

Sept. 15, 1953

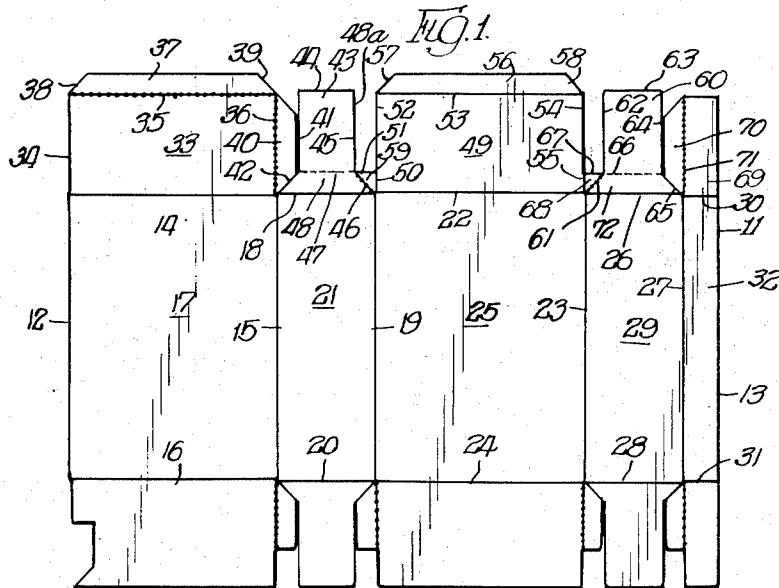
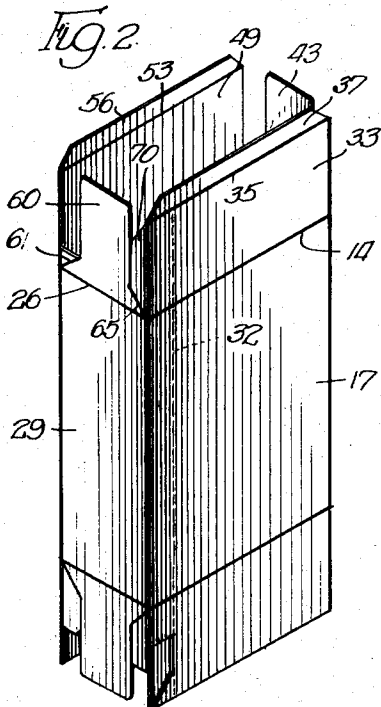
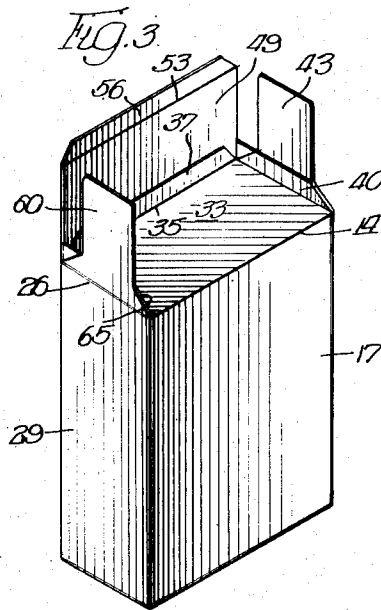
J. A. ZINN, JR

