Sept. 3, 1940. L. J. BRAINARD 2,213,200

BOTTLE CAP

Filed Oct. 1, 1938

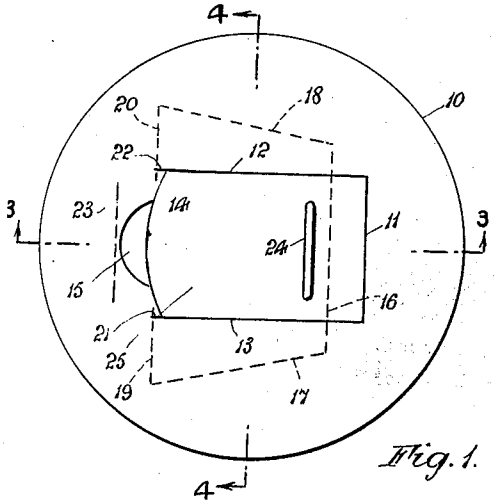


Fig. 1.

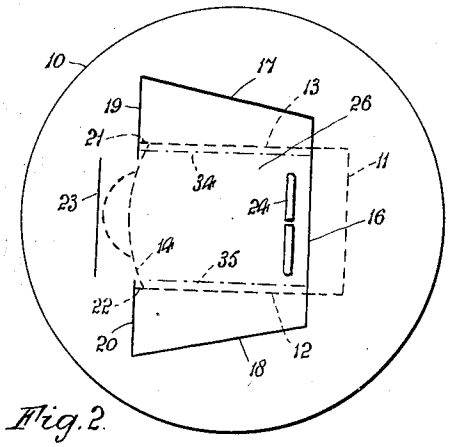


Fig. 2.

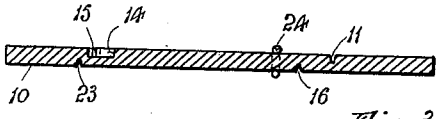


Fig. 3.

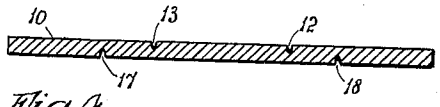


Fig. 4.

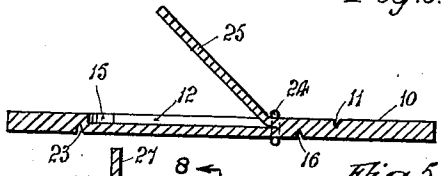


Fig. 5.

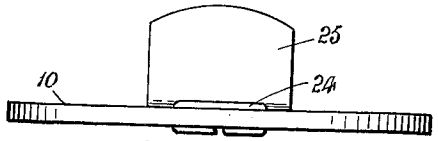


Fig. 6.

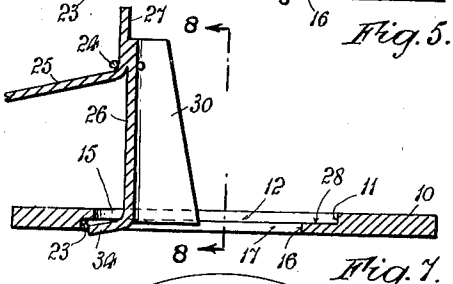


Fig. 7.

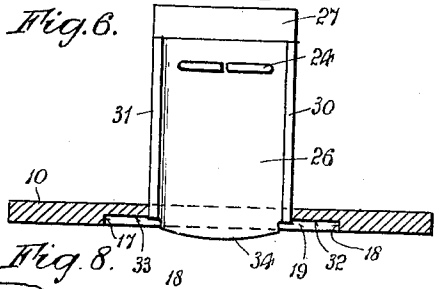


Fig. 8.

