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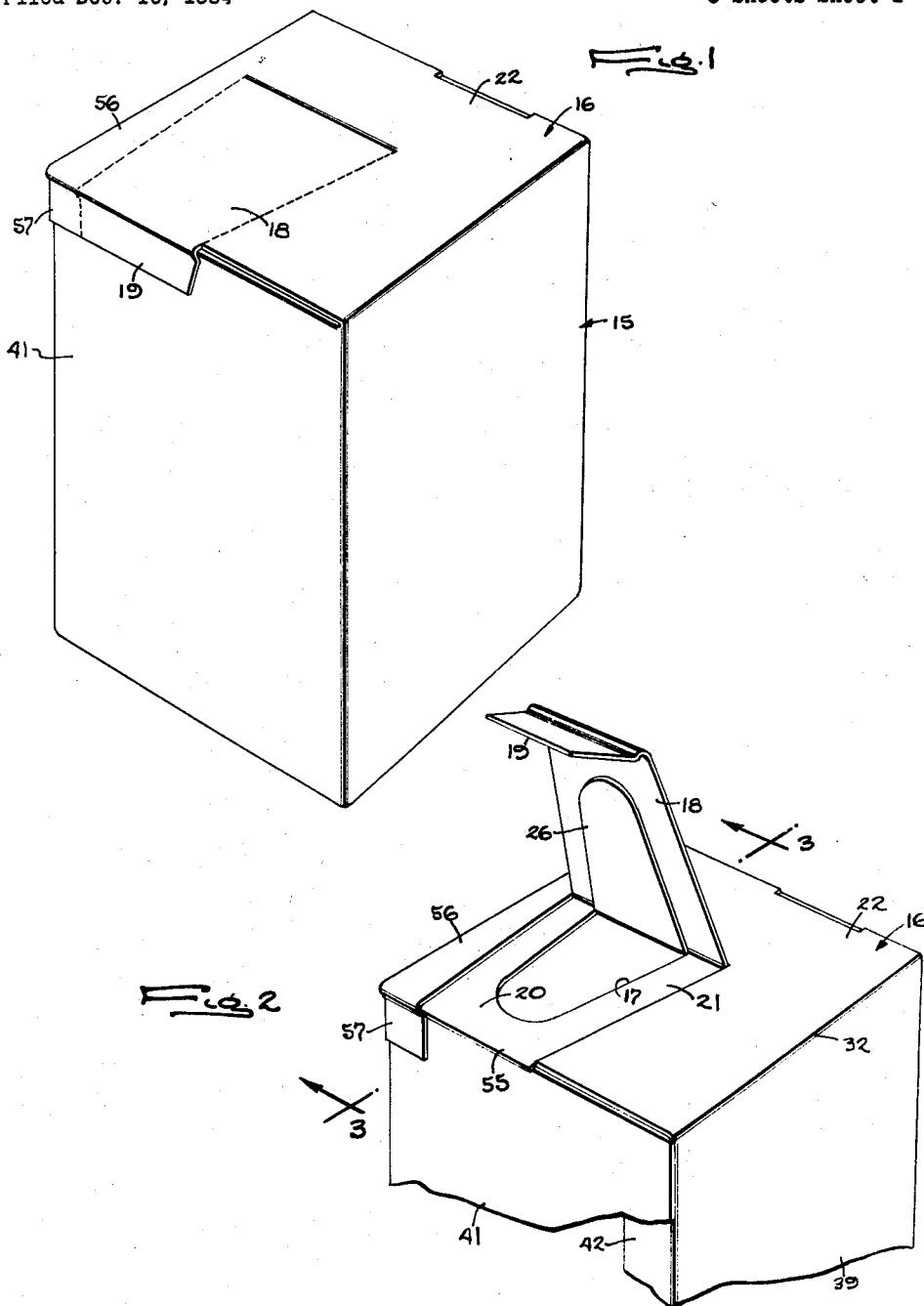
C. R. ALDEN

