

Aug. 2, 1938.

C. L. BAKER

2,125,417

PAPER MILK BOTTLE

Filed Aug. 24, 1937

2 Sheets-Sheet 1

Fig. 1.

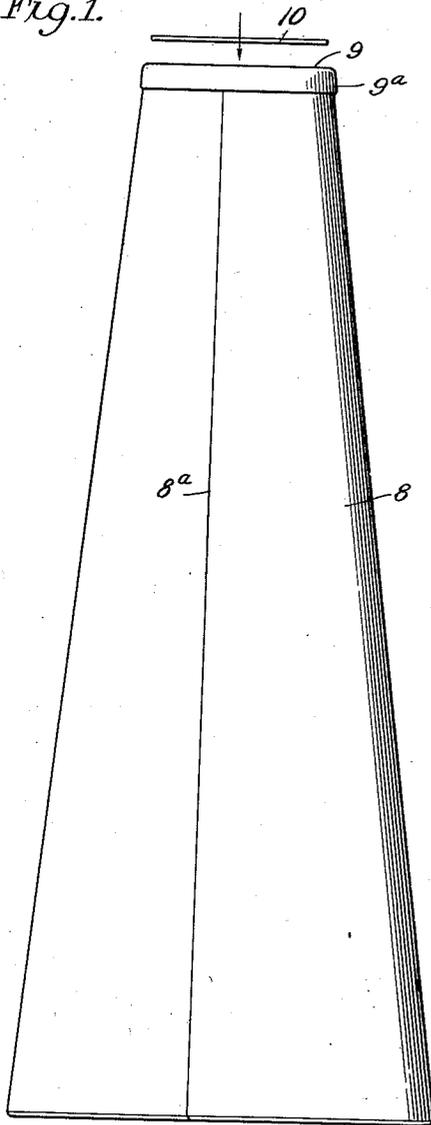


Fig. 2.

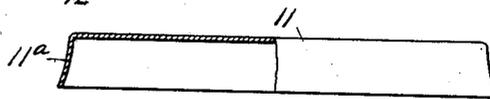
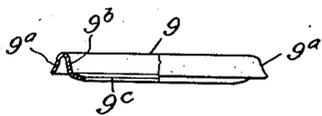
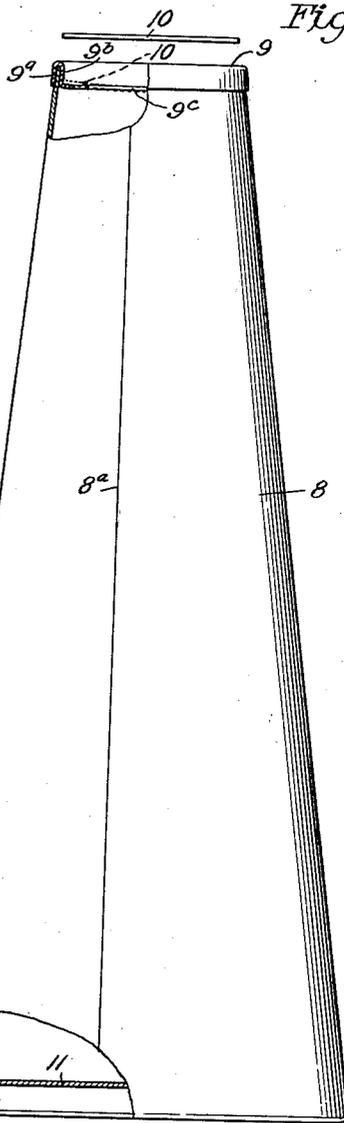


Fig. 3.

Fig. 4.

Inventor

CHARLES L. BAKER.

334 *Douglas Dowell*

Attorneys.

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Fig. 5.

