

July 21, 1942.

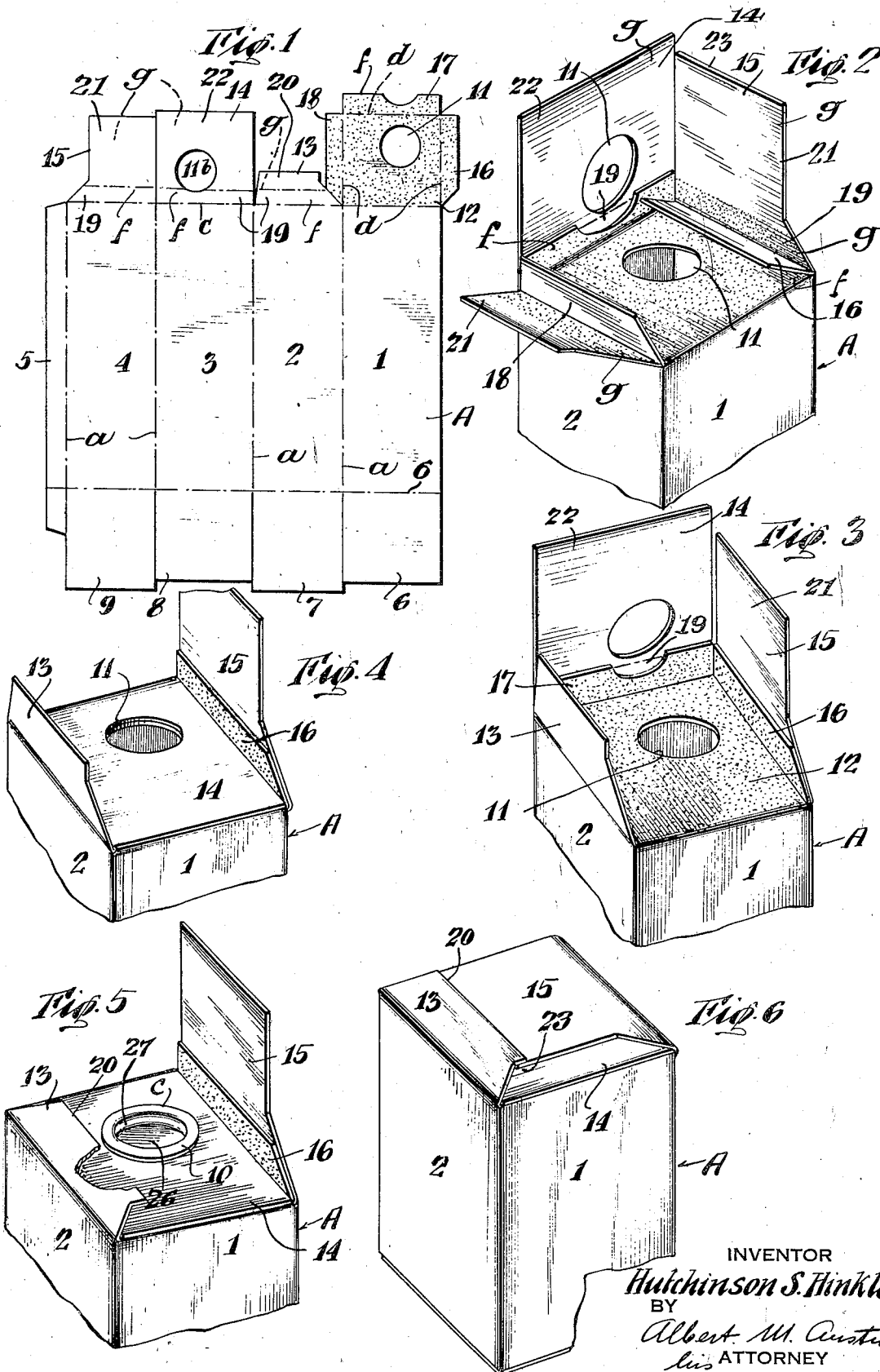
H. S. HINKLE

2,290,185

PROTECTED FLUID CONTAINER

Filed Nov. 25, 1938

2 Sheets-Sheet 1



INVENTOR
Hutchinson S. Hinkle
BY
Albert M. Austin
his ATTORNEY

July 21, 1942.

