Jan. 4, 1966 E. L. BUMP 3,227,353

CARTON WITH HANDLE AND POURING SPOUT

Filed Jan. 11, 1965 4 Sheets-Sheet 1

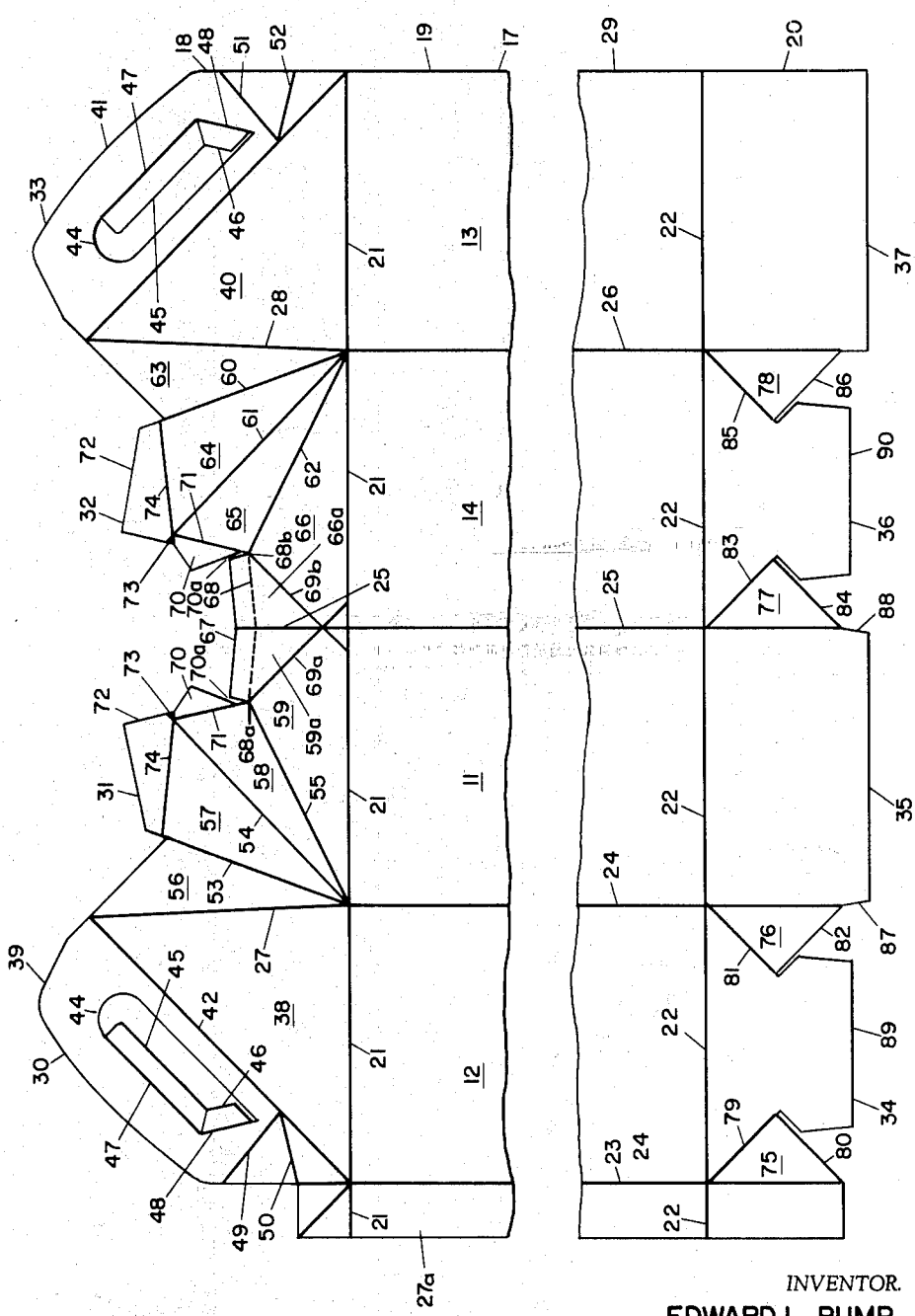


FIG. 11

INVENTOR.
EDWARD L. BUMP
BY Joseph G. Werner
ATTORNEY

Jan. 4, 1966 E. L. BUMP 3,227,353

CARTON WITH HANDLE AND POURING SPOUT

Filed Jan. 11, 1965 4 Sheets-Sheet 2

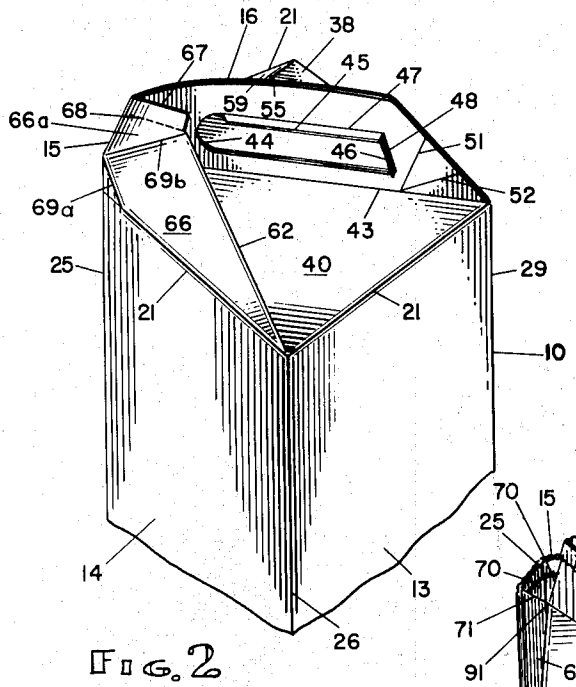