2,925,948

LIQUID DISPENSING CONTAINER AND BLANK THEREFOR

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5 Sheets-Sheet 1



INVENTOR
Carroll R. Alden
Carlson, Pitzner, Hubbard & Wolfe
ATTORNEYS

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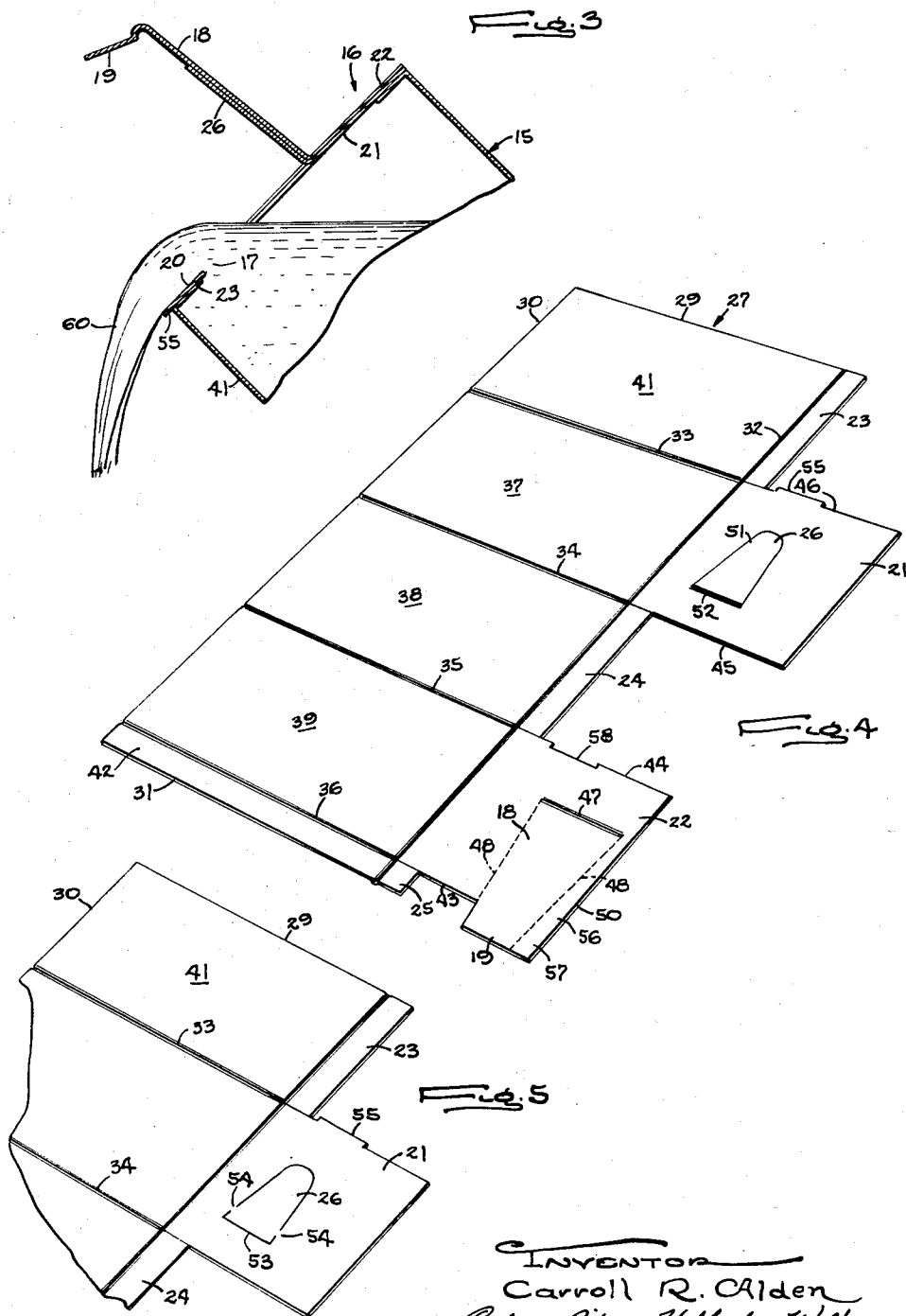
C. R. ALDEN

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INVENTOR
Carroll R. Alden
Carlson, Pitzner, Hubbard & Wolfe
ATTORNEY

