Oct. 14, 1947. R. GUYER 2,428,845

CARTON CLOSURE

Filed Jan. 19, 1944 2 Sheets-Sheet 1

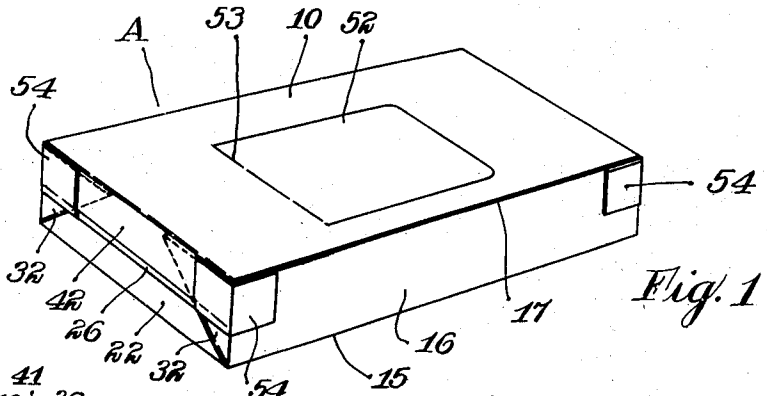


Fig. 1

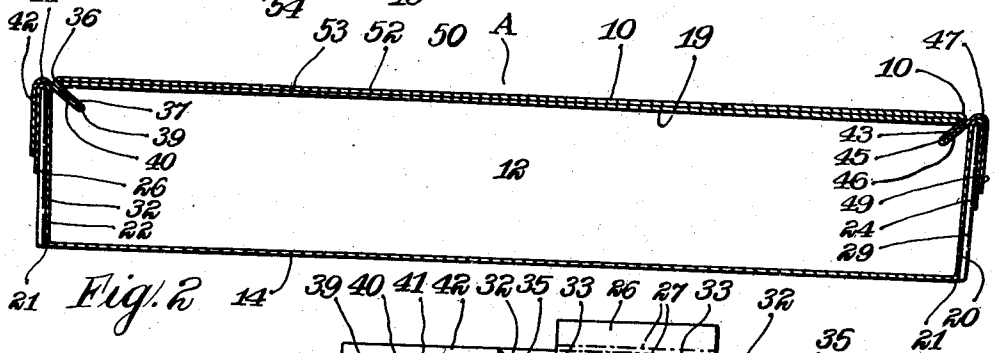


Fig. 2

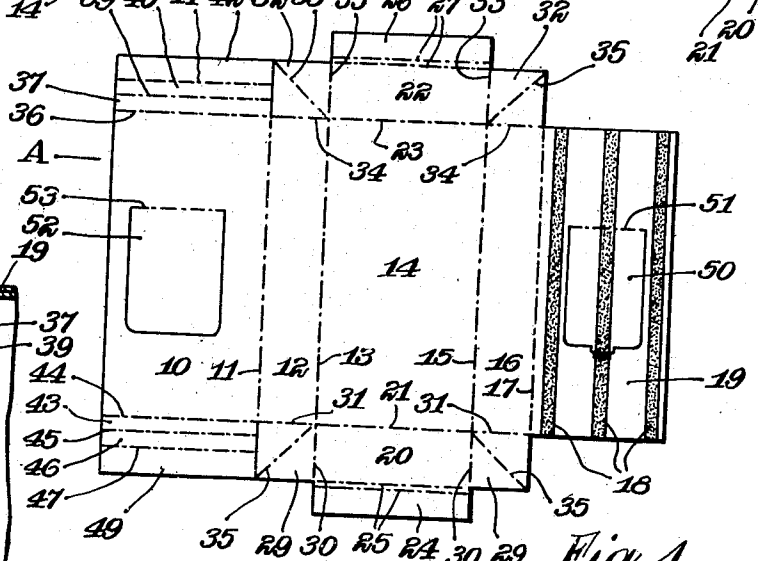


Fig. 4

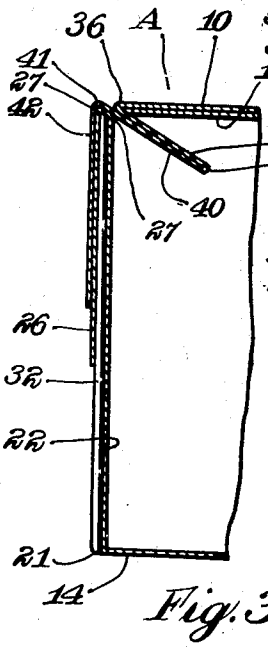


Fig. 3

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CARTON CLOSURE

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2 Sheets-Sheet 2

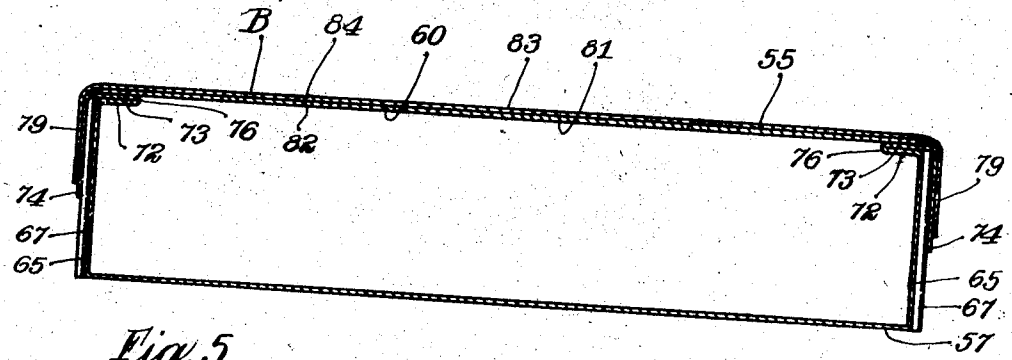


Fig. 5

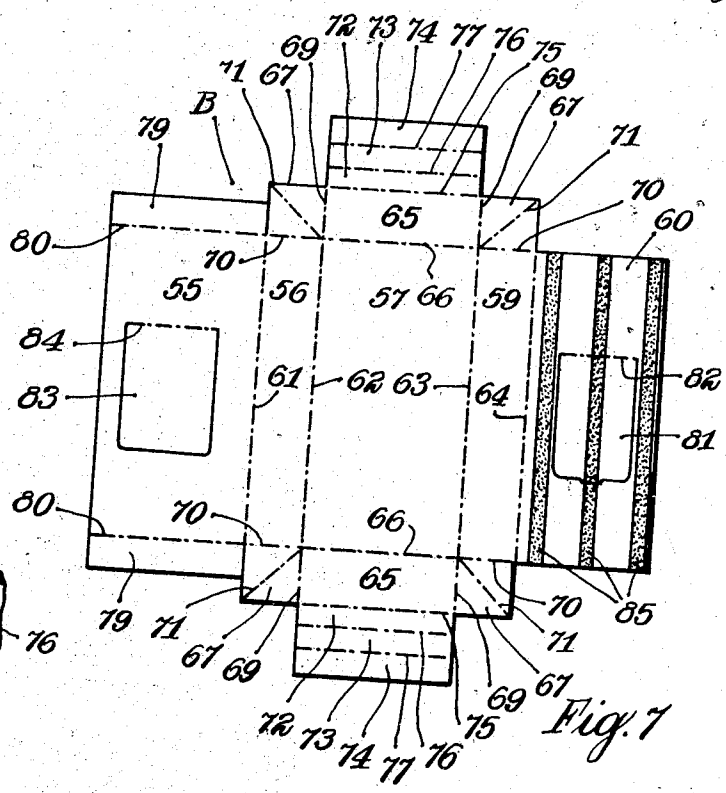


Fig. 7

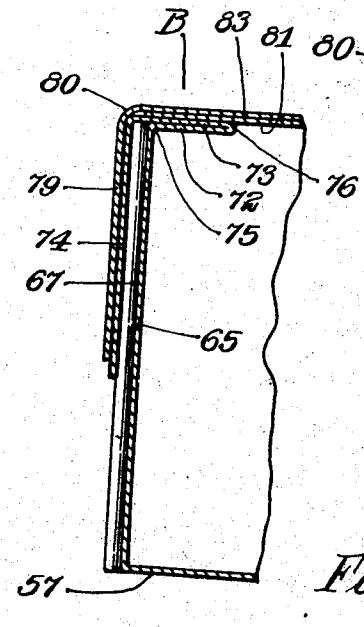


Fig. 6

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UNITED STATES PATENT OFFICE

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CARTON CLOSURE

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Application January 19, 1944, Serial No. 518,843

9 Claims. (Cl. 229—31)

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My invention relates to an improvement in carton closure wherein it is desired to provide a means for rendering cartons relatively leak-proof.