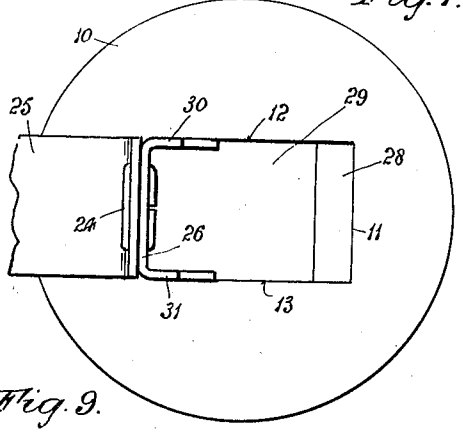


Fig. 9.

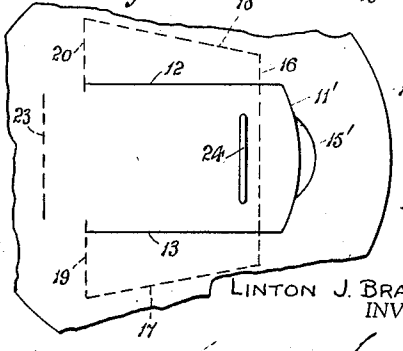


Fig. 10.

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2,213,200

BOTTLE CAP

Linton J. Brainard, Detroit, Mich.

Application October 1, 1938, Serial No. 232,742

3 Claims. (Cl. 215—51)

This invention relates to caps for the sealing of milk bottles, although it is applicable to containers other than milk bottles, and has for its object to provide a very simple, cheap, readily constructed and efficient seal of an inherently integral nature, capable of being readily transformed by manual manipulation into a spout or pouring structure which may be readily and easily opened and closed from time to time, and which will be self-locking and sealing when reclosed after opening.

Still further objects and advantages subsidiary to or resulting from the aforesaid objects, or from construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may provide a milk bottle cap in the form of a pasteboard disc, having the outlines of a flap cut partially through its upper surface, with a depression for thumb nail engagement at one end of said flap, and on the underside of said cap the developed outlines of a spout also cut partially through the pasteboard, all in such manner that the flap may be peeled by the thumb along a medial plane of the pasteboard to a point approaching the lip of the spout outline. The arrangement is such that further pulling on the flap will draw the outlined spout through the opening provided by the lifting of the flap, the margins of the opening causing the marginal portions of the spout development to fold inwardly during such movement. The said marginal portions are severable on a medial plane from the upper material of the cap, and means are provided for preventing the total severance of the flap from the spout development. All of which is more particularly described and ascertained hereinafter, by way of example, having reference to the accompanying drawing, wherein:

Figure 1 is a plan of a bottle cap embodying the said invention;

Figure 2 is a plan of underside of the same;

Figure 3 is a cross section of the same taken on a plane indicated by the line 3—3 in Figure 1;

Figure 4 is a cross section taken on a plane indicated by the line 4—4 in Figure 1;

Figure 5 is a similar view to Figure 3 showing the flap portion of the cap raised in the first step of opening the spout;

Figure 6 is an end elevation of the cap with the flap portion so raised;

Figure 7 is a similar section to Figures 3 and 5 showing the spout extended from the cap;

Figure 8 is a cross section taken on a plane indicated by the line 8—8 in Figure 7;

Figure 9 is a plan of the cap showing the spout in its open position; and

Figure 10 is a fragmentary plan similar to Figure 1 showing a slightly modified form of the cap.

Similar characters of reference indicate similar parts in the several figures of the drawing.

10 indicates generally a disc of pasteboard or material having similar characteristics suitable for the purposes herein explained. While the invention is described as a bottle cap and the body 10 is therefore in the form of a disc, it will be understood that there is no reason for so limiting it, as to either its purpose or shape, as the invention may be obviously utilized in or applied to many forms of packages and for dispensing many materials both dry and liquid.

As to the material of which the present device is preferably made, the common pasteboard or cardboard from which milk bottle caps are at present made is very satisfactory. The structure of such pasteboard is of a somewhat stratified or laminated nature, which admits of it being split more or less readily along planes parallel to its upper and lower surfaces, is excellently adapted for use in the present construction, and it is desired that such material be considered as an example, as to its characteristics which are availed of in this invention, and in interpreting the term "pasteboard or similar material" as used herein.