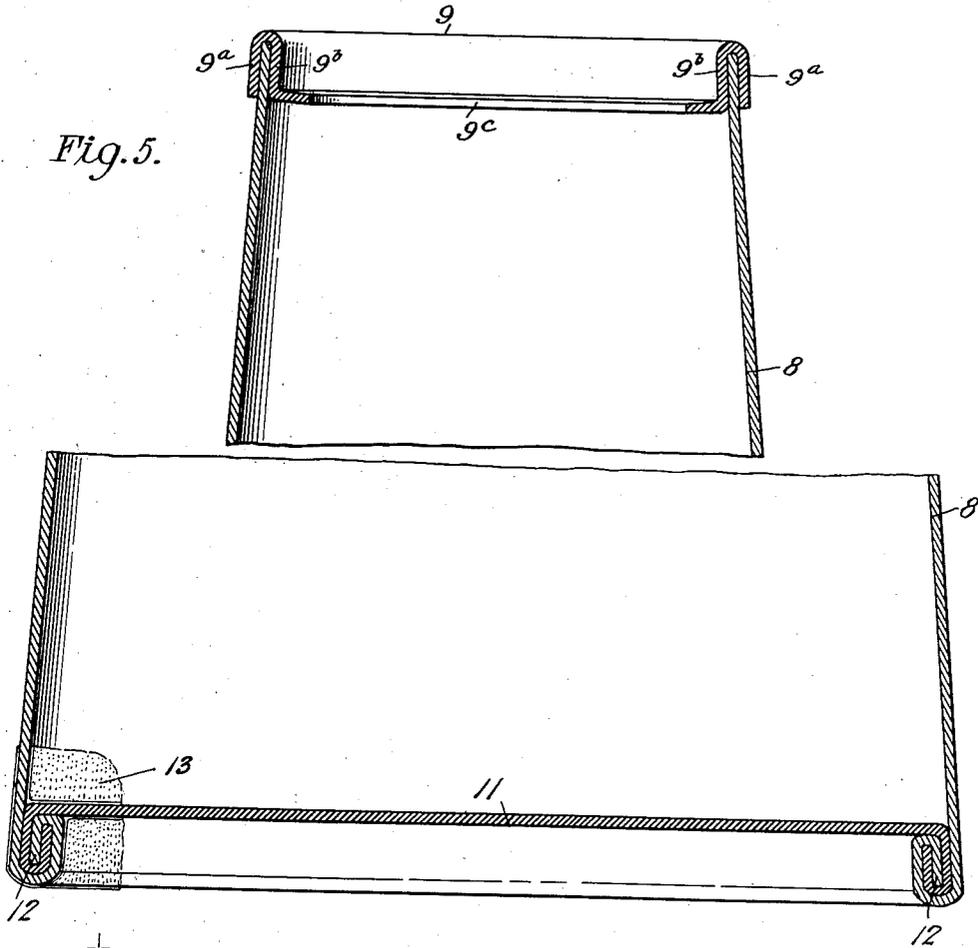


Fig. 6.

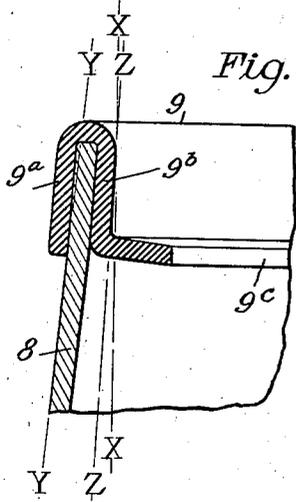
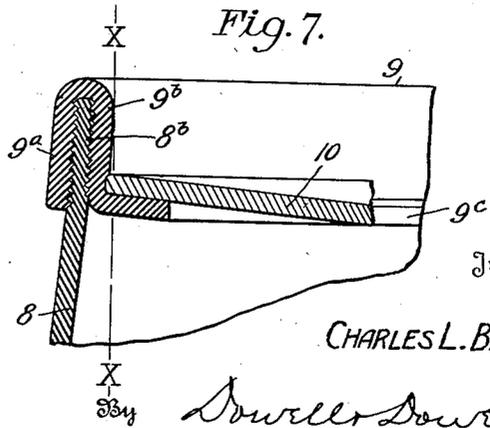


Fig. 7.



Inventor

CHARLES L. BAKER.

Dwells Dwells

Attorneys.

UNITED STATES PATENT OFFICE

2,125,417

PAPER MILK BOTTLE

Charles L. Baker, Lancaster, Pa., assignor to
Jet D. Sheetz, Lancaster, Pa.

Application August 24, 1937, Serial No. 160,706

2 Claims. (Cl. 229—5.5)

This invention relates to paper containers, having reference more especially to liquid containers of paper and particularly to paper milk bottles.

The object is to provide an improved paper milk bottle for use in place of the ordinary glass bottles now in general use; that is, a paper milk bottle of simplified, strong, durable and less costly construction as compared with other proposals of the kind and adapted to hold milk or other liquid without leakage or disintegration from the effects of the same, composed entirely of paper.

The said invention, its advantages and particular purposes in connection with the same will be best understood from the following description with reference to the appended drawings, illustrating one practicable embodiment thereof in a commercially complete form produced by specially designed machines or devices, to which reference will be made hereinafter.

