

Nov. 4, 1941.

J. K. M. HARRISON

2,261,621

CONTAINER CLOSURE

Filed July 14, 1938

2 Sheets-Sheet 1

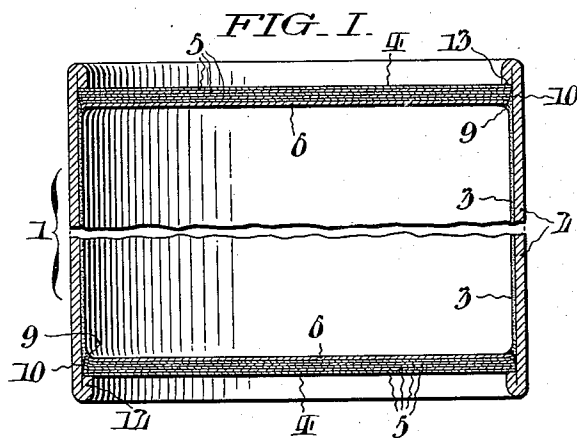


**FIG. II.**

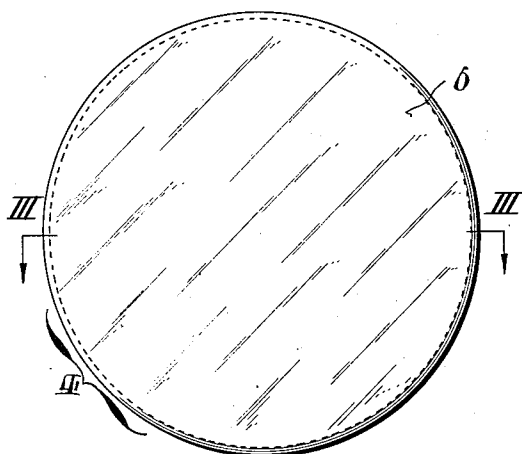


**FIG. III.**

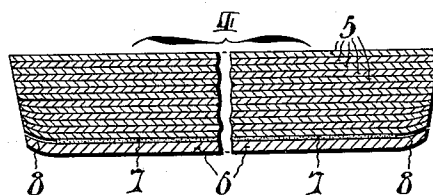


**FIG. V.**

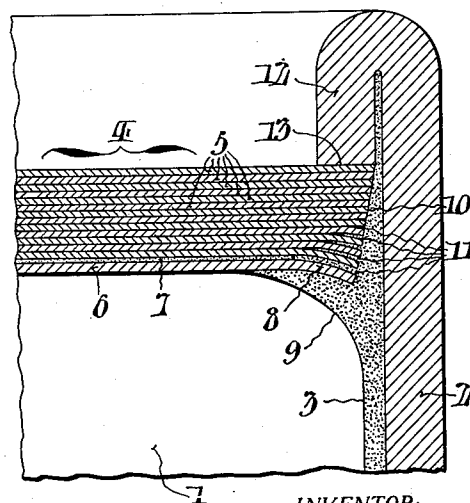
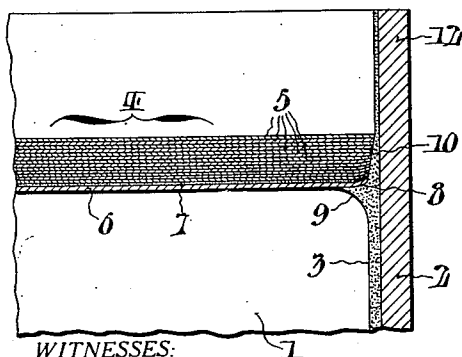


**FIG. IV.**



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FIG. VI.

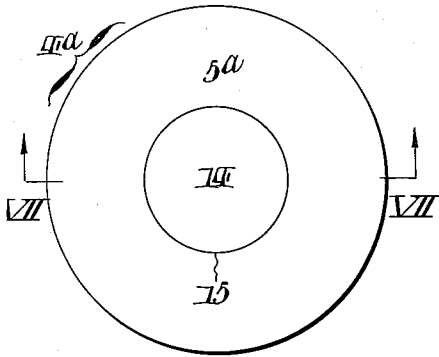


FIG. VII.