2,652,186

CARTON

Filed March 8, 1947

2 Sheets-Sheet 1



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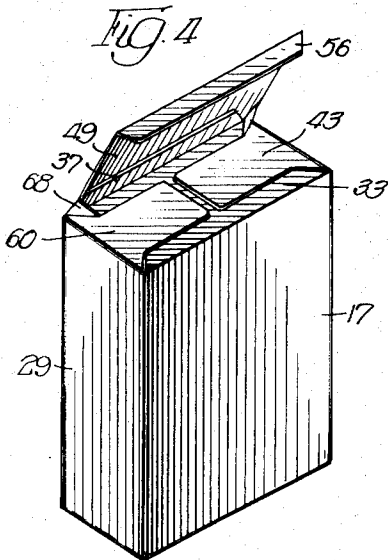
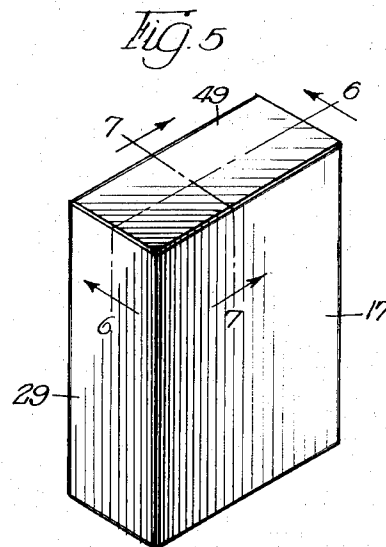
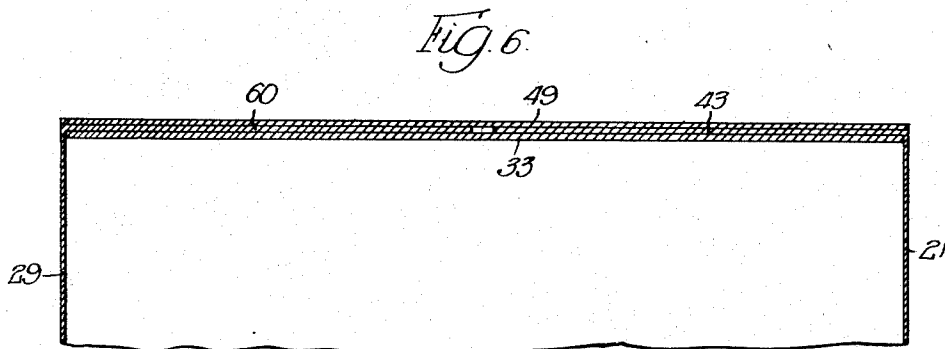
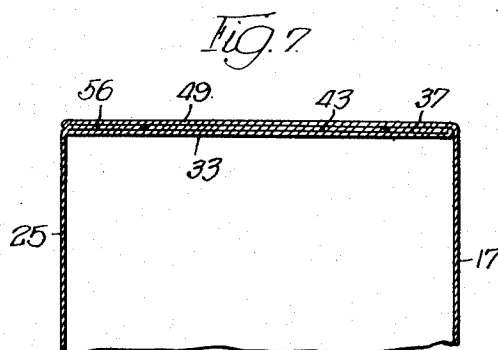
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CARTON

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,652,186

CARTON

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Application March 8, 1947, Serial No. 733,305

6 Claims. (Cl. 229—38)

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The present invention relates to improvements in cartons.

Though the present invention will be described by reference to a carton of uniform rectangular cross-sectional contour from bottom to top, it will be obvious as the description proceeds that the invention is equally applicable to tapering cartons, that is, cartons of the nesting type.

An object of the present invention is to provide an improved carton in which strength and rigidity are attained with the use of relatively thin gauge material.

A further object is to provide an improved carton which may be made from a simple blank in which wastage of material is minimized.

A further object is to provide an improved carton which, although made of relatively thin material, may be readily sealed even though it contains only non-rigid material.

A further object is to provide an improved carton which is sturdy in construction, relatively cheap to manufacture, neat in appearance, and well adapted to hold fine grained material or a liquid.

A further object is to provide an improved blank for forming a carton of the kind above referred to.

A further object is to provide an improved carton well adapted to meet the needs of commercial service.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view of a blank adapted to be formed into a carton, which blank embodies the principles of the present invention;

Figure 2 is a view in perspective of the blank having the four side walls thereof assembled in operative position, but having the top and bottom closures thereof not yet in operative position;

Figure 3 is a view similar to Figure 2, but with the bottom wall in operative position and showing the top closure at an intermediate stage of assembly;

Figure 4 is a perspective view illustrating the top closure in a later stage of assembly;

Figure 5 shows the completely sealed carton;

Figure 6 is a sectional view taken along the plane indicated by the arrows 6—6 of Figure 5; and

Figure 7 is a sectional view taken along the plane indicated by the arrows 7—7 of Figure 5.