In my previous application, Serial No. 477,845, filed March 3, 1943, I described a carton for containing liquid products to be frozen. This carton in preferred form comprises a rectangular tray having diagonally folded corner gussets and a top closure having an opening therethrough through which the carton could be filled. As the carton was formed of water-proof stock and as the body of the carton was formed in the shape of a tray having diagonally creased corners, no leakage could occur through this lower portion of the container. In handling the cartons after the same had been filled with liquid to be frozen and prior to the freezing operation, it was found that movement of the container had a tendency to cause the liquid within the container to surge from one end to the other thereof. This surging of liquid within the container causes a certain amount of seepage from the container at the ends thereof between the end walls of the container and the end flaps of the top closure. Thus while the containers were relatively liquid tight this surging action of the liquid during movement of the container sometimes forced a certain amount of liquid into the end flap construction, wasting a certain amount of the liquid and causing some slight leakage therefrom.

The object of the present invention is to overcome this previously encountered difficulty. This I accomplish by providing a fold material projecting into the interior of the container near each end thereof at the junction between the end wall and the top closure of the container. This fold of waterproof material has a tendency to guard the corner of the container against the surging of liquid within the container and also tends to reinforce the container along the seam between the end wall and the top closure to prevent leakage at this point.

A feature of the present invention lies in the fact that the fold of material extends into the interior of the container near the ends thereof and provides a guard against which liquid may surge during handling of the container filled with liquid. This fold acts to reinforce the container along the upper end seam and prevents the entire weight of the liquid within the container from pressing against the container end wall.

A further feature of the present invention resides in the fact that the reinforcing fold may be formed as an integral part of the top closure of the container or may be formed as a part of the end wall of the container. Each structure has its individual advantages over the other.

A further feature of the present invention lies

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in the fact that the fold of carton stock along the one seam where leakage can most readily occur forms a wall thickness of several plies at this point, thus thoroughly stiffening and reinforcing the container at this point. The extension of the fold into the interior of the container also makes it more difficult for liquid to seep from the container along the upper end wall seam.

In the form of construction illustrated the container comprises five panels of stock, two of which are overlapped to form a rectangular body of tubular formation. Such a tubular body may readily be formed with little likelihood of leakage between the two overlapped and connected panels. By subsequently folding the corners of the container so as to form the lower portion of the container body into a tray having diagonally folded corners, leakage through the entire lower portion of the container is virtually impossible if the stock is water-proof. As a result only those seams through which no leakage may occur with relative ease, are allowed to remain in the structure. These seams in the construction illustrated lie along the upper edges of the end wall. By providing a fold of material inwardly of these seams, the seams are reinforced and less leakage will therefore result.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a perspective view of a container in completed set up form.

Figure 2 is a longitudinal section through the container showing the construction thereof.

Figure 3 is an enlarged section of one end of the container showing the inwardly extending guard fold extending along the upper end wall seam.

Figure 4 is a diagrammatic view of the blank of which the container is formed.

Figure 5 is a longitudinal section through a modified form of carton construction.

Figure 6 is an enlarged view through one of the end walls of the container illustrated in Figure 5.

Figure 7 is a diagrammatic view of the carton blank of which the carton illustrated in Figure 5 is formed.

The carton A, illustrated in Figures 1 through 4 of the drawings, includes a top closure panel 10 connected along a fold line 11 to a side wall panel 12. The side wall panel 12 is connected along a fold line 13 to the bottom panel 14. The bottom panel 14 is connected along a fold line 15 to a side wall panel 16 which in turn is connected along a fold line 17 to the top closure panel 19 which is designed to extend in underlapping relation with the panel 10. Strips of moisture-proof adhesive 20 are coated upon the

panel 19 as illustrated, or upon the undersurface of the panel 10, and the container is formed into tubular relation by overlapping the panel 10 with the panel 19.

The containers are usually shipped in this flat formation with the panels 10 and 19 secured together. An end wall panel 20 is connected to one end of the panel 14 along the fold line 21, while a panel 22 is connected to the other end of the bottom panel 14 along a fold line 23. A flap or flange 24 is connected to the end wall 20 along the double creased lines 25, while the flap or flange 26 is connected to the panel 22 along the double fold line 27.

Corner members 29 are foldably connected along fold lines 30 to the end wall panel 20 and are connected along fold lines 31 to the side walls 12 and 16 respectively. Corner gusset forming members 32 are connected along fold lines 33 to the end panel 22 and are connected along fold lines 34 to the side wall panels 12 and 16, respectively. The corner members 29 and 32 are diagonally creased along diagonal fold lines, indicated by the numeral 35.

The top closure panel 10 is connected along a fold line 36 to a flange 37, which in turn is connected along a fold line 39 to a second flange 40 slightly wider than the flange 37. A flange 40 is connected along a fold line 41 to the end flange 42.