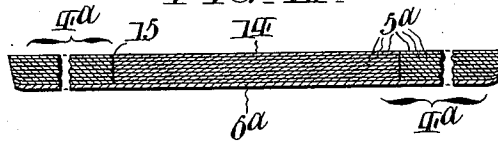


FIG. VIII.

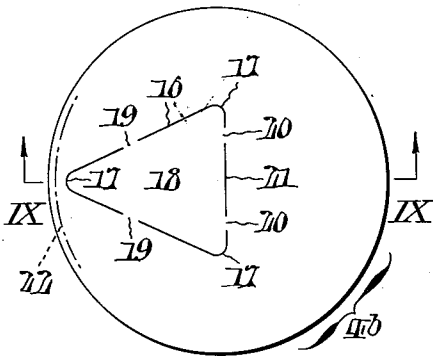


FIG. IX.

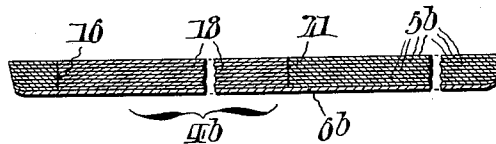


FIG. X.

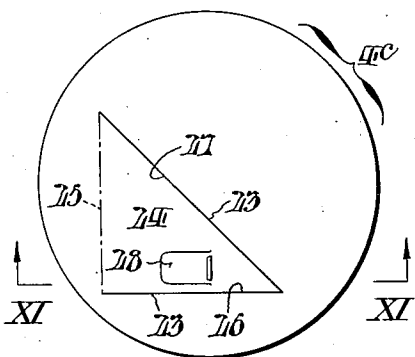
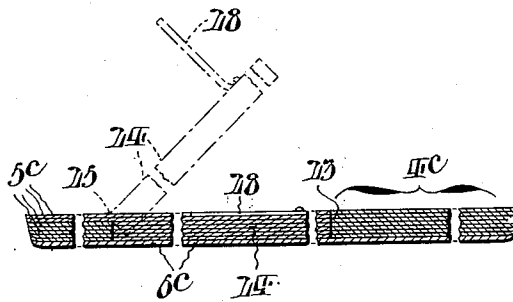


FIG. XI.



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## UNITED STATES PATENT OFFICE

2,261,621

## CONTAINER CLOSURE

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Application July 14, 1938, Serial No. 219,183

## 1 Claim. (Cl. 229—5.5)

This invention in its broader aspect has reference to containers of paper, fiber or similar material adaptable for holding fluids or solids for storage, merchandizing and shipment and, more particularly, aims to provide a novel type of end closure for such receptacles, whereby a better sealed joint is obtained between the same and the container wall than heretofore possible.

In forms of the invention as hereinafter disclosed, another object is to substantially reinforce the end closure by an inner lamina of parchment or other suitable fluid-proofed sheet material which is permanently adhered thereto.

A further object is to furnish a novel type of end piece or closure for suitably-lined containers which, incident to its insertion, in part peripherally opens up or flares so that the container lining is caused to annularly enter between and securely unite with the inner plies or fibers of said closure, whereby an effective and rigid buttress joint is positively ensured.

A still further object is the provision of an end closure, of the character above indicated, having a removable or partly removable section whereby easy access is afforded to the contents for discharge, or in some forms which enables differential out-pourings.

Additional objects and ancillary advantages of this invention will be manifest from the following disclosure of typical embodiments considered in conjunction with the accompanying drawings; while it is to be understood that the concluding claims of this specification are to be accorded a range of equivalents consistent with the state of the prior art.

In the drawings:

Fig. I is a broken central section through a container embodying one form of the novel end closure of this invention.

Fig. II is a plan view of the end closure of Fig. I apart from the container body shell.

Fig. III is a broken diametric section on the line III—III of Fig. II, but drawn to exaggerated scale for purposes of clearness.

Fig. IV is a fragmentary sectional illustration showing a joint-forming stage incident to insertion of the end closure into a body shell.