Referring first to Figure 1, the numeral 11 indicates a blank which may be made from a sheet

of cardboard or the like. The particular blank chosen for illustration is intended for a carton having uniform rectangular cross-section throughout its length, with end walls disposed in right angular relationship with the side walls. The invention is equally applicable to cartons of tapering construction, the tapering contours of the panels thereof being chosen to conform to the degree of taper desired.

The uppermost surface of the blank as viewed in Figure 1 will be the outermost surface of the carton to be formed therefrom.

The blank 11 has side edges 12 and 13 and is provided with a plurality of crease lines defining panels, a connector section, top and bottom flaps, tabs, web-corners and other parts to be described presently.

Crease lines 14, 15 and 16 and the edge 12 define a panel 17. Crease lines 15, 18, 19 and 20 define the next panel, 21. Crease lines 19, 22, 23 and 24 define the next panel, 25. Crease lines 23, 25, 27 and 28 define the next panel, 29. Crease lines 27, 30, edge 13 and crease line 31 define a connector section, 32. All of the crease lines referred to in this paragraph will be ruled into the blank 11 on the under surface thereof as the blank is viewed in Figure 1, so that said crease lines will bias the sections on the sides thereof to bend inwardly, that is, toward the bottom side of the blank, it being remembered that Figure 1 shows the outer surface of the carton as uppermost. Said crease lines are indicated in solid lines in Figure 1. Such crease lines, that is, those ruled in from the side of the blank which is to be folded inwardly, will be referred to as direct crease lines. Crease lines which are ruled into the blank 11 on the top side as the blank is viewed in Figure 1, are illustrated as solid lines with dots spaced therealong. Such crease lines will be referred to as reverse crease lines.

Crease line 15 is spaced from the crease line 19 and the crease line 23 is spaced from the crease line 27 a distance equal to the width of the two opposite narrow side walls of the carton. The section between the crease line 27 and the edge 13, that is, the section 32, is a connector section and is utilized for securing the blank into a continuous outline rectangular in cross-section.

The panel 17 provides a relatively wide side wall or panel of the carton and will be referred to hereinafter as the first wall or panel.

The panel 21 provides a relatively narrow side wall or panel of the carton and will be referred to hereinafter as the second wall or panel.

The panel 25 provides a relatively wide side

wall or panel of the carton and will be referred to hereinafter as the third wall or panel.

The panel 29 provides a relatively narrow side wall or panel of the carton and will be referred to hereinafter as the fourth wall or panel.

The panel 17 (the first panel) is provided with the flap 33 bounded by the crease line 14, the edge 34 which will preferably be offset inwardly of the edge 12, the reverse crease line 35 and the reverse crease line 36. The reverse crease line 36 is offset toward the edge 34 from the line 15 a short distance to permit the ready folding of the flap 33 into the space between the panels 17 and 25 of the carton. Said flap 33 outwardly of the reverse crease line 35 is provided with the web 37, having end edges 38 and 39 disposed in 45 degree relationship with the reverse crease line 35. The flap 33 at the region thereof along the reverse crease line 36 is provided with the web 40 bounded by the reverse crease line 36, the edge 39, the slit 41, and the direct crease line 42. Connected to the panel 21 (the second panel) is the tab 43 which is bounded by the crease line 18, the crease line 42, the slit 41, the edge 44, edge 45, and the reverse crease line 46. Said crease lines 42 and 46 extend in 45 degree relationship with the crease line 18 up to points lying in the broken line 47. The region bounded by the crease line 18, the crease line 42, the broken line 47, and the reverse crease line 46 forms a web 48 which is part of the tab 43. That portion of the tab 43 between the broken line 47 and the edge 44 is indicated by the numeral 48a. That portion of the blank embodied in the web 40 and the web 48 joined at the crease line 42 constitutes a web-corner, the function of which will appear presently.