In said drawings:

Fig. 1 is a side elevational representation of the finished bottle, showing the usual closure cap for such articles in position thereover for appliance into place;

Fig. 2 is a similar view, broken away sectionally at one side to better illustrate the bottle construction, the said closure cap being represented by dotted lines in its applied position;

Fig. 3 is a partly elevational and partly cross-sectional view of the mouth or top piece member before its affixture to the bottle body;

Fig. 4 is a corresponding or like view of the bottom member applied to the bottle body;

Fig. 5 is an enlarged broken away view of the bottle showing its top and bottom parts in plainer cross-section;

Fig. 6 is a fragmentary view on a still larger scale showing the applied top part cross-sectionally in illustration of a particular detail; and

Fig. 7 is a similar view illustrating a further detail of modification.

In the illustrative embodiment, the bottle body 8 comprises a hollow frusto-conical tube or shell made of paper or paper sheet material. Said body in this instance is formed from a single sheet on the machine of my co-pending application Serial No. 160,703, filed simultaneously herewith, covering a Machine for forming tubular sheet-material bodies, and has a longitudinal joint or seam 8^a at one side resulting from folding the edges of said sheet together. Said joint or seam is adhesive bound along its entire extent under a strong pressure applied and maintained by the machine in its process of production and is posi-

tively closed along its full length, without possibility of separating or opening apart.

Upon the upper or smaller end of this body there is secured a mouth rimming and closure-receiving member 9, comprising in this instance a paper ring. Fig. 3 illustrates the same in its form before securing or affixture to the bottle body. Bent as shown so as to fit foldably over the extremal edge of said body, the outer peripheral portion 9^a thereof engages the outer side of the body wall and the intermediate portion 9^b engages the inner side of the body wall, while a third, or inner peripheral portion 9^c of the same, extends inwardly so as to provide a circumferential ledge on the inner side of the body below its top edge level.

Said ring is affixed in the manner described in my copending application Serial No. 160,704, also filed simultaneously herewith, for a Device for applying closure mouths to bottle bodies. That is, it is applied axially of the bottle body by pressure at opposite sides, or with pressure against the outer and intermediate portions 9^a and 9^b, with the end of the bottle body therebetween (see Fig. 5). It is secured in place by an adhesive applied to the contacting surfaces, i. e., to the outer and inner sides of the body end and/or to the inner sides of the portions 9^a and 9^b of the ring, and the bind is perfected by the strong applicative pressure maintained until the adhesive has sufficiently dried to have a permanent hold. If desired, the bind may be facilitated and strengthened by forming circumferential serrations 9^b in the top part or edge of the bottle body (see Fig. 7) on its outer and inner sides, or in one of said sides, the said serrations serving to pocket the adhesive and so augment or strengthen the bind between the parts.

In applying the mouth ring to place, the top part or edge of the bottle body is temporarily distorted or bent out of the normal inclination of the body wall, represented by the line Y—Y in Fig. 6, into a substantially vertical position, represented by the line X—X in said figure, so as to permit the ring to be applied axially in a perfectly vertical plane. After the ring affixture and release from pressure, the said end of the body tends to resume its former normal inclination and in so doing draws the adhering intermediate portion 9^b of the ring inward so as to assume an inclination represented by the line Z—Z in said Figure 6. Thus the inner side of the ring is brought to an inclination correspondingly with but less than the inclination of the body wall, so that the ring or mouth opening will

be wider at the bottom, adjacent the ledge portion 9^c, than it is at the top. At the same time, the inwardly extending portion 9^c is drawn upwardly to assume a substantially horizontal position or a position of only slight inclination downwardly. The ring is thereby rendered particularly adaptable to receive and retain a closure member. That is, an ordinary closure cap or milk bottle top 10 inserted into place must be pressed through the smaller or narrower diameter opening of the ring in order to be positioned in the larger or wider opening at the bottom of the ring against the ledge portion 9^c, the said cap being of a diameter equal to or slightly greater than the diameter of the ring at its bottom next to said ledge portion. The said closure cap will thereupon press itself circumferentially into the mouth ring, as represented in Fig. 7, and so become firmly embedded or lodged therein, permitting the bottle to be inverted without dropping out to release the contents, and without the possibility of becoming loosened until it is removed in the usual way.