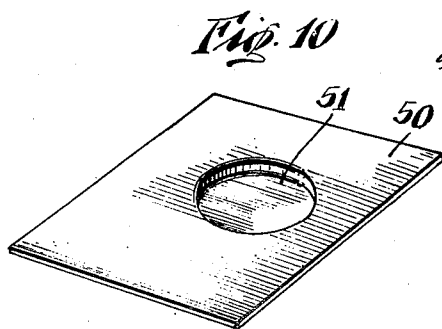
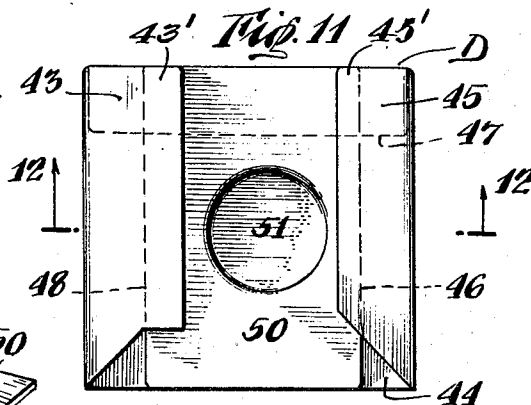
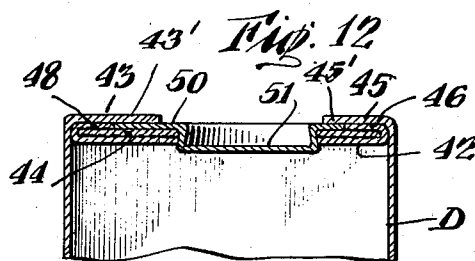
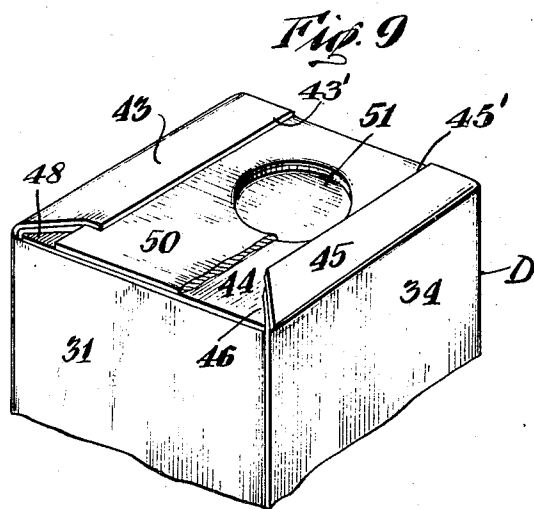
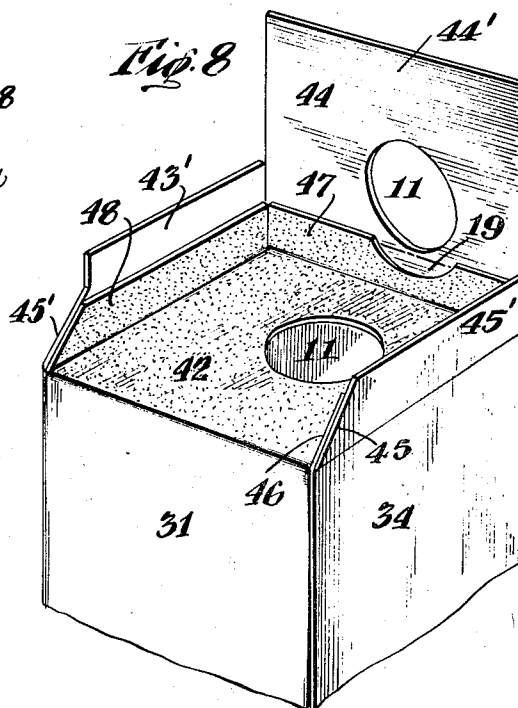
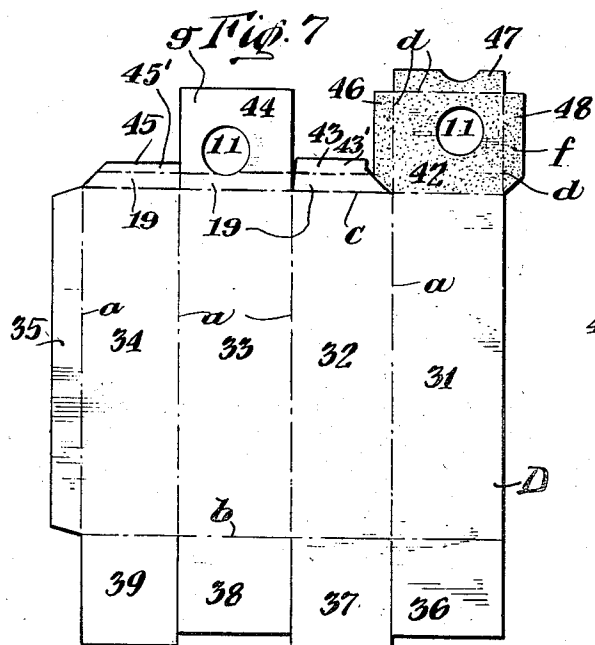
H. S. HINKLE