At the opposite end of the panel 10, a flange 43 is connected along a fold line 44 to the panel 10, and this flange 43 is also connected along a fold line 45 to a second flange 46 similar to the flange 43, but slightly wider than the same. A flange 46 is connected along a fold line 47 to the end flange 49.

A substantially rectangular hinged closure 50 is die cut from the body of the panel 19, being connected thereto along a creased hinge line 51. A closure panel 52 is similarly cut from the panel 10, being connected thereto along the creased fold line 53. When the panels 10 and 19 are in overlapped relation the fold lines 51 and 53 coincide, but the closure 52 is somewhat larger than the closure 50, forming an off-set between the two closure panels. The closure panels 50 and 52 are connected together by a portion of an adhesive strip 20 so as to pivot in unison, but the smaller opening of the panel 50 forms a ledge upon which the marginal edge of the larger panel 52 may rest.

The manner in which the carton blank is folded into tubular relation has been mentioned. In assembling the carton for use, the end walls 20 and 22 are folded up into substantially right angular relation with the bottom panel 14, the corner gusset forming members 29 and 32 folding along the fold lines 35. A substantially triangular flap of double thickness is thus formed connected along a vertical line to each end of each end wall 20 and 22.

The closure panel 10 is folded along the fold lines 36 and 44, and the material is doubled back on itself along the fold lines 39 and 45 so as to provide folds of double thickness stock at each end of the container. As illustrated in Figures 2 and 3 of the drawings, this double thickness fold extends inwardly of the container, the wider flange of each fold, 40 and 46 respectively, urging the double fold toward the under-surface of the panel 19. The outer flanges 42 and 49 are then folded down over the triangular corner gusset members 29 and 32 and overlie the marginal flanges 24 and 26 on the end walls 20 and 22.

The flaps 42 and 49 may then be secured in position by any suitable means such as by the use of tape strips 54 which hold the corners in proper formation.

Thus it is seen that a double thickness fold is provided along the upper edge of each end wall which is the only point where leakage might readily occur. This double fold reinforces the seam against the surge of liquid within the container and also provides a firmer connection between the flaps on the end wall panel and on the top closure panel respectively. It will been seen that should the flanges issuing from the top panel 10 fold directly over the flanges 24 and 26 on the end walls 20 and 22, respectively, there would be no contact between these flaps before the center of the fold between the end wall panels 20 and 22 and the flanges 24 and 26. With the present construction contact occurs throughout a longitudinal area of the curve, thus increasing the effectiveness of the seal at this point a considerable extent.

In Figures 5, 6, and 7 of the drawings I disclose a carton construction B which differs slightly in construction from that illustrated in Figures 1 through 4. The carton B includes a top closure panel 55, a side wall panel 56, bottom closure panel 57, side wall panel 59, and underlapping closure panel 60 connected in the order stated by parallel fold lines 61, 62, 63 and 64. The end wall panels 65 are connected to opposite ends of the bottom panel 57 along fold lines 66. Corner gussets, from which members 67 are connected along fold lines 69 to the opposite ends of the end panels 65, are connected along fold lines 70 to the side wall panels 56 and 59. The corner gusset forming members 67 are provided with diagonal fold lines 71 along which the corner members may fold into triangular flaps foldable to overlie the end walls 65.

Flanges 72, 73, and 74 are connected to the end walls 65, the flange 72 being connected thereto by a fold line 75. The flanges 72 and 73 are separated by a fold line 76, while the flanges 73 and 74 are separated by the fold line 77. The fold lines 75, 76, and 77 are parallel to each other, and to the fold line 66 connecting the end panel 65 to the base panel 57.

Flaps 79 are connected to the top closure panel 55 along fold lines 80. The folds 80 are substantially aligned with the fold lines 66 and 70. A hinge closure panel 81 is cut from the body of the panel 60 and is connected thereto along the fold line 82. A slightly larger dimension hinge closure panel 83 is cut from the body of the top closure panel 55 and is connected thereto along the fold line 84. The panel 60 overlaps the panel 55 and is adhered thereto by suitable means, such as the strips of adhesive 85. The fold lines 82 and 84 coincide and the hinge closure panels 81 and 83 are secured together to open in unison, the marginal edges of the larger panel 83 resting upon the body of the panel 60 surrounding the hinged closure panel 81.