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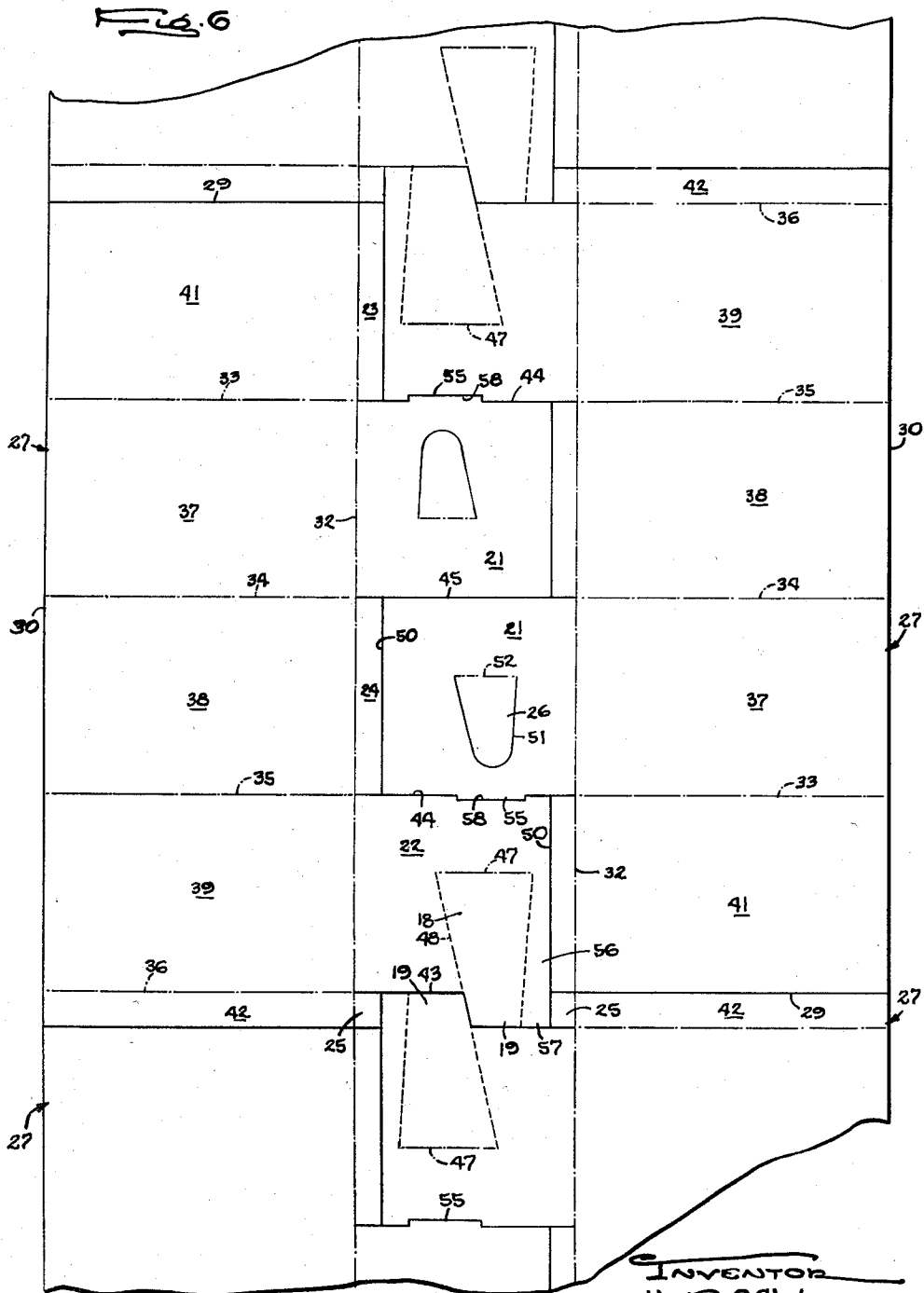
C. R. ALDEN

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INVENTOR
Carroll R. Alden
Carlson, Pitner, Hubbard & Wolfe
ATTORNEYS

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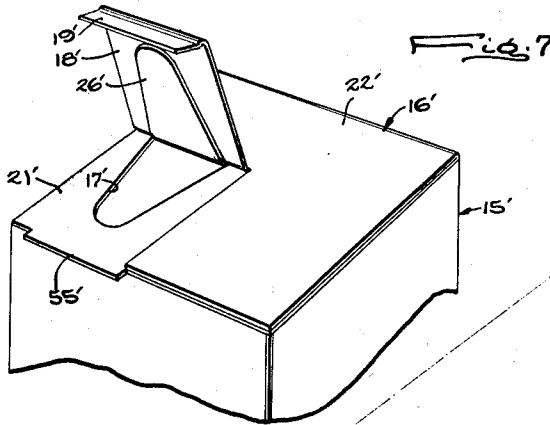
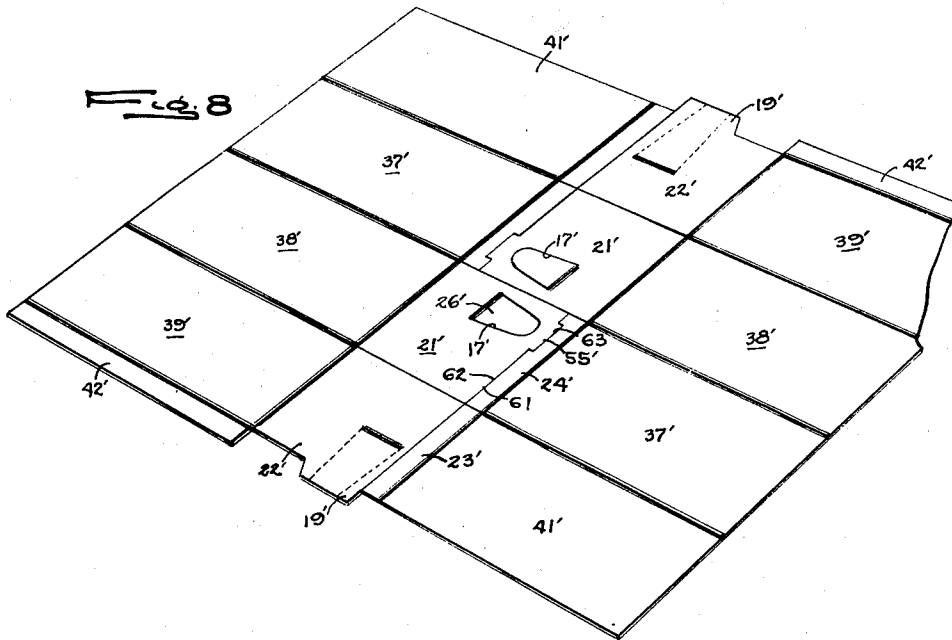
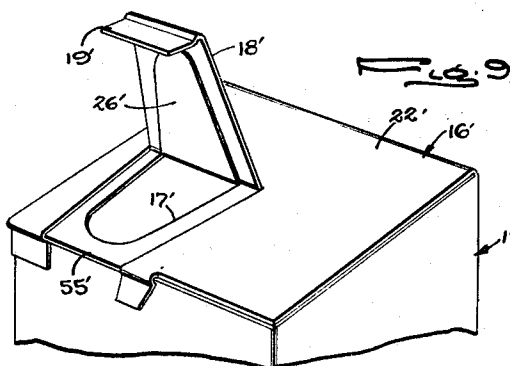
C. R. ALDEN