In actual practice, I have satisfactorily constructed the present invention from such pasteboard having a thickness of approximately 1/20 of an inch, so that heavier or more expensive pasteboard than that at present in general use for milk bottle caps is not necessarily called for.

The upper surface of the disc 10 is shown as having impressed or cut therein lines 11, 12, 13 and 14 bounding the form of a flap 25, and also, contiguous to the line 14, a small segment of material is removed to a depth equaling the depth of the impressed lines to form the depression 15 whereby to admit of thumb nail engagement of the end of the flap bounded by the said line 14.

The depth of the impression of the said lines is substantially one-half the thickness of the material of the cap, as may be readily seen from an examination of Figures 3 and 4, and the described outline may be readily cut or impressed into the

upper surface of the said material by a suitable die in the manner well known.

The underside of the said cap is similarly provided with an outline impression cut therein to a depth also substantially one-half the thickness of the pasteboard or material of the cap, this outline in the present example being shown as being of a developed spout formation and represented by the lines 16, 17, 18, 19 and 20, and 12 and 13 are extended as at 21 and 22 to meet or closely approach the lines 19 and 20 of the spout development as clearly shown in Figure 1. A staple 24 or other similar reinforcement bar or member extends through the material of the cap and is located within the area of the outline cut on the underside of the said cap and somewhat adjacent to line 16 of the said outline.

The lower portion of the cap bounded by the impressed keystone outline will be generally referred to as the spout portion 26.

From an examination of the Figures 5 and 6, it will be seen that by inserting the thumb nail in the provided opening and engaging margin 14 of the flap portion 25, the said flap portion may be separated by peeling from the spout portion, due to the stratified characteristic of the pasteboard or similar material, until such separation reaches the reinforcement 24 whereupon it is halted. Thus the flap may be caused to assume the position shown in Figures 5 and 6.

By further pulling on the flap against the resistance offered by the said reinforcement, the further end of the flap portion bounded by the lines 11, 12, 13 and 16, and indicated by the reference numeral 27, will be similarly severed from the lower layers of the cap material on the plane 28 as shown in Figure 7, whereupon, continued pulling on the said flap portion 25 will swing the spout portion 26 on a fulcrum about the lines 19 and 20 through the opening 29 which was provided in the first place by the lifting of the said flap portion from the body of the cap in the manner described.

As the spout portion is so pulled through the said opening 29, the lateral wings 30 and 31 of the spout portion disengage from the upper layers of the material of the cap at 32 and 33, respectively, and also bend on the indicated lines 34 and 35 by reason of the lateral restriction imposed on these wings by the lateral margins of the said opening 29 during this movement. This bending of the wings causes them to form the side walls of the spout as is clearly shown in Figures 7, 8 and 9, and the restriction imposed by the lateral margin of the said opening 29 holds the said side walls in the desired position to maintain the required spout formation when the device is in use.

It will be understood that the lines 34 and 35 may be scored or depressed in the underside of the cap material to facilitate the bending of the side walls of the spout, although I have found in actual practice that such swing or depression may be dispensed with.

When the so-formed spout after use is moved back through the opening 29 to its original position, natural resiliency of the material forming the spout causes the wings 30 and 31 to again spread on the underside of the cap to more or less the original flat form, although not necessarily completely so but to an extent which is effective in resealing the opening and securing the spout portion in its closed position, pending further operation in the manner described at a future time. Of course, on such further operation, the severing of material 28, 32 and 33 is not repeated or required for obvious reasons.

When the spout portion is moved outwardly in the manner described, undue strain on the material at the fulcrum line 19 and 20 is alleviated, where though necessary or desirable, by the provision of the cut or impressed line 23 which permits movement of the material 34 relative to the upper layer of the cap thus preventing tearing or undue resistance of such material at the fulcrum of the spout.