2,290,185

PROTECTED FLUID CONTAINER

Filed Nov. 25, 1938

2 Sheets-Sheet 2



INVENTOR
Hutchinson S. Hinkle
 BY
Albert M. Austin
 his ATTORNEY

UNITED STATES PATENT OFFICE

2,290,185

PROTECTED FLUID CONTAINER

Hutchinson S. Hinkle, Bethany, Conn., assignor
to National Folding Box Company, New Haven,
Conn., a corporation of New Jersey

Application November 25, 1938, Serial No. 242,162

6 Claims. (Cl. 229-7)

This invention relates to containers for liquids and particularly to a paper or boxboard container especially adapted for the delivery of milk and other liquid products.

The invention consists broadly in a combination of structural features particularly arranged and proportioned to meet the varying conditions to which a perishable and easily contaminated food product such, for example, as milk, may be exposed. Receptacles embodying the features of the present invention may be delivered to the user in partially assembled collapsed form to be thereafter set up, wax-treated, filled, and sealed by the user as needed. The filled and sealed container may be exposed to a wide range of weather and temperature conditions without injury to the contents.

One of the objects of the present invention is to provide a leakproof paperboard container for liquid food products that can be economically assembled, filled and sealed and which will withstand hard usage and exposure under varying conditions without danger of contamination of its contents.

A further object of this invention is to provide a receptacle comprising a combination of structural features whereby standard filling apparatus may be utilized to introduce the liquid contents into it and whereby substantially standard types of sealing caps or closures may be employed to seal or close the filled receptacle.

The invention also consists in an arrangement and combination of parts whereby the pouring opening and its surrounding area may be easily and positively protected from contamination.

The invention also contemplates a sanitary structure with a removable closure member which can easily be reinserted.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is a plan view of the paperboard blank from which the receptacle is assembled.

Fig. 2 is a top view of the receptacle partly assembled.

Fig. 3 is a top view of the receptacle at a further advanced stage of assembly.

Fig. 4 is a top view of the receptacle as nearly completely assembled.

Fig. 5 is a top view of the receptacle after being filled and closed by a closure cap.

Fig. 6 is a top view of the receptacle when completely assembled, filled, closed and sealed.

Fig. 7 is a plan view of a blank which may be used to form a second form of the receptacle.

Fig. 8 is a top view of the second form of the receptacle as it appears when partially assembled.

Fig. 9 is a top view of the second form of the receptacle as it appears when assembled, filled and sealed by a cap closure member, the cap member being partially broken away to reveal structural details.

Fig. 10 shows the top closure cap preferably adapted for use with the second form of receptacle.

Fig. 11 is a top plan view of the second form of the container as assembled and closed.

Fig. 12 is a cross-sectional view of the second form of the container as assembled and closed.

In the drawings accompanying and forming part of this specification, certain specific disclosures of the invention are made for the purposes of explanation, but it will be understood that the details may be modified in various respects without departure from the broad aspect of the invention.

Like reference characters denote like parts in the several figures of the drawings.

My improved receptacle may be of any desired shape, but is preferably polygonal in cross section. This shape also utilizes space in transportation, in storage, and on conveying apparatus.

The receptacle as shown in the first form of the invention comprises generally a body A which may be formed from a single blank of paperboard material which when assembled and filled is closed by a closure cap C. The body-forming blank A is cut and provided with vertical scores *a* to form the side wall panels 1, 2, 3 and 4 of the desired size and shape and is provided with the glue flap 5 whereby the edges may be glued together with a suitable preferably sterile, non-toxic adhesive to form a tubular body.