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LIQUID DISPENSING CONTAINER AND BLANK THEREFOR

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5 Sheets-Sheet 4



5' INVENTOR
Carroll R. Aiden
Carlson, Pitzner, Hubbard & Wolfe
ATTORNEY

Feb. 23, 1960

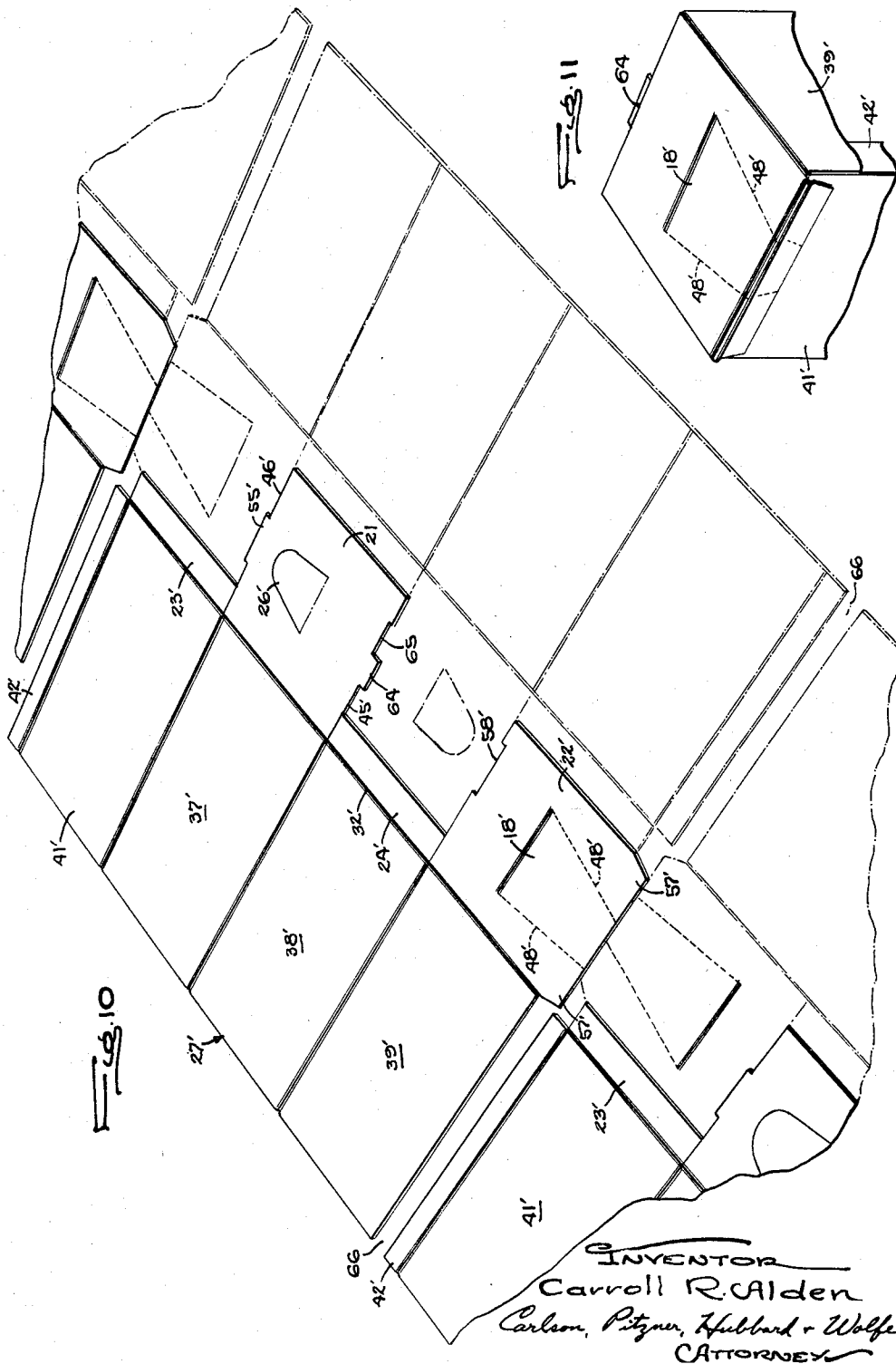
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2,925,948

LIQUID DISPENSING CONTAINER AND BLANK THEREFOR

Carroll R. Alden, Detroit, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich., a corporation of Michigan

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4 Claims. (Cl. 229—17)

This invention relates generally to disposable liquid dispensing containers formed of bendable sheet material such as paperboard. More particularly, the invention relates to a container having a body of rectangular cross section and a laminated flat end closure with a pouring opening therein, the container being fabricated from a flat blank including panels defining the side walls of the container body and end flaps connected to the panels and foldable into overlapping relation to form the end closure.