As an example of a way in which the embodiment of the invention may be slightly modified, Figure 10 shows an arrangement in which the separable flap proper is dispensed with, the cut or impressed line 11′ corresponding to the line 11 of the foregoing figures and having the depression 15′ formed continguous thereto; so that thumb nail engagement with the portion bounded by the lines 11′, 12 and 13 may be effected at that point. The severing of the upper material of the cap at 28 is thus effected by directly lifting the material at the depression 15′. Otherwise the act of opening the spout remains to all intents and purposes the same as that already described, the reinforcing member 24 preventing the said severing at 28 of the material continuing rearwardly beyond that point, as will be well understood.

The device described, being constructed of a single piece of material simply impressed with outlines partly cut through, calls for no assembling and provides at the outset an integral structure forming a perfect seal for milk bottles and other containers requiring no additional sealing means, and being free from any tendency to inadvertent opening or to being forced open by the weight of the contents of the container to which it is applied. No additional weight of material or more expensive material need be used than that which is at present commonly used in the construction of milk bottle caps.

The utilizing of such a cap on a milk bottle facilitates both pouring and sealing and renders it possible for the contents of the container to be poured over surfaces absolutely untouched by hand. It avoids the necessity of pouring such contents over the rim of a bottle, as in the present practice with milk bottles which are commonly and frequently handled by such rim with constant danger of contamination of the contents while pouring however careful the original sealing may have been effected.

Although in the interests of the most perfect sealing I do not prefer it, it is appreciated that the separation of the upper and lower parts of the spout elements at such areas as 28, 32 and 33 may be effected prior to distribution of the caps to the public, and I wish it to be recognized that the invention as described and claimed herein contemplates the structure both before and after such separation.

It is also contemplated, although not preferred, that the upper and lower layers of the cap may be originally separately constructed of separate pieces of pasteboard or other suitable material thereafter secured together, as by an adhesive, to form the unitary construction described and illustrated, this being simply considered as an alternative procedure in forming the laminated or stratified material of the cap and the result comprising the mechanical equivalent of the one-piece cap formed in the first place from a single laminated or stratified piece of material such as pasteboard.

This invention may be developed within the scope of the following claims without departing from the essential features of the said invention, and it is desired that the specification and drawing be read as being merely illustrative and not in a limiting sense, except as necessitated by the prior art.

What I claim is:

1. In a device of the class described, a flat body of stratified material, a spout development having a central portion and lateral wings cut through the lower strata of said body, the upper strata of said body being scored to define an opening contiguous to the central portion of said spout development and to form a lifter therefor whereby said spout development may be pulled through the defined opening, the wings of said spout development being normally integral with the upper layer of said body and separable therefrom by the pulling of the center of said spout development through said defined opening.

2. In a device of the class described, a flat body of stratified material, a spout development cut through the lower strata of said body, a lifter for such spout development cut through the upper strata of said body, said lifter being severable by peeling from the lower strata to form an opening in the upper strata of said body, wing members on said spout development extending beyond lateral limits of said lifter, said wing members being normally integral with the upper strata of said body and severable therefrom by the pulling of the spout development through said opening by the aid of said lifter, and means preventing total severance of said lifter from said spout development.

3. In a device of the class described, a flat body of stratified material, a spout development having a central portion and lateral wings cut through the lower strata of said body, the upper strata of said body being scored to define an opening contiguous to the central portion of said spout development and to form a lifter therefor whereby said spout development may be pulled through the defined opening, the wings of said spout development being normally integral with the upper layer of said body and separable therefrom by the pulling of the center of said spout development through said defined opening, said body having a cut in the lower strata somewhat removed from the throat portion of said spout development to relieve tension of material at said throat when the spout development is operated by said lifter.

LINTON J. BRAINARD.