The panel 25 (the third panel) is provided with the flap 49 bounded by the crease line 22, the crease line 50 (which extends from the crease line 22 to the edge 51, which edge 51 is in alignment with the broken line 47), the edge 52 in alignment with crease line 50, the crease line 53, edge 54 and crease line 55. The crease line 55 and edge 54 will be in alignment with each other. However, the line defined on the one side by the crease line 50 and the edge 52 and the line defined on the other side by the crease line 55 and edge 54 will be offset inwardly of the crease lines 19 and 23, respectively, to facilitate folding.

Further to facilitate folding of the top closure of the carton, the crease line 22 should be offset slightly above the crease lines 18 and 26 (which may be in alignment with each other). The crease line 14 should be offset slightly below the crease lines 18 and 26 and the crease line 30 should be offset slightly below the crease line 14. The amount of the offsets will depend upon the thickness of the material. The amount of offset of the edge 34 relative to the edge 12; of crease line 36 relative to crease line 15; of edge 52 and crease line 50 relative to crease line 19; of edge 54 and crease line 55 relative to crease line 23; of crease line 22 relative to crease lines 18 and 26; and of crease line 30 relative to crease lines 18 and 26 will be enough greater than the thickness of the material to facilitate folding while providing a good fit. Preferably the offset of crease line 30 below the crease lines 18 and 26 will be about twice the offset of crease lines 18 and 26 below crease line 22. The flap 49 is provided outwardly of the crease line 53 with the web 56 having its long dimension parallel with the crease line 22. The web 56 has its lateral extremities cut off along the edges 57 and 58 dis-

posed in 45 degree relationship with the crease line 53. The section defined by the crease line 50, edge 51 and the reverse crease line 46 is a web indicated by the numeral 59. Said web 59 and the web 48 constitute a web-corner. The crease line 42 and the reverse crease line 46 intersect the crease line 18 at the junctures of crease lines 15 and 19 with said crease line 18.

Disposed above the panel 29 (fourth panel) is the tab 60 bounded by the crease line 26, the reverse crease line 61, the edge 62, the edge 63, the slit 64 and the crease line 65. Reverse crease line 61 is disposed in symmetrical relationship with the crease line 65 and they extend in 45 degree relationship with crease line 26 from the junctures of crease line 26 with crease lines 23 and 27, respectively, to their points of intersection with the edge 62 and slit 64. Said points of intersection lie in the broken line 66 which is parallel with the crease line 26.

The numeral 67 indicates an edge in alignment with the broken line 66, which edge, with crease line 55 and reverse crease line 61, defines a web indicated by the numeral 68.

Extending above the connector section 32 is the flap 69, said flap 69 being joined to the section 32 by means of the crease line 30. Said flap 69 is provided with the web 70 connected to the flap 69 by means of the reverse crease line 71.

That portion of the tab 60 bounded by the crease line 26, reverse crease line 61, the broken line 66, and the crease line 65, constitutes a web indicated by the numeral 72. Webs 68 and 72 constitute a web-corner and webs 70 and 72 constitute another web-corner, both promoting the sift-proofness of the carton.

The tabs 43 and 60 are adapted to be folded down to form part of the top closure of the carton, and preferably their dimensions from the crease lines 18 and 26, respectively, will be slightly less than the cross dimension of the panel 17 or panel 25, so that the edges 44 and 63 of said tabs will not quite meet.

As indicated above, the webs 40, 48 and 59 associated with the tab 43 constitute a web-corner assembly, and the webs 68, 72 and 70 associated with the tab 60 constitute another web-corner assembly for promoting tight sealing of the top of the carton.