The general object of the invention is to construct a container of the above character in a novel manner to enable the liquid flow from the pouring opening to be cut off sharply without dripping into the container side wall, to facilitate fabrication of the body and end closure in few folding operations, and to make economical use of the material from which the container blanks are formed.

Another object is to control the liquid flow from the pouring opening by a pouring lip which is formed on an end flap in a novel manner to avoid increasing the number of folding operations necessary to form the end closure.

A further object is to construct the end closure of a flat topped container in a novel manner to utilize a sanitary covering for the pouring lip as a finger hold to facilitate handling of the container.

Still another object is to reduce the amount of scrap incident to the formation of a plurality of blanks by forming each blank as a one of a double succession arranged on a web of the bendable material with their end flaps overlapping each other in a novel manner to utilize substantially all of the web as integral parts of the blanks.

A more detailed object is to minimize the material required for a plurality of blanks by recessing the end flaps of each blank to provide material for the projecting parts of the overlapping flaps of adjacent blanks on the web.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a perspective view of a container body and end closure embodying the novel features of the present invention.

Fig. 2 is a fragmentary perspective view of the end closure in open condition.

Fig. 3 is a fragmentary sectional view taken along the line 3—3 of Fig. 2 and showing the container in pouring position.

Fig. 4 is a perspective view of a blank from which the container is fabricated.

Fig. 5 is a fragmentary perspective view similar to Fig. 4 and showing a modified flap construction.

Fig. 6 is a plan view of a plurality of blanks for containers of the type shown in Figs. 1 and 2.

Fig. 7 is a fragmentary perspective view similar to Fig. 2 of a modified end closure.

Fig. 8 is a fragmentary perspective view of a plurality

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of blanks showing another modified end closure flap construction.

Fig. 9 is a perspective view of an end closure formed from a blank similar to that shown in Fig. 8.

Figs. 10 and 11 are views similar to Figs. 8 and 9 respectively of a further modified construction.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and will herein describe in detail the preferred embodiment. It is to be understood, however, that I do not intend to limit the invention by such disclosure but aim to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

The container shown in the drawings to illustrate the present invention is especially adapted for dispensing liquid food products such as milk and is formed from paperboard or other bendable sheet material impregnated with a suitable liquid proofing agent such as paraffin to render the container fluid tight. Generally, the container comprises a body portion 15 of square cross section having a flat laminated closure 16 at its top end and a separate insertable bottom end closure (not shown) of well known form. A reclosable pouring opening 17 in the end closure 16 normally is covered by a lifting tab 18 terminating in an easily loosened gripping tab or tongue 19 and is of smaller area than the lifting tab to provide a sanitary margin 20 around the opening. The latter and lifting tab are formed respectively on inner and outer end flaps 21 and 22 which, together with glue flaps 23, 24 and 25, are secured together in overlapping relation to form the end closure 16. Reclosure of the pouring opening is effected by a plug 26 carried by the lifting tab and having the same size and shape as the pouring opening.

Preferably, the container body 15 and the end closure 16 are formed from a single flat blank 27, (Figs. 4 and 6) the inside face of which, as shown in Fig. 4, is divided by score lines into a plurality of panels and areas which form the walls and closure parts of the fabricated container. A major portion of the blank defined by three cut edges 29, 30 and 31 and a common folding score 32 is divided by laterally spaced folding scores 33, 34, 35 and 36 into three intermediate panels 37, 38 and 39 constituting three sides of the container body and two terminal panels 41 and 42 foldable into overlapping relation to form the fourth side wall. In the present instance, the intermediate panels and one terminal panel 41 are made of the same size and rectangular shape by extending the score lines 33, 34, 35 and 36 parallel to each other and normal to the common score 32 and the opposite cut edge 30 and by spacing the parallel scores and one cut edge 29 of the blank equal distances apart. The other cut edge 31 is spaced a shorter distance from the adjacent parallel score 36 so that the other terminal panel 42 which is merely a glue panel is narrow.

The outer end flap 22 and the inner flap 21 are of the same area and shape as the cross section of the body to cover the end of the latter completely. In the preferred construction, the closure flaps 22 and 21 constitute continuations of the outer or alternate intermediate panels 37 and 39 and are connected to the latter by the common score 32, the cut side edges 43 and 44 of the outer panel and the side edges 45 and 46 of the inner panel being aligned with the parallel score. The glue flaps 23, 24 and 25 are continuations of the other panels and extend corresponding lengths along the common score.

