UNITED STATES PATENT OFFICE

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CONTAINER CAP WITH FOLDABLE BARRIER

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The present invention relates to containers for the packaging and delivery of liquids, such as milk, fruit juices or other flowable materials. It has particular reference to a sanitary fibre container with a hinged friction plug closure which has a folded web of thin flexible material interposed between a container wall and the hinged closure to provide a shield to prevent extraneous material, which may come into contact with the top, from entering into the interior of the container.

This invention constitutes an improvement upon the container illustrated and described in the John M. Hothersall United States Patent 2,085,979, issued July 6, 1937, and especially upon the top construction thereof.

The invention is preferably embodied in a container top construction wherein a top member or disk is secured to the body of the container by the interlocking of marginal portions of the top and body members in an end seam or joint, the top member having a filling and dispensing opening closed by a friction plug closure. A strip or web of thin flexible material is secured to the top member adjacent to the opening and to the friction plug closure. This web is folded along its longitudinal margin in such a manner as to provide a self raising barrier against entry of extraneous material into the interior of the container when the closure is opened and also to prevent contamination of the pouring surface of the container.

An object of my invention, therefore, is the provision of a sanitary fibre container for milk and other beverages wherein the opening in the top end is closed by a hinged closure and is protected by a barrier comprising a strip of flexible material which is folded in such a manner that one fold will tend to unfold the other when the closure is hinged into open position.

Another object is the provision of a container with an opening closed by a hinged plug seal wherein a strip of thin flexible material is interposed between the top of the container and the closure member and in which the strip has two pairs of folds disposed at an angle to each other which are unfolded transversely of the body and of its closure when the latter is opened to form a shield to prevent entry of extraneous material into the container when the closure is hinged into open position.

Another object is the provision of such a friction plug and flexible shield combination in which the shield automatically assumes its protective position when the container is opened, and similarly reverts to its folded position when the container is closed.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a fragmentary perspective view of the upper part of a container embodying the present invention and illustrating the top of a sealed container showing the thin flexible strip in folded position.

Fig. 2 is a view similar to Fig. 1 showing the hinged closure member in partially opened position upon the container and the thin flexible strip partially flared outwardly.

Fig. 3 is a view similar to Fig. 2 showing the hinged closure member fully opened, as in a dispensing position, and the protective flexible strip completely unfolded into an upright flared and shielding position.

Fig. 4 is an enlarged sectional view taken substantially along a vertical plane indicated by lines 4—4 in Fig. 3; and

Fig. 5 is an enlarged sectional view taken substantially along a vertical plane indicated by lines 5—5 in Fig. 3.

The container illustrated in the drawing is a preferred or exemplary embodiment of the invention. It shows a container of the general construction shown and described in the Hothersall patent herebefore mentioned. The container, briefly, comprises a substantially rectangular body 11 closed at its ends with suitable top and bottom end members. These end members are of similar construction and for the purpose of this invention only the top member 12 need be illustrated.

The body 11 is preferably formed from a single sheet or blank of liquid-proof fibrous material folded at right angles to provide four side walls 12. The side edges of the sheet are overlapped to form a lap seam 14 which extends longitudinally of the body on one of the side walls 13. This lapped side seam joint is adhesively secured together to make it leakproof.

The end members or discs are rectangular or square and are preferably formed from the same liquid-proof fibrous material as the body of the container. Fig. 4 of the drawings shows how the top member or disc 12 is interlocked with the adjacent marginal end portions of the body. For this purpose, the body marginal end portions
are bent obliquely inward at 15 and then horizontally outward to provide a horizontal seat or ledge 16 which extends circumferentially of the body upon which the top end is supported.

The remainder of the marginal end portions of the body are bent upwardly and then inwardly over the marginal edges of the top end, thus providing U-shaped body flanges 16, 17 which enclose and hold the end member in an end seam 22. The U-shaped body flanges 16, 17 and the intervening marginal edges of the top member 12, prior to being assembled, have their engaging surfaces coated with a suitable liquid-proof adhesive 18. During assembly, the parts are pressed firmly together and secured permanently to form the leak-proof end seam 22.

The top end member 12 (Fig. 3) adjacent one of its four corners is provided with a filling and pouring opening 23, which may be of any desired shape, a circular shape being shown in the drawing.

A hinged closure element 24 is provided for closing the opening 23. This closure element is formed with an integral drawn central plus portion or member 25 which frictionally fits into and tightly closes the pouring opening. To insure a perfect seal, the bottom of the drawn plug section 26 may be expanded under the edge of the opening 26 as shown in said Hotherton patent.

A thin strip or web of flexible and preferably liquid-proof material 26 having an opening therein to coincide with the opening 26 is secured to the top 12 and the closure member 26 as a separate element as shown in the drawings, or, if preferred, as an integral part of the closure. The web 26 completely surrounds the opening 26 and extends forward thereof to terminate at adjacent outer edge portions of the end seam 22, and also extends rearwardly to surround completely the drawn plug section 26 of the closure member 24. This strip or web 26 is secured or bonded to the top end adjacent the opening 23 and to the under side of the closure member 24 adjacent the drawn plug portion 26, as best shown in Figs. 3, 4, and 5. Preferably the banding or securing agent is a liquid-proof sanitary material. An unbonded margin is provided in the strip 26, which margin is folded rearwardly at an angle over the main area of the strip to provide a pair of converging folds or pleats 27 along opposite sides of the filling and dispensing opening 23. The folds also extend rearwardly to merge into a second pair of integral, converging folds or pleats 29 adjacent the drawn plug portion 25 of the hinged closure member 24 (Fig. 3). Preferably the width of each fold is such that its inner edge terminates at the rim or edge of the opening 23.