Fig. V is an exaggerated section somewhat similar to the preceding view, but showing the relative position of the constituent parts incidental to completion of the end inserting operation and with the body shell end spun over into abutment with the end closure outer peripheral surface.

Fig. VI is a plan view of an end closure, in accordance with this invention, provided with a central removable section for outlet purposes.

Fig. VII is a broken diametric section on the plane VII—VII of Fig. VI, on an increased scale.

Fig. VIII is a plan view, showing an end

closure provided with an eccentrically located section for pouring purposes.

Fig. IX is a broken diametric section on the plane IX—IX of Fig. VIII, but drawn to increased dimensions.

Fig. X is a view similar to Fig. VIII, but showing the semi-removable section adapted to permit differential out-pourings; and,

Fig. XI is a section like Fig. IX, with the semi-removable section in elevated dot-and-dash line position.

In all the views, corresponding parts are characterized by similar reference symbols, with an appropriate exponent to distinguish the different embodiments.

Referring more in detail firstly to Figs. I—V, inclusive, the numeral 1 comprehensively designates a paper, fiber or other material, container, the body shell 2 whereof is conveniently of the spirally-wound type coated on its inner surface with a suitable liquid-resistant medium 3, such as a resinous thermoplastic for example. Into the respective ends of the body shell 2 there is fitted, and firmly secured, one of the novel end closures 4 of this invention.

Each such end closure 4 comprises a main or body portion of card or fiber board, or it may consist of suitably affixed sheets of paper, fiber or other suitable material 5, and a facing lamina 6 of appropriate parchment or parchmented paper, said lamina being secured to the confronting sheet face of the body portion by the adhesive film 7, of oil and moisture-proof glue, which forms an impervious juncture. It is to be particularly noted that the glue film 7, in practice, may be initially formed by a "dab" of glue or the like which, when compressed to affix the parchment lamina 6, spreads out to cover an area well within the circumferential confines of the closure 4, so that the surrounding edge portion 8 of said lamina 6 is left unattached and free, for a purpose later on explained. Still further, it is to be expressly understood that, in practice, when adherently compressed paper sheets are used for the main or body portion approximately three or four plies are found sufficient, also that in the drawings the reverse sectioning shown is intended to indicate both paper-plies and, alternatively, the fibrous constituents of cardboard or the like.

In producing the end closures 4 from sheet material as aforesaid, it will be apparent that the parchment or facing lamina 6 is applied to the desired face of the multi-ply or fibrous body 5 before the individual closures 4 are suitably formed therefrom so as to define a slightly inclined surrounding edge, flaring outwards from the parchment lamina, as readily understood on an inspection of Figs. III—V, more particularly. It is also to be observed that incidental to sever-

ance or punching of the end closure from the pre-formed parchment-faced body material 5, the parchment lamina 6 will have its annular surrounding free portion 8 slightly dishd towards said body material 5 for a purpose later on set forth; while it is to be expressly understood the degree of flare around the closure edge has been exaggerated in the drawings, for clearer illustration of one of the inventive features.

In applying each end closure 4, and assuming the diameter thereof closely approximates that of the bore of the body shell 2, it will be readily seen that, incidental to its insertion, a portion of the liquid-resistant medium or thermoplastic 3 will be inwardly displaced or pushed forwards with resultant production of a surrounding fillet 9. This fillet 9 forms a strong joint around the parchment lamina 6 with a tapering-section juncture 10, circumferentially intervening the end closure 4 and the body shell wall. When the above inserting operation is carried out by aid of a heated die or the like, it will be obvious the medium 3 is softened somewhat and will penetrate between the parchment surrounding free portion 8 as well as between the corresponding free edges of the paper plies or fibers 5, as indicated by the "stippled" parts 11 to move said free edges inwards, best shown in Fig. V. As a result there is produced what may be conveniently termed an annular buttress juncture intermediate the closure-surrounding edge and the displaced medium 3, whereby an effective sealed joint is set-up between the end closure 4 and the inner wall of the body shell 2. Furthermore, such a juncture is strengthened incidental to contractive cooling of the medium or thermoplastic 3, such cooling serving to further draw the juncture 10 and parts 11 inwards, as shown in Fig. V, in an obvious manner.