To the lower or larger end of the bottle body is secured a closing bottom member 11, comprising in this instance a paper plate. Fig. 4 illustrates the same in its form before securing or affixture to the bottle body. Having its peripheral portion 11^a formed as a flange as shown, this said member fits inversely into the frusto-conical body end with its said flange portion extending outwardly or downwardly in close engagement with the inner inclined wall of the bottle body. Said bottom plate is secured or affixed in the manner described in my co-pending application Serial No. 160,705, likewise filed simultaneously herewith, for a device for applying closure bottoms to tubular containers. That is, it is applied axially of the bottle body by an inward folding of its flange portion jointly with the surrounding end portion of the bottle body, which it engages, into a double or interfold joint 12 (see Fig. 5), one substantially within and embraced by the other. In other words, the end portion of the bottle body is inwardly folded double or backwardly within the folding of the flange part of the plate, and said flange part of the plate is inwardly folded double or backward within the folding of said body end portion.

This folding is performed by an endwise or directly vertical pressure between pressure members and with pressure on the opposite or inner side of the bottom plate to hold it firm against slippage or sliding inwardly of the bottle. As the folding proceeds between the stated pressure members, a horizontal compression or squeeze occurs which increasingly tightens or binds the fold into a firm and absolutely sealed union, which cannot loosen or open apart. The joint also forms a stout, solid and strong bottom rim on which the bottle may rest and gives rigidity as well as great strength thereto, combined with the mouth piece reinforcement at the top.

No adhesive is employed in securing this bottom closure to the bottle body. The union by interfold of the parts is so close and tight that it provides a permanent affixture without the necessity for any adhesive or other binding agent. Friction alone holds it together, engaging one part within the other, without any possibility of loosening or opening at any point to allow leakage.

The completed bottle, with applied mouth and bottom members, is coated with an adherent layer 13 of paraffin or the like sanitation in-

ulate. This is applied either by spraying or dipping, preferably with a rotational movement, for even distribution or thickness throughout, and said coating fills and covers all crevices as well as the surface areas of the bottle. The coating may be on both the inner and outer sides, or only on the inner side, as preferred. In ordinary circumstances of practical usage, it is sufficient to coat it only on the inner side. Said paraffin or other coating of course hardens sufficiently to form a solid film on the wall and surfaces of the bottle and provides a complete protectorate for any liquid that is placed in the bottle as well as a protection of the bottle itself, especially when applied on the exterior as well as the interior.

The improvement and advantages of the described bottle will be readily appreciated. It provides a most practical and economic substitute for glass bottles now in use, while at the same time retaining or embodying the essential features and advantages of the glass bottles. They can be stacked incomplete, i. e., without bottom affixtures and without the paraffin coating, in large numbers within a comparatively limited space and dairymen making use of the same can themselves complete the structure by applying the bottom members thereto and coating the same, by machinery for the purpose which is available. One of the chief advantages is that the bottle cannot be broken, as may glass, and the expense of destruction and loss is considerably less.

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

1. In a paper milk bottle, embodying a frusto-conical shell body of sheet paper, a paper mouth rim on the upper end of the same comprising a ring having portions bent foldingly over the edge and secured to the body wall on outer and inner sides of the same and another portion extending inwardly circumferentially thereof in provision of a circumferential ledge within the body below its said edge, the portion of the ring of the inner side of the body being inclined to a degree correspondingly with the inclination of the wall of said body so as to be wider at the base adjacent to said another inwardly extending portion thereof than at the top, and the said ring portion inclination being attained by the force of the body wall tending to resume its normal inclination following the attachment of said ring distorting it temporarily out of normal inclination and a paper bottom closure applied in joint to the lower end of the body.

2. An all-paper milk bottle or other liquid container, comprising a frusto-conical shell body composed of a single piece of paper sheet material joined overfoldingly edge to edge longitudinally, a paper bottom closure applied to the larger or lower end of the body, and a paper mouth rim secured upon the smaller or upper end of said body, said mouth rim consisting of an edge-overlapping ring member having one portion engaging the outer side of the body wall, a continuing second portion engaging the inner side of the body wall, and a third further continuing portion extending inwardly laterally to the body wall in provision of a circumferential ledge within the body below its overfolded top edge, the first and second named portions of said ring member respectively engaging the outer and inner sides of the body wall being inclined to a degree correspondingly with the inclination of the body

5 wall itself and said second named portion particularly being so correspondingly inclined so as to be slightly wider at its base or lower end from which the third named ledge forming portion extends inwardly than at its top in order to provide for a tensional-grip retention of a closure cap, and said inclinations of said first and second

named portions of the ring member being attained by the force of the body wall tending to resume its normal inclination following the attachment of said ring member distorting it temporarily out of its normal formational inclination. 5

CHARLES L. BAKER.