The lifting tab 18 which extends beyond one cut edge 43 of the outer flap 22 to define the gripping tab 19 is defined at its inner end by a folding score 47 spaced from the cut edge 43 and on its side edges by weakened

lines 48 of severance formed by spaced perforations. If desired, one of these severance lines may be omitted as shown in Fig. 7 by making one edge of the lifting tab coincident with the free end edge 50 of the outer flap. A line 51 of incision extending completely through the inner closure flap 21 defines a major portion of the reclosure plug 26 and the pouring opening 17, the remainder of the plug in the preferred construction shown in Fig. 4 being defined by a hinge score 52 which coincides with the lifting tab hinge score 47 in the completed end closure as shown in Fig. 2. In a modified construction of the plug shown in Fig. 5, the inner end of the plug is defined by a second line 53 of incision spaced from the ends of the first line 51 to provide two short sections 54 which are severable to permit movement of the plug with the lifting tab after the two are secured adhesively together and as the tab is opened.

In accordance with one aspect of the present invention, novel means is provided to insure a sharp cutoff of liquid flow from the pouring opening 17 while avoiding substantial increase in the folding operations required to form the end closure 16 and while maintaining a sanitary protection of the areas contacted by the liquid until after the lifting tab is opened. This means includes a projection 55 formed on the inner closure flap 21 and constituting a pouring lip extending outwardly beyond the cut edge 46 of the inner flap which underlies the cut edge 43 of the outer flap 22 adjacent the gripping tab 19 in the completed end closure. The outer edge of the lip 55 overhangs the adjacent side panel 41 of the body as shown in Figs. 2 and 3 and is spaced from the panel far enough to avoid contact of the latter with the liquid stream flowing out of the pouring opening 17 and across the upper side of the lip. Such contact is avoided because, when the container is in pouring position as shown in Fig. 3, liquid must flow upwardly along the underside of the lip to reach the side panel.

To maintain the upper side and outer edge of the pouring lip sanitary and protect the lip from damage before the container is opened, the lip is enclosed by the gripping tab 19 which extends around the outer edge of the lip and then reversely along the under side of the lip to the side panel 41. At its outer end portion, the tab is adhesively secured to the side panel. Such reverse bending of the gripping tab not only forms a tubular section protecting the lip against damage, but also covers the underside of the lip to avoid the formation of a fillet of paraffin in the corner defined by the lip and the side panel. The danger of forming such a fillet is further avoided by extending the band 56 between the lifting tab 18 and the free edge 50 of the outer flap 22 outwardly beyond the side edge 43 of the latter as indicated at 57 (Figs. 2 and 4) and securing such extension to the adjacent panel 41, this extension also serving to protect the gripping tab against inadvertent opening.

The present invention, in another of its aspects, contemplates formation of each blank 27 in a novel manner as one of a double succession of blanks arranged along opposite side edge portions of a single web of material to utilize substantially all of the latter as integral parts of the blanks, thereby avoiding waste of the material and the necessity of disposing of scrap parts. For this purpose, the end flaps of each blank are shaped to overlap and substantially fill the spaces between the flaps of another blank reversed relative to the first blank (see Fig. 6) and lying in the same plane with the bottom edges 30 and the common scores 32 of the two blanks parallel and the free edges of the glue flaps of one blank abutting the free edges of the inner and outer closure flaps of the opposed blank. This arrangement makes it possible to utilize the parallel side edges of the usable part of a web of the material as the bottom edges 30 of blanks cut therefrom.

Overlapping of the flaps of opposed blanks on the web to utilize and fill all of the space between the common

scores 32 of the blanks is achieved by making at least the three intermediate panels 37, 38, and 39 and the three adjoining flaps 21, 24 and 22 of the same width along the common score 32. Also, the lengths of the respective glue flaps 23, 24 and 25 normal to the common score are complementary to these lengths of the closure flaps 21 and 22. For example, the center glue flap 24 of one blank 27 abuts the free end 50 of the inner closure flap 21 of the oppositely arranged blank and the combined lengths of the two equals the spacing of the common scores 32 of the two blanks as shown in Fig. 6. Where, as in this instance, the closure flaps are square and extend equal distances from the common score of each blank, all of the glue flaps similarly extend equal distances. To permit interfitting of the flaps of opposed blanks in spite of the projection of parts such as the pouring lip 55 from the flaps, recesses are cut in the flaps of each blank to provide material for the projecting parts of the opposed blanks. In the preferred construction of Figs. 1 to 6 in which the closure flaps 21 and 22 adjoin alternating panels 37 and 39, material for the pouring lip 55 is supplied by recessing the cut side edge 44 of the outer flap 22 opposite the gripping tabs as indicated at 58.

To utilize all of the material of the web between the outer side edges thereof which form the bottom edges 30 of the double succession of blanks, the gripping tab 19 of each blank 27 is offset to one side of the center of the associated cut edge 43 of the outer closure flap 22 and the narrow glue flap 25 adjoining the glue panel 42 extends outwardly from the common score a distance equal to that of the wide glue flaps 23 and 24. Thus, as shown in Fig. 6, the gripping tab of each blank is formed between the narrow glue flap 25 and the gripping tab 19 of the opposed blank on the opposite side edge of the web.