It will be noted that the flaps 33 and 49 are of substantially the same widths as their corresponding panels 33 and 49, being only sufficiently narrower than said panels to permit ready folding down onto the formed carton. The altitude of each of said flaps 33 and 49 is approximately equal to the width of the panels 21 and 29. It will be noted also that the tabs 43 and 60 are of less width than their corresponding panels 21 and 29, and that the flap 33 and the flap 69 are provided with webs 40 and 70, respectively, which project laterally from said flaps into adjacency with the respective tabs 43 and 60. The edge 48a of the tab 43 is spaced from the edge 52 of the flap 49 (at least adjacent to the web 59) a distance equal to the width of said web 59—that is, a distance equal to the length of the edge 51. Furthermore, the edge 62 of the tab 60 is spaced from the edge 54 of the flap 49 (at least adjacent to the web 68) a distance equal to the width of said web 68—that is, a distance equal to the length of the edge 67. Expressed in other language, a space is provided between the flap 49 of the third panel and the adjacent flaps 43 and 60, which space is sufficient to provide clearance in the subsequent folding of the

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top closure. Since the flaps 33 and 49 are intact throughout their widths, no resulting void will occur when the top closure is folded into position.

The construction below the crease lines 16, 20, 24, 28 and 31 need not be described herein, inasmuch as no claims in this application are specific to said construction. The particular construction illustrated presents features of novelty which are described and claimed in applicant's co-

pending application Serial No. 750,954, filed May 28, 1947, now abandoned.

Any preferred construction may be employed for the bottom closure, one construction which is applicable being illustrated and described in applicant's Patent No. 2,390,909, dated December 11, 1945; or, if preferred, the top construction illustrated and described in this application may be employed for the bottom closure of the carton.

In forming the blank 11 into a carton, the blank may be wrapped around a mandrel, or the like, and the connector section 32 may be adhesively connected to the under side of the panel 17 (the first panel), the parts assuming the positions illustrated in Figure 2. The bottom of the blank may be folded to provide the bottom closure, the details of the bottom closure, as indicated above, forming no part of the present invention.

After the formed carton has been filled with material, which may be non-rigid in its nature, the flap 69 will be folded down into right angular relationship with the panels 17 and 25. By reason of the reverse crease 71, said flap 69 will assume a position in approximately right angular relationship with the panel 29, and the under side of the web 70 will be disposed in flatwise engagement with the web 72 of the tab 69.

The flap 33 will then be folded down into right angular relationship with the panel 17 (the first panel) and the panel 25 (the third panel), and the web 37, by reason of engagement with the flap 49, will be swung about the reverse crease line 35 into approximately right angular relationship with the flap 33 and in flatwise engagement with the bottom portion of the flap 49. In the same action the web 40 connected to the flap 33, by reason of its engagement with the tab 43, will be moved into right angular relationship with the flap 33 and into flatwise engagement with the web 48, forming part of the tab 43. The parts will now be in substantially the positions illustrated in Figure 3.

The web 37 will be adhesively secured to the flap 49 to provide a relatively rigid support for said flap 33, whereby to facilitate the further sealing of the top closure without distortion of the carton. The tab 60 and the tab 43 may now be folded down into flatwise engagement with the flap 33, drawing the webs 68 and 59 into angular relationship with said tabs 60 and 43 and drawing the flap 49 partially toward closing position, substantially as illustrated in Figure 4. The flap 49 may then be folded down as illustrated in Figure 4, the web 56 thereof being folded under to provide the construction illustrated in Figure 5.

The web 56, which has its ends cut off in forty-five degree relationship with the crease line 57, will fit within the edges of the tabs 43 and 60, providing a top closure of uniform thickness substantially throughout said closure.

It will be understood, of course, that the interfacial surfaces of the various portions of the top closure will be provided with adhesive, whereby

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the parts may be adhesively secured together by the use of instrumentalities which are well known in the carton making art.

By reason of the firm foundation provided by the flap 33, the web 37 of which is adhesively secured to the flap 49, a firm foundation is provided for the successive sealing operations, whereby a tight sealing may be accomplished without distortion of the carton.