A plurality of bottom closure flaps 6, 7, 8 and 9 are hinged along a transversely extending score line *b* to the lower ends of the respective side wall panels 1, 2, 3 and 4. These bottom flaps may be so shaped that when glued and folded in superimposed relationship a strong rigid bottom of four ply thickness is provided. While I have shown this particular type of bottom wall, it is understood that the bottom wall may be otherwise formed to

provide a leakproof bottom. If desired, only the initial assembly operation need be performed by the box manufacturer, which initial assembly operation comprises securing the securing flap 5 to the opposite side wall panel 1 of the blank. The thus partially assembled blank may be shipped to the contents manufacturer or user in collapsed condition. When the container is to be filled with contents the body of the receptacle is raised into tubular form, adhesive applied to the bottom flaps 6, 7, 8 and 9 which are secured together to form the bottom wall of the container. Preferably the innermost bottom flap has an area which extends over the entire bottom cross-section of the container so that the contents come into contact with only the innermost bottom flap.

The top wall of the receptacle is formed by a pair of main closure flaps 12 and 14 and a pair of sealing flaps 13 and 15 hinged to the side wall panels 1, 2, 3 and 4 respectively along a transversely extending score line *c*. The closure flaps 12 and 14 each have a circular opening 11 which fall into alignment when the flaps are secured together in superimposed relationship. Lateral tabs 16, 17 and 18 are hinged to the main flap 12 by score lines *d* so arranged that the main closure flap 12 is of sufficient area to close the end of the body section. Adhesive is applied to the various flaps and tabs over a particular area and on a particular side thereof. To clarify the description the index *f* will be used to indicate one side surface of the blank and the index *g* will be used to indicate the other side surface.

The main flap 12 and its associated tabs 16, 17 and 18 have glue applied over their entire surfaces *f*, as indicated in Fig. 1. A strip of adhesive is applied to surface *g* of flaps 13, 14 and 15. This strip of adhesive is preferably of uniform width and is applied to only that portion 19 of flaps 13, 14 and 15 which is adjacent the score line *c*. Thus the outer portion 20 of flap 13, outer portion 21 of flap 14, and outer portion 22 of flap 15, remain unglued, and the side surface *f* of flaps 13, 14 and 15 are not glued at all.

In closing the upper end of the container, flap 12 is first brought down so that its edge defining score lines *d* are in alignment with the score line *c* intermediate the flaps 13, 14 and 15 and the side wall panels 2, 3 and 4. The tabs 16, 17 and 18 are then pressed into adhesive contact with the glued surface *g* applied to portions 19 of the adjacent flaps 13, 14 and 15.

Main closure flap 14 is then folded over upon flap 12, substantially covering it, as shown in Fig. 4. Flap 14 is pressed into adhesive engagement with the glue coated surface *f* of main closure flap 12.

Flap 13 is then folded down so as to overlie main closure flap 14, as shown in Fig. 5. It will be noted that the outer portion 20 of sealing flap 13 is unglued, that tab 18 is adhesively secured to portion 19 of sealing flap 13 and that surface *f* of tab 18 is coated with adhesive which is pressed into adhesive engagement with main closure flap 14 when flap 13 is folded down to overlie main closure flap 14. It will be further noted that the outer edge of sealing flap 13 when thus secured to main closure flap 14 does not overlap the aligned openings 11.

The receptacle body is next treated with paraffin or other suitable coating material which has no harmful effect on the contents, which treatment makes the receptacle liquid-tight. The receptacle is then filled with the liquid contents

by pouring the contents into the receptacle through the aligned openings 11 in main closure flaps 12 and 14.

After the receptacle has been filled, a cap C, which may be made of wax-coated fiberboard material, is applied to the aligned openings 11. It will be noted that cap C has a depressed center portion 26 and an annular overhanging lip 10, and is so shaped and proportioned as to fit snugly into the aligned filling openings 11. Since the main closure flaps 12 and 14 form a wall of considerable thickness when these flaps are superimposed on each other and firmly glued together, the defining edge of aligned openings 11 provide a surface against which the annular rim 27 of cap C fits snugly and tightly to close the receptacle after it has been filled.

Thereafter flap 15 may be folded down and its outer edge 23 slipped under the unglued portion 20 of flap 13. It will be noted that the glued tab 16 has been previously secured to portion 19 of the sealing flap 15. The glued surface *f* of flap 16 may be pressed into adhesive engagement with the unglued surface *f* of main closure flap 14 to further hold flap 15 in flat position over the main closure flap 14 so that the unglued portion 21 thereof overlies and covers the cap C and its associated annular lip 10 to protect the cap from contamination. In opening the container the unglued portion 21 of flap 15 may be swung upwardly, thereby uncovering the closure cap C to permit removal thereof and give access to the contents. The cap C can be replaced as desired and the unglued portion 22 of sealing flap 15 again folded down to cover and protect the cap C.