FIG. 2

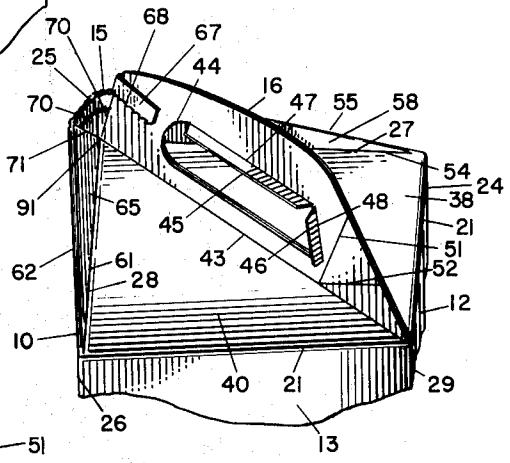


FIG. 3

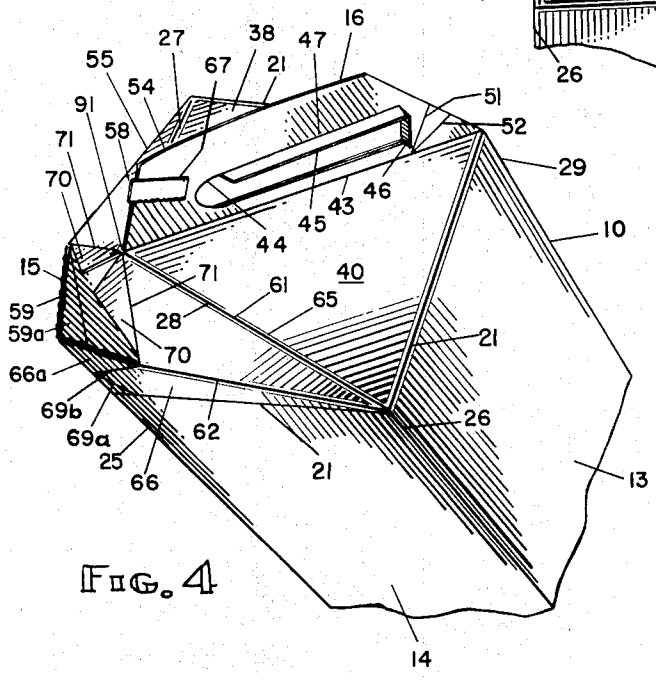


FIG. 4

INVENTOR.
EDWARD L. BUMP
BY Joseph G. Werner
ATTORNEY

CARTON WITH HANDLE AND POURING SPOUT

Filed Jan. 11, 1965 4 Sheets-Sheet 3

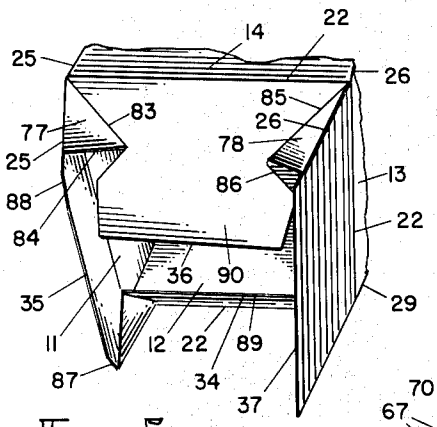


FIG. 5

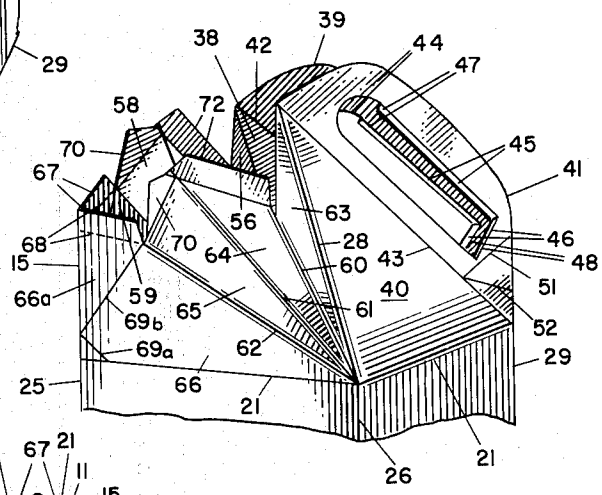


FIG. 6