In the fabrication of the container, let it be assumed that a suitable adhesive (not shown) has been applied to the inner side of the outer closure flap 22 around the edge thereof including the free end portion of the gripping tab 19 but excluding the lifting tab 18 and has also been applied to the outer sides of the glue panel 42, the glue flaps 23, 24, and 25, the reclosure plug 26, and a marginal area of the inner closure flap 21 excluding the sanitary margin 20 around the opening 17 and the area between the latter and the pouring lip 55. While various adhesives may be used for this purpose, it is preferred to use a thermosetting material which may be applied by a printing process and can be activated in response to heat and pressure.

Following the application of the adhesive, the panels are folded inwardly toward each other about the parallel scores 33, 34, 35, and 36 and the outer side of the glue panel 42 is secured to the inner side of the other terminal panel 41 along the free edge 29 thereof to complete the container body 15. Then with the latter supported on a suitable mandrel, the end closure 16 is formed by folding first the glue flaps 23, 24, and 25, next the inner closure flap 21, and finally the outer closure flap 22 inwardly into overlapping relation and applying heat and pressure to activate the adhesive on the flaps. As an incident to such folding operations the cut edges 43 and 46 of the closure flaps 21 and 22 are positioned automatically in alignment with each other and the upper edge of the terminal panel 41, the pouring opening 17 and the pouring lip 55 then underlying the lifting tab 18 and the pouring lip overhanging the terminal panel 41. The gripping tab 19 and the adjacent band extension 57 then are bent first downwardly around the pouring lip 55, reversely with the tab beneath the lip and to the terminal panel 41, and downwardly along the latter where heat and pressure are applied to secure the outer ends of these parts to the panel.

Upon completion of the top end closure 16, the latter and the body 15 are immersed in a bath of the liquid proofing material such as molten paraffin and, after this material has solidified, are reversed end for end with the

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bottom side up for filling of the container with liquid 60 to be dispensed and insertion of the bottom end closure. During liquid proofing of the top end closure, the gripping tab 19 and the adjacent flap extension 57 protect the pouring lip 55 and prevent the flow of the molten paraffin beneath the lip so as to retain the sharp cutoff pouring characteristics of the lip after it is uncovered.

To dispense the liquid from the container with the top end closure 16 up, the pouring opening 17 is uncovered by separating the gripping tab 19 from the terminal panel 41 and raising the lifting tab 18 as shown in Fig. 2 to remove the reclosure plug 26 from the opening. Then, the body is tipped about a horizontal axis for the flow of the liquid 60 through the pouring opening and across the pouring lip 55 as shown in Fig. 3. By virtue of the spacing of the lip outwardly beyond the side panel 41, the liquid remains out of contact with the panel and, when the container is righted, the liquid stream is cut off sharply. The pouring opening may be reclosed by folding the lifting tab 18 downwardly and pressing the reclosure plug 26 into the opening 17, the friction between the edges of the hole and the plug acting to retain the plug in the hole.

Instead of forming the end closure flaps 21 and 22 as extensions of the spaced intermediate panels 37 and 39, the flaps may be joined to adjacent intermediate panels 38' and 39' as shown in Figs. 8 and 9, and still enable all of the web material to be utilized for integral parts of the blank 27. In this modified construction in which parts corresponding to parts of the preferred construction bear similar but primed reference characters, the locations of the lifting and gripping tab 18' and 19' on the outer closure flap 22' are the same as in the preferred construction. The pouring opening 17', however is elongated toward the outer free edge 61 of the inner flap 21' and the pouring lip 55' projects beyond this edge. To provide material for the pouring lip, the outer free edge 62 of one glue flap 24' is recessed as indicated at 63, the glue flaps 23' and 24' being joined to adjacent panels 41' and 37' respectively.

With the gripping tab 19 extending reversely around the pouring lip 55 in the completed end closure 16, the tab also extends outwardly beyond and overhangs the adjacent side panel 41. Such extension of the gripping tab is utilized in a further modification shown in Figs. 10 and 11 to facilitate handling of the filled container by the provision on the opposite edge of the end closure of a ledge 64 which projects beyond the opposite side panel 38' of the container body and constitutes, along with the gripping tab, a finger hold for lifting the container. In this modification in which the parts corresponding to parts of the preferred construction of Figs. 1 to 6 have similar but primed reference characters, the glue panel 42' is connected to the panel 41' rather than to the intermediate panel 39'.

To avoid increasing the folding operations for completing the end closure 16' of the modification of Figs. 10 and 11, the finger ledge 64 is formed as an extension of the inner flap 21' located on the cut edge 45' of the latter flap opposite to the cut edge 46' of the pouring lip 55' and is positioned to overhang the panel 38' automatically as an incident to folding the flaps into overlapping relation. The closure flaps 21' and 22' in this modification adjoin alternating panels 37' and 39', the same cut edge 45' of the inner panel from which the finger ledge 64 projects being recessed as indicated at 65 to provide material for the finger ledge of the overlapping inner flap of the blank formed from the opposite edge portion of the web. In this instance, the pouring lip 55' is centered relative to its cut edge 46' and the gripping tab 19' extends outwardly from the center of the outer closure flap 22'. The latter also projects outwardly on both sides of the gripping tab 19' to provide two extensions 57' which remain secured to the side panel 41' when the gripping tab is separated therefrom. With

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such centering of the gripping tab and extension of the outer flap on both of its sides, adjacent pairs of overlapping blanks 27' are spaced apart on the web from which they are cut as indicated at 66 in Fig. 10.