A transverse crease 28, substantially coinciding with the hinge line of the plug closure 26, constitutes a dividing hinge line between the pairs of folds 27, 29 and causes the latter to overlap each other in four thicknesses of web material when the plug closure is in closed position, as shown in Fig. 1. Each fold 27, 29 is preferably wider at the transverse crease and narrower at its opposite end. When the plug closure is in open position, as shown in Fig. 3, the pairs of folds 27, 29 form an effective shield or protective barrier for the pouring opening 23. Because both pairs of folds converge at the transverse crease, i.e. each fold 27 and 29 has a line of fold which forms an obtuse angle to the dividing hinge line between the pairs of folds. 27, 29, each fold 29 tends to pull each fold 27 from folded to unfolded position when the hinged closure member 24 closure is lifted thus creating a raised barrier around the opening 23 and also around the plug 25. This protective barrier extends from a point immediately in back of the drawn plug of the opened closure member as viewed in Fig. 3, to the forward edge of the end seam 22. Thus, the entire opening 23 and the adjacent pouring surface is protected. Any fluid that might become lodged on the folded margin of strip 26 will flow off by force of gravity. If fine droplets of liquid should adhere to the strip they will be on the exterior portion of the folds when the container is opened and therefore cannot drop or flow into the container contents or onto the pouring surface or spout. Solid deposits on the strip 26 are similarly prevented from falling into the container.

As the container is opened by lifting the closure member 24, the converging folds 29 tend to pull the converging folds 27 gradually upwardly into unfolded position until the folds 27, 29 are disposed substantially perpendicular to the container top when the closure member 26 is fully opened, as in Fig. 3. Thus, all extraneous material which may be present on the folds 27, 29 is first moved laterally away from opening 23, and an upright barrier adjacent the opening is formed to further prevent extraneous material from entering the container or contaminating the pouring surface. The barrier is formed automatically upon opening and collapses automatically upon closing of the container.

The protective strip 26 may be made from paper or other cellulosic base, but is preferably formed of a liquid-proof substance, such as a cellulosic material impregnated with wax or other liquid-proof agent, a latex or rubber, a plastic or the like. Any thin, flexible liquid-proof material such as liquid-proof paper, parchment, glassine, cellophane, etc., is satisfactory for the purpose.

The hinged closure member 24 preferably includes integrally formed curved lip extensions or flanges 30 which protrude beyond the plug 25 and are cramped or bent under the projecting end seam 22 along the sides of top 12 adjacent the opening 23. These cramped extensions 30 maintain the closure member flat against the top in closed position and serve to protect that portion of the pouring surface which extends outward from the folds 27. The tail end of the closure member 28 is hingedly secured to the top 12 preferably by a wire staple 32, thereby permitting the closure member to be swung or hinged rearwardly, as illustrated in Fig. 3.

The drawings show strip or web 26 in a unitary or integral form. However, the same effect can be attained if the barrier is formed by two separate strips adjacent the opening 23 and drawn plug 26, or, if desired, the protective folds 27, 29 may be formed integrally from the material of the plug closure member 25.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form herebefore described being merely a preferred embodiment thereof.

I claim:
1. A fibre container for holding and dispensing
flowable products, comprising a tubular body having a wall provided with a pouring opening, a separate hinged friction plug closure for closing said opening and having marginal portions overlapping said wall, and an web of flexible material extending along and adhesively secured to the body wall on opposite sides of said opening and to the underside of the overlapping portions of the plug closure and having a transverse crease between the opening and the hinge of the closure, said web also having an unsecured outer marginal portions folded longitudinally and inwardly on each other on lines of bend converging at said transverse crease, said web lying between said body wall and overlapping plug portion when the plug closure is hinged into closed position, said folded element is in outer亦 marginal position when said closure is hinged into open position thereby preventing entry of foreign material through said opening into the interior of the container.

2. A fibre container for liquids, comprising a tubular body having a wall provided with a pouring opening, a friction closure element hinged secured to said body wall and including a plug member for closing said opening, and a protective member of flexible material having a fixed part thereof secured to said body wall on opposite sides of said pouring opening, an integral movable part of said web member being disposed beneath and overlapping said closure element on opposite sides of said plug member, opposed marginal portions of said web member being foldable inwardly towards said web member when the closure element is in inwardly hinged position to close said opening, said inwardly folded marginal portions of said web member being unfolded and raised outwardly into shielding position when said closure element is in raised open position and being folded inwardly when the plug closure element is disposed in depressed closed position over said opening as described.

3. A fibre container for liquids, comprising a tubular body having a wall provided with a pouring opening, a separate friction plug closure element hinged secured to and having its marginal portions overlapping said wall, and a web member of flexible material having a fixed apertured inner portion secured to said body wall and extending on opposite sides of said opening, an integral hingedly movable outer portion of said web member being disposed beneath and secured to said opening overlapping portion of the closure element, said web member having an intermediate transverse crease line disposed between said opening and the hinge line of said closure element to separate said integral inner and outer web member portions, the outer marginal edges of said web member portions being unsecured and folded inwardly to form a pair of adjacent aligned foldable sections joined by said transverse crease line, said web member including its said inwardly foldable sections being wholly disposed between said container body wall and said closure element when the latter is in inwardly hinged position to close said opening, said inwardly folded web member sections being unfolded and raised into upright shielding position when said closure element is moved to outwardly hinged open position, thereby preventing entry of foreign material through said opening into the interior of the container.

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