In the second form of the invention, shown in Figs. 7 to 12 inclusive, there is shown a container which is substantially the same as the container shown in Figs. 1 to 6 with minor modifications. As shown in Figs. 7 to 12 inclusive, the main body portion D of the receptacle comprises side wall panels 31, 32, 33 and 34 defined by vertically extending score lines *a*. A securing flap 35 is hinged to panel 34, flap 35 being secured to the vertical free edge of panel 31 by adhesive. Bottom-forming flaps 36, 37, 38 and 39 are hinged to the lower ends of side wall panels 31, 32, 33 and 34 respectively along a transversely extending score line *b* and are adapted to be adhesively secured together in overlapped relationship to form the bottom of the container.

The other end of the container is formed by main closure flaps 42 and 44 and sealing flaps 43 and 45 which are respectively hinged to side wall panels 31 and 33, 32 and 34 along a transversely extending score line *c*. Main closure flaps 42 and 44 may be similar to main closure flaps 12 and 14 shown in Figs. 1 to 6 inclusive, and sealing flap 43 may be similar to sealing flap 13 shown in Figs. 1 to 6 inclusive. Main closure flaps 42 and 44 are each provided with a circular pouring opening 11 which align with one another when flaps 42 and 44 are folded in superimposed position. Tabs 46, 47 and 48 extend laterally from main closure flap 42 and are hinged thereto along score lines *d* so arranged that the area of main flap 12 is substantially the same as the cross-sectional area of the upper end of the container section D.

Adhesive is supplied to the entire surface *f* of main closure flap 12 and its associated tabs 46, 47 and 48. A strip of adhesive is applied in a substantially continuous straight line to sur-

face *g* only of sealing flaps 43 and 45 and main closure flap 44. It will be noted that this strip of adhesive covers only a portion 19 of flaps 43, 44 and 45 adjacent the score line *c* and the outer portions 43', 44' and 45' of flaps 43, 44 and 45 are free of adhesive.

In closing the upper end of the container, flap 42 is folded down so that its peripheral edge defining score line *d* is generally in alignment with the score line *c* at the base of flaps 43, 44 and 45. Tab 46 is then pressed into engagement with the adhesive strip on sealing flap 45, tab 47 is pressed into engagement with a strip of adhesive on main closure flap 44, and tab 48 is pressed into engagement with adhesive on sealing flap 43.

The sealing flap 44 is then folded down into adhesive contact with the glued surface *f* of main closure flap 42, and it will be noted that the pouring openings 11 in closure flaps 42 and 44 will then be in alignment, with closure flap 44 covering substantially the entire area of main closure flap 42. Sealing flaps 43 and 45 are then folded down to overlie the closure flap 44. It will be noted that sealing flap 43 becomes firmly secured to the secondary closure flap 44 by reason of the adhesive applied to the surface *f* of tab 48 and sealing flap 45 is firmly secured to the secondary closure flap 44 by the adhesive applied to the surface *f* of tab 46.

When the sealing flaps 43 and 45 have been thus secured in position, the aligned pouring openings 11 will be uncovered and exposed. The receptacle is then treated with paraffin or similar coating materials to make it leakproof. The container is then filled with the contents and a suitable sealing cap applied.

In Fig. 10 I have shown a modified form of closure member for the opening in this top of the container. This closure member 50 comprises an oblong paper board member which in length is substantially equal to the distance across the top of the container member between the side wall panels 31 and 33 and in width it is substantially equal to the distance between the glued tabs 46 and 48. Located within this member 50 is a depressed section 51 corresponding in diameter to the diameter of the opening 11 in the container. This closure member may be inserted under the unglued portions 43' and 45' of the flaps 43 and 45 with the depressed portion fitted into the opening in the container. It can thus be seen that the opening in the container may be readily sealed and due to the large portion of the closure member overlying the top of the container, the opening will be protected from contamination.