By reason of the web corners associated with the tabs 43 and 60, a sift-proof seal is had. By reason of the offset relationship of the edges and crease lines of the panels and flaps as above described and by reason of the fact that the crease lines 42, 46, 61 and 65 communicate, respectively, with the crease lines 15, 19, 23 and 27, the parts constituting the top closure may be folded into the carton without jamming, thereby further promoting the sift-proof features of the web-corner assemblies associated with the tabs 43 and 59. Due to the equalization of the cardboard thickness in the top closure, all contacting surfaces therein may be securely adhered together.

Although a preferred embodiment of the present invention has been described in detail, many modifications will occur to those skilled in the art, and it is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is:

1. In a blank, in combination, a first panel, a second panel, a third panel, a fourth panel and a connector section, said panels being defined and joined together and to said connector section by crease lines, said first panel having a flap swung thereon, said third panel having a flap swung thereon, each of said two flaps having side edges spaced apart a distance equal to its axis of swing and an altitude approximately equal to the width of said second and fourth panels, each of said flaps having a web swung thereon, each of said webs having a beveled end, said second panel being provided with a tab having web corners connecting it with the flaps of said first and third panels, said tab of said second panel being of less width than that part of said second panel adjacent to its tab, said connector section being provided with a flap swung thereon said fourth panel being provided with a tab having web corners connecting it with the flaps of said third panel and said connector section, said tab of said fourth panel being of less width than the portion of said fourth panel adjacent to its tab, the flaps of said first panel and said connector section having laterally extending webs integrally united with the web corners of said second and fourth panels, said webs of said flaps of said first panel and said connector section extending into adjacency with the sides of the tabs of said second and fourth panels, the two opposite sides of the flap of said third panel being free of webs whereby to provide clearance on both sides of said last mentioned flap.

2. In a blank, in combination, a first panel, a second panel, a third panel, a fourth panel and a connector section, said panels being defined and joined together and to said connector section by crease lines, said first panel having a flap swung thereon, said third panel having a flap swung thereon, each of said two flaps having side edges spaced apart a distance equal to its axis of swing and an altitude approximately equal to the width of said second and fourth panels,

each of said flaps having a web swung thereon, each of said webs having a beveled end, said second panel being provided with a tab having web corners connecting it with the flaps of said first and third panels, said tab of said second panel being of less width than that part of said second panel adjacent to its tab, said connector section being provided with a flap swung thereon said fourth panel being provided with a tab having web corners connecting it with the flaps of said third panel and said connector section, said tab of said fourth panel being of less width than the portion of said fourth panel adjacent to its tab, the flaps of said first panel and said connector section having laterally extending webs integrally united with the web corners of said second and fourth panels, said webs of said flaps of said first panel and said connector section extending into adjacency with the sides of the tabs of said second and fourth panels, the two opposite sides of the flap of said third panel being free of webs whereby to provide clearance on both sides of said last mentioned flap, said web corners connecting said tabs with the flap of said third panel having reverse crease lines communicating with the crease lines between said second and third panels and between said third and fourth panels, said web corners connecting said tabs with the flaps of said first panel and of said connector section having direct crease lines communicating respectively with the crease line between said first and second panels and the crease line between said fourth panel and said connector section.

3. In a blank, in combination, a first panel, a second panel, a third panel, a fourth panel and a connector section, said panels being defined and joined together and to said connector section by crease lines, said first panel having a flap swung thereon, said third panel having a flap swung thereon, each of said two flaps having side edges spaced apart a distance equal to its axis of swing and an altitude approximately equal to the width of said second and fourth panels, each of said flaps having a web swung thereon, each of said webs having a beveled end, said second panel being provided with a tab having web corners connecting it with the flaps of said first and third panels, said tab of said second panel being of less width than that part of said second panel adjacent to its tab, said connector section being provided with a flap swung thereon said fourth panel being provided with a tab having web corners connecting it with the flaps of said third panel and said connector section, said tab of said fourth panel being of less width than the portion of said fourth panel adjacent to its tab, the flaps of said first panel and said connector section having laterally extending webs integrally united with the web corners of said second and fourth panels, said webs of said flaps of said first panel and said connector section extending into adjacency with the sides of the tabs of said second and fourth panels, the two opposite sides of the flap of said third panel being free of webs whereby to provide clearance on both sides of said last mentioned flap, said web corners connecting said tabs with the flap of said third panel having reverse crease lines communicating with the crease lines between said second and third panels and between said third and fourth panels, said web corners connecting said tabs with the flaps of said first panel and of said connector section having direct crease lines communicating re-