It will be apparent that the pouring lip 55, being simply an extension of the inner closure flap 21, may be formed in the same cutting operations as the flap and is positioned properly relative to its underlying side panel 41 as an incident to folding of the flap into overlapping relation with the other flaps to complete the end closure 16. Projection of the pouring lip beyond the side panel 41 is made possible by the gripping tab 19 which, in addition to both protecting and sanitarily covering the lip, cooperates with the finger ledge 64 to facilitate handling of the container. By virtue of the novel arrangement of the end flaps including the recesses 58 and 65, for the projecting parts of overlapping flaps of oppositely arranged flanks 27, it is possible to reduce the cost of each blank by utilizing substantially all of a web of blank forming material and avoiding scrap which must be removed from the blanks and disposed of.

What is claimed is:

1. In a tubular container of sheet material, a panel structure comprising, in combination, a side panel defining a side wall of the container, an inner flat end panel extending across one end of said container and having an edge portion extending along and secured to the adjacent end edge of said side panel, a part of said edge portion projecting outwardly from said edge portion beyond said side panel to define a pouring lip shorter than and spaced from the ends of said edge portion, an outer panel overlying and secured to said inner panel and including a lift tab hinged to the outer panel with the free edge portion of the tab overlying said pouring lip, means on said inner panel underlying said lift tab and defining a pouring opening, said free edge portion of said lift tab extending reversely around said lip and against said side panel to provide a gripping tab removably secured to the side panel, and an integral extension of said outer end panel coextensive with but severable from said gripping tab and bent reversely with the latter around said lip, said extension and said gripping tab cooperating to avoid the flow of sealing liquid beneath said lip.

2. In a tubular container of sheet material, a panel structure comprising, in combination, a side panel defining a side wall of the container, an inner flat end panel extending across one end of said container and having an edge portion extending along and secured to the adjacent end edge of said side panel, a part of said portion projecting outwardly from said edge portion beyond said side panel to define a pouring lip shorter than and spaced from the ends of said edge portion, an outer panel overlying and secured to said inner panel and including a lift tab hinged to the outer panel with the free edge portion of the tab overlying said pouring lip, means on said inner panel underlying said lift tab and defining a pouring opening, said free edge portion of said lift tab extending reversely around said lip and against said side panel to provide a gripping tab removably secured to the side panel, an integral extension of said outer end panel coextensive with but severable from said gripping tab and bent reversely with the latter around said lip, said extension and said gripping tab cooperating to avoid the flow of sealing liquid beneath said lip, and a second extension on the opposite edge of said second flap projecting beyond the adjacent side panel and cooperating with said reversely extending tab portion to define finger holds facilitating lifting of the container.

3. In a tubular container of sheet material, a panel structure having, in combination, two flat side panels defining opposed laterally spaced walls of the container and terminating at one end of the latter in straight edges, an inner flat end panel extending across said container end and between said side panel edges and having opposite edge portions extending along and secured to said side

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panels adjacent said edges of the latter, at least a part of each of said end panel edge portions projecting outwardly beyond the adjacent one of said side panels to form extensions overhanging the latter, said extensions being shorter than and spaced from the ends of the respective end portions, means on said end panel defining a dispensing opening disposed between said edge portions, an outer flat end panel overlying and secured to said inner end panel and having a lifting tab of greater area than said opening overlying the latter and hinged along one edge to the outer panel between the opening and one of said extensions with its free edge portion overlying the other of said extensions, and a gripping tab formed integral with said free edge portion of said lifting tab and extending therefrom around said other extension and along the adjacent side panel with its free edge portion removably secured to the latter, said gripping tab and said one extension providing finger holds on opposite sides of said container facilitating lifting of the same.

4. A one piece blank of sheet material foldable to form a tubular container having a flat laminated closure at one end, said blank comprising, a section divided by laterally spaced folding scores into panels defining side walls of said container, first and second end flaps integrally connected along folding scores to corresponding ends of two of said panels and each having a cut edge disposed flush with one of said side walls when said container is fabricated and said flaps are folded into overlapping relation to form said end closure,

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integral extensions projecting outwardly from opposite cut edges of said second flap to define respectively a pouring lip and a finger hold, said extensions being shorter than and spaced from the ends of the respective cut edge, means on said second flap defining an opening for pouring the contents of said container over said lip, and an elongated lifting tab on said first flap integrally connected to the latter along a hinge score at the inner end of the tab, the other end portion of said lifting tab extending outwardly beyond said cut edge of said outer flap to form a gripping tab, said tab being positioned on said first flap to overlie said opening and enclose said lip and form a second finger hold in the completed end closure.

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