25. This operation opens the knife score 24 as shown at 26 as if the glue lap were hinged on the uncut portion of the material adjacent the score, and prevents strain at this point, while the cut 25 may spread slightly and provide in effect a slot overlying the fold on score line 15; the impregnated edges of the material at these points are thus exposed to contact with the fluid contents of the bottle. Their impregnation by the waterproofing agent, however, prevents the absorption of the fluid in the bottle by the material and as all other interior surfaces of the bottle are also coated or saturated with the waterproofing agent the bottle presents no points at which its contents may permeate the material of which it is made and thereby induce leaks.

Moreover, the ability of the cut 25 extending angularly through the glue lap to spread in response to the strain placed upon the latter when it is folded with the extension 12 along the score 15 in registry with the cut together with the hinging of the glue lap where it is bent along the knife score 24, forming groove 26 in Fig. 5, relieves any strain on the glue lap at these folds and prevents it from being pulled away from the panel 1 and separation of the laminations of which it is formed, while the continuity of the waterproof film is also preserved through the avoidance of extreme folds in all parts of the bottle.

In the modified embodiment of the invention indicated in Figs. 6 and 7, the blank B' is provided with a cut formed as an oblique V-shaped notch 28 in the glue lap 5' adjacent the point corresponding to the cut 25 in the glue lap 5 of the blank B, but in other respects is identical with the latter. When the blank B' is formed up and impregnated with the waterproofing agent, the latter permeates the material in the vicinity of the cut in the same manner as heretofore described and when the bottle is thereafter folded as shown in Fig. 7 the cut is slightly widened, relieving any strain on the glue lap and preventing exposure of unwaterproofed surfaces to contact with the bottle contents, the knife score 24' opening outwardly adjacent its point of engagement

with the fold in the panel 1' to form a groove 26' substantially similarly to the action of the corresponding parts in the preferred embodiment of the invention.

No specific mention has herein been made of the manner of finally sealing the bottle and this forms no part of the present invention, but it will be understood that the tongue 21 is usually folded inwardly between the edge of extension 11 on the panel 1 and the inwardly folded edges of the extensions 13 and 14 on the panels 2 and 4 and the tongue 20 is thereafter folded over it. A fastener 30 is then desirably inserted through the several thicknesses of material at the top of the bottle and crimped over to hold them together and if, as is usually the case, they are slightly warmed during this operation, the waterproofing agent may be sufficiently softened to permit an entirely waterproof and substantially air tight seal to be effected.

While I have herein described the invention with considerable particularity, and especially as it may be embodied in a box of a certain well known specific type, it will be understood that I do not desire or intend thereby to limit or confine myself in any way thereto, as changes and modifications in the form, structure and arrangement of the several parts, in their mode of mutual association, and in their cooperative effect will readily occur to those skilled in the art and may be made if desired without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

1. In a disposable bottle formed from a single unitary blank comprising integral sides, a bottom and extensions carried by the sides adapted to be folded along predetermined lines to form a top closure, a glue lap integral with one of the sides and its extension secured to a second side and its extension and having a transverse knife score aligned with the juncture therebetween, and an angular cut extending in alignment with one angular line of fold in the second extension.

2. In a disposable bottle formed from a single unitary blank comprising integral sides, a bottom and extensions carried by the sides adapted to be folded to form a top closure, a glue lap integral with one of the sides and its extension secured to the adjacent side and its extension and having a transverse knife score aligned with the juncture therebetween, and a V-shaped notch extending angularly inwardly from its edge toward the knife score having one of its sides aligned with a correspondingly angular fold in the adjacent extension.

3. In a bottle formed of bendable material, an extension having inter-folding portions adapted to be folded along predetermined lines in forming a top-closure for the bottle, a glue lap extending longitudinally of the bottle and said extension having an angular cut in registry with a correspondingly angular fold along one of said predetermined lines in the extension and a transverse knife score in registry with a transverse fold between the extension and the adjacent portion of the bottle.

4. In a bottle formed of bendable material, an extension adapted to be folded along predetermined lines in forming a top-closure for the bottle, a glue lap extending longitudinally of the bottle and said extension having an angular cut in registry with one of said predetermined lines in the extension and a transverse knife score in registry with another such line between the extension and the adjacent portion of the bottle and a waterproof agent impregnating the material an appreciable distance inwardly from said cut and score respectively and coating the interior surfaces of the bottle to thereby render the bottle substantially impervious to aqueous fluids.

5. In a bottle formed of bendable material, an extension having inter-folding portions foldable along predetermined lines in forming a top-closure, a glue lap extending longitudinally of the bottle and said extension having an angular V-shaped notch projecting inwardly from one of its edges to a point adjacent an opposite edge, one side of the notch registering with the fold along one of said lines in the extension and a transverse knife score registering with the fold along another of said lines between the extension and the adjacent portion of the bottle.

6. In a bottle formed of bendable material, an extension having inter-folding portions defined from each other by rectilinear folds in forming a top-closure, a glue lap extending longitudinally of the bottle and said extension having an angular V-shaped notch projecting inwardly from one of its edges to a point adjacent an opposite edge, one side of the notch registering with one of said folds in the extension and a transverse knife score registering with another fold between the extension and the adjacent portion of the bottle and a waterproof agent impregnating the material an appreciable distance inwardly from said notch and score respectively and coating the interior surfaces of the bottle to thereby render the bottle substantially impervious to aqueous fluids.

7. A blank for forming a disposable fluid container comprising a plurality of integral substantially rectangular panels adapted to form the sides of the container, extensions respectively defined from the panels by scores adapted to cooperate to form a top closure, the extension defined from one panel having angular scores to facilitate the folding thereof, and a glue lap integral with another panel and its extension having a transverse knife score in substantial prolongation of the score defining the angularly scored extension from its panel, and an angular cut adjacent said knife score adapted to register with one of said angular scores and to overlie the fold along said score when the top closure is formed by folding all the extensions along said scores.

8. A blank for forming a disposable fluid container comprising a plurality of integral substantially rectangular panels adapted to form the sides of the container, extensions respectively defined from the panels by scores adapted to cooperate to form a top closure, certain of said extensions having angular scores and transverse scores to facilitate the folding thereof, and a glue lap integral with one panel and its extension having a transverse knife score in substantial alignment with the score between said panel and its extension, and an angular substantially V-shaped notch extending inwardly and downwardly from a point in an edge of the glue lap adjacent but above the knife score at an angle to the latter substantially corresponding to the angle between the angular scores and the transverse scores in said scored extensions.

HENRY J. REITER.