In assembling the carton B, the flanges 72 and 73 are folded so that these flanges lie parallel in superimposed relation. The end panels 65 are then erected into substantially right angular relation with the bottom panel 57, the double thickness fold formed by the flanges 72 and 73 extending into the body of the carton and underlying the under-surface of the panel 60. As the end walls 65 are erected the corner members 67 fold along the diagonal fold lines 71 to form triangular flaps which are folded to overlie the outer surface

of the end wall 65. The flaps or flanges 74 are folded down to overlie these triangular corner gusset members and the flanges 79 on the top closure panel 55 fold down over the flanges 74. As a result the double thickness folds reinforce the upper edges of the end panels 65 and form a large surface area through which fluid may not readily leak. The fold thus provided acts as a splash guard and also as a seal for the contents of the carton.

In accordance with the patent statutes, I have described the principles of construction of my carton closure, and while I have endeavored to set forth the best embodiments thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A carton closure for a carton having rectangularly arranged body walls and a closure wall hingedly secured to one of said body walls, and extending into proximity with the opposite body wall, a double thickness fold hingedly connected to the edge of said closure wall and extending between said closure wall and said opposite body wall, and a flange on said double thickness fold folded over and lying outwardly of said closure wall.

2. A carton comprising a tubular body formed of rectangularly arranged body walls, a closure wall hingedly secured to one of said body walls, and extending into proximity with the opposite body wall, a double thickness fold hingedly secured to said closure wall and extending between said closure wall and said opposite body wall, a flap on said double thickness fold folded over and lying outwardly of said closure wall, and a flap on said opposite body wall folded over said first named flap.

3. A carton comprising a tray-shaped receptacle having a base panel, side wall panels, and diagonal folds connecting adjacent side wall panels, a top closure panel connecting the upper extremities of said side walls, a double thickness fold hingedly secured between said top wall and an end wall of said carton, and a flap on said double thickness fold folded over and lying outwardly of said end wall.

4. A carton comprising a tray-shaped base including a bottom panel and side and end wall panels foldably connected thereto, diagonal creased folds connecting adjacent side and end walls, a top wall connecting the upper extremities of said side walls, a double thickness fold between said top wall and an end wall, and folded outwardly of said diagonal creased corner portions and said end wall.

5. A carton comprising a tray-shaped body including a bottom panel, side wall panels foldably connected thereto, and end wall panels foldably connected thereto, a top closure foldably connected to the upper extremities of said side walls, diagonally creased corner gussets connecting adjacent side and end walls and adapted to fold to lie exteriorly of said end walls, a double thickness fold between said top closure and each end wall and a flap on said double thickness fold extending outwardly of said diagonally folded corner portions and said end walls.

6. A carton comprising a tray-shaped base including a bottom panel, foldably connected side wall panels and foldably connected end wall panels, connecting diagonally folded corner gussets between said end walls and said side walls, said gussets being adapted to fold outwardly of said end walls, a top closure foldably secured to the upper extremities of said side walls, a double thickness fold hingedly secured to said top closure and foldable between said top closure and each end wall, and a flap on said double thickness fold folded outwardly of said corner gussets and said end walls.

7. A carton comprising a tray-shaped body including a base panel, side wall panels foldably connected thereto, and end wall panels foldably connected to said base, diagonally folded gusset portions connecting adjacent side and end walls and adapted to fold outwardly of said end walls, a flap on said end walls designed to fold outwardly of said gussets, a double thickness fold hingedly secured to each end of said top closure and foldable between said top closure and the adjacent end wall, and a flap on said double thickness fold extending over the said flap on the adjacent end wall.

8. A carton comprising a tray-shaped bottom including a bottom panel, side wall panels foldably connected thereto, end wall panels foldably connected thereto, and diagonally folded gussets connecting adjacent side and end walls, said gussets being folded outwardly of said end walls, a top closure foldably connected to said side wall panels at the upper extremity thereof, a double thickness fold foldably connected to the upper extremity of each end wall and extending between the end wall and the top closure panel, a flap on each double thickness fold folded over and lying outwardly of said gusset portions, and a flap on each end of said top closure panel folded to overlie said flap on the adjacent end wall.

9. A carton comprising a tray-shaped body including a bottom panel, side wall panels foldably connected to said bottom panel, end wall panels foldably connected to said bottom panel, corner gusset portions connecting adjacent ends of said side and end walls and adapted to overlie the outer surface of said end walls, a top panel foldably connected to the upper extremity of one side wall, a second top closure panel foldably connected to the upper extremity of the other side wall and foldable into overlapping relation with the first top panel, means adhering said top panels together, a double thickness fold foldably connected to each end of said top closure panels, and foldable between said top closure panel and the adjacent end wall, and a flap on said double thickness fold folded outwardly of the gusset portions of the adjacent end wall.

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