In practice, after each end closure 4 has been inserted, the body shell free end 12 is suitably spun over and inwardly so as to strengthen the container, as a whole, by annular abutment with the end closure outer face at 13.

Referring to Figs. VI and VII, the end closure 4a differs only from the form previously described by the provision therein of a plug portion 14, removable from a central orifice 15. The removable or plug portion 14 is conveniently formed by an appropriate operation, such as a second punching effected from the outer face of the body portion 5a by a suitable tool or die that does not pierce the parchment lamina 6a. When the portion 14 is removed, it will be apparent that an appropriate implement, for example a combined cutter-and-pouring spout, not shown, adapted to remove or partially remove the parchment lamina within the confines of the orifice 15, can be applied.

In the further embodiment of the end closure 4b illustrated in Figs. VII and IX, the same is provided with a triangular aperture 16 having the angular corners rounded at 17, said aperture not penetrating the parchment lamina 6b as described in connection with Figs. VI and VII. This aperture 16 is normally closed by a snugly fitting plug 18 which is preferably not severed at the spaced points 19 and 20 from the end closure laminated or fibrous portion 5b. It is to be observed the aperture 16 and plug 18 are shown as of isosceles contour with the base 21 approximately in registration with a diametric

line through the center of the closure 4b, and the apex rounding 17 a sufficient distance within the circumferential confines of said closure. This latter feature ensures against weakening of the disc circumference in the region of the apex rounding 17, as well as enabling spinning over of the container shell free end without interference with the pouring aperture 16, as indicated by the arcual dot-and-dash line 22 in Fig. VIII. By suitably severing the plug 18 at the points 19, and using the points 20 as hinges, it will be apparent the plug 18 may be angularly raised, the underlying parchment suitably severed within the confines of the aperture 16, and the contents of the container poured out; or a combined cutter-and-pouring spout affixed as above referred to.

Referring now to Figs. X and XI, which illustrate the adaptation of the present invention as a closure 4c for milk containers, said closure is formed with an incised triangular opening 23 and flap 24, preferably of right-angled contour. This flap 24 preferably has one side, including the right-angle, scored at 25 for hinging movement, a second side 26 proximate, or disposed chord-fashion relative to, the closure circumference, and the third or longer side 27 in parallel relation to a diametric line passing through the center of the closure 4c; and said flap 24 is provided with a conventional pull-up tab 28. When the flap 24 is drawn outwardly by aid of the tab 28, as indicated in Fig. XI, it tears away from the underlying parchment 6c, leaving said parchment intact. Now it will be readily understood that by severing the parchment 6c along the side 26, the cream collected at the top of the container, by a gentle inclination of the latter, can be poured-out weir-fashion over the opening edge aligning with the flap side 26, in an obvious manner; whereas if the parchment 6c is cut along the side 27 and the container tilted for discharge over the opening longer edge that registers with said flap side, the milk and cream can be poured out in parallel relation to the diameter of the closure 4c.

From the foregoing description, it is deemed the merits and advantages of this invention will be fully appreciated; also, that the specific details of construction illustrated and set forth are susceptible of modification in various ways, without departing from the spirit of said invention. It is, therefore, desired to include herein all reasonable variations that may fall within the scope and liberal interpretation accorded the following claim.

Having thus described my invention, I claim:

A container comprising a paper or the like plastic lined body component; an end closure therefor including a fibrous main portion consisting of multiple paper sheets suitably adhered together with the surrounding edges annularly unattached, and an impervious sheet material lamina secured by moisture-proof adhesive to the inner face of the body portion with the annular edge portion unattached; said end closure being frusto-conical in shape with the smaller end positioned inwardly, and the side thereof forming with the wall of the container and plastic lining, in cross section, a plastic wedge, with the plastic extending inwardly between the unattached edge portions of the paper sheets.

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