spectively with the crease line between said first and second panels and the crease line between said fourth panel and said connector section, said crease lines defining and joining said panels and said connector section biasing said panels and connector section to fold inwardly.

4. In a carton, in combination, a first panel, a second panel, a third panel, a fourth panel and a connector section, said panels being defined and joined together and to said connector section by crease lines, said first panel having a flap, said flap at its swinging edge being provided with a web having beveled ends, said third panel having a flap, said last mentioned flap being provided at its swinging edge with a web having beveled ends, said second panel being provided with a tab having web corners connecting it with the flaps of said first and third panels, said flaps of said second panel being of less width than that part of said second panel adjacent to its tab, said connector section being provided with a flap swung thereon said fourth panel being provided with a tab having web corners connecting it with the flaps of said third panel and said connector section, said tab of said fourth panel being of less width than that part of said fourth panel adjacent to its tab, said connector section including a flap, the flaps of said first panel and said connector section having laterally extending webs integrally connected respectively with the tabs of said second and fourth panels, the web of the flap of said first panel being adhesively secured to the flap of said third panel, said flaps of said first and third panels being approximately co-extensive in width with their corresponding panels, said flap of said first panel overlying the flap of said connector section, said tabs of said second and fourth panels overlying the flap of said first panel, the flaps of said third panel overlying the tabs of said second and fourth panels.

5. In a carton, in combination, a first panel, a second panel, a third panel, a fourth panel and a connector section, said panels being defined and joined together and to said connector section by crease lines, said first panel having a flap, said flap at its swinging edge being provided with a web having beveled ends, said third panel having a flap, said last mentioned flap being provided at its swinging edge with a web having beveled ends, said second panel being provided with a tab having web corners connecting it with the flaps of said first and third panels, said flaps of said second panel being of less width than that part of said second panel adjacent to its tab, said connector section being provided with a flap swung thereon said fourth panel being provided with a tab having web corners connecting it with the flaps of said third panel and said connector section, said tab of said fourth panel being of less width than that part of said fourth panel adjacent to its tab, said connector section including a flap, the flaps of said first panel and said connector section having laterally extending webs integrally connected respectively with the tabs of said second and fourth panels, the web of the flap of said first panel being adhesively secured to the flap of said third panel, said flaps of said first and third panels being approximately co-extensive in width with their corresponding panels, said flap of said first panel overlying the flap of said connector section, said tabs of said second and fourth panels overlying the flap of said first panel, the flaps of said third panel overlying

the tabs of said second and fourth panels, the web of said third panel being folded under, the beveled ends of said last mentioned web approximately fitting the web corners connecting with said first panel and said connector section.

6. A container comprising pairs of walls providing a tubular body, the walls of each pair being disposed on opposite sides of said tubular body, said walls being provided with closure members at one end of the tubular body, the closure member of one wall of one pair of walls constituting an inner closure member, the closure member of the opposite wall of said pair of walls constituting an outer closure member, the closure members of the other pair of walls constituting intermediate closure members disposed between said inner and outer closure members, said inner closure member having a sealing flap extension on the swinging edge thereof and hingedly connected thereto and adhesively se-

cured to the underside of the outer closure member, said flap extension and intermediate closure members lying in a common plane flatly against the inner closure member, said intermediate closure members being recessed at the rear thereof to permit the flap extension to lie flatly against the inner closure member and in the plane of the intermediate closure members when the outer closure member is in closed position.

JULIUS A. ZINN, JR.

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