Also due to the fact that this closure member and top protecting member is adapted to slide in under the unglued portions of the flaps 43 and 45, it may be easily slid back on the container once it has been removed and will be firmly held in position, thus avoiding any danger of displacement of the closure member and consequent contamination of the contents of the container. Furthermore, the pouring lip of the container will be adequately protected by the overlying flange portion of the top closure member and prevent contamination thereof.

In addition, I have provided an economical receptacle which complies with the requirements in numerous localities that the pouring opening be closed and that the surrounding surface be covered to protect it from contamination.

Furthermore, I have provided an integral cov-

ering member which may be used to protect the opening when its closure member has been removed.

In general my improved container is so economical in material and inexpensive to construct that it can be discarded or destroyed after once being used at less cost to the distributor and consumer than the glass and metal containers now widely used for delivering milk and other perishable or liquid food products.

All of the assembly operations may be performed manually or mechanically upon machines now used for performing corresponding operations upon different types of receptacles by suitably adjusting and adapting such machines to their new use, or by machines especially designed to perform them.

While certain novel features of the invention have been disclosed and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. A receptacle for liquid food products comprising a paperboard body section, main closure flaps integral with said body section adapted to be folded over each other to form a multiple-ply laminated top for the receptacle, a sealing flap arranged to overlie said main closure flap having glue on a predetermined portion of said sealing flap whereby said sealing flap may be adhesively united when folded to said main closure flaps, said sealing flap having an unglued end portion, a free flap opposite said sealing flap adapted to have its end inserted beneath said unglued portion of said sealing flap, a pouring and filling opening in said top, a closure cap therefor, said free flap adapted to overlie said closure cap whereby to protect it from contamination.

2. A paperboard blank adapted to form a receptacle for liquids comprising a main body section scored longitudinally along predetermined lines whereby to define side wall sections of said receptacle, bottom closure flaps for uniting the side wall sections of said blank, top closure flaps extending from the other ends of said side wall sections, said closure flaps including a pair of inner closure flaps each having an opening cut therein, said main closure flaps being so arranged that when folded upon each other said openings will be in registry, tab portions on one of said inner closure flaps, glue over predetermined areas of said top closure flaps and said tabs whereby said top closure flaps may be united when folded down upon each other, said top closure flaps also including an outer closure flap having an unglued portion extending from one side wall section and another outer closure flap extending from another side wall section adapted to be folded down upon said inner closure flaps when in folded position and inserted beneath the unglued portion of said first-mentioned outer closure flap whereby to form a sealing and protecting cover for said opening.

3. A receptacle for liquid food products comprising a paper board body section, inner flaps integral with said body section and adapted to be folded over upon each other to form a multiple-ply laminated top for the receptacle, adhesive between substantially the entire contacting surfaces of said inner flaps, outer flaps hav-

ing adhesive between predetermined portions of their surfaces and the surface of the adjacent inner flap, said outer flaps having unglued portions adjacent their outer ends as folded, a filling and pouring opening in said top, and a closure therefor adapted to overlie said opening and protect it from contamination, said outer flaps assisting in retaining said closure in closing position.

4. A receptacle for liquid food products comprising a paper board body section, inner closure flaps integral with said body section and adapted to be folded over upon each other to form a multiple-ply laminated top for the receptacle, glue adhesively uniting said inner closure flaps over substantially their entire contacting surfaces, outer flaps each having a portion thereof glued to the adjacent inner closure flap and an unglued end portion, a pouring and filling opening in said top, and a closure therefor adapted to overlie said opening and protect it from contamination, the unglued portions of said outer flaps assisting in retaining said closure in closing position.

5. A paperboard receptacle formed from a single blank and comprising a closed bottom, side walls extending therefrom, cover flaps ex-

tending from certain of said side walls, said cover flaps being overlapped and adhesively secured to provide a closed top, a pouring opening in said top, a removable closure member seated in said pouring opening, a first protective flap extending from a side wall and adhesively secured in part to said top and having its free edge portion unsecured, and a second protective flap extending from another side wall and removably overlying said closure member and having its free edge inserted under the free edge of said first protective flap.

6. A paperboard receptacle formed from a single blank and comprising a closed bottom, side walls extending therefrom, cover flaps extending from certain of said side walls, said cover flaps being overlapped and adhesively secured to provide a top, a pouring opening in said top forming flaps, a removable closure member seated in said pouring opening, and retaining flaps extending from opposite side walls and adhesively secured in part to said top and having their free edge portions unsecured and at least partially overlying said closure member to assist in retaining said closure member.

HUTCHINSON S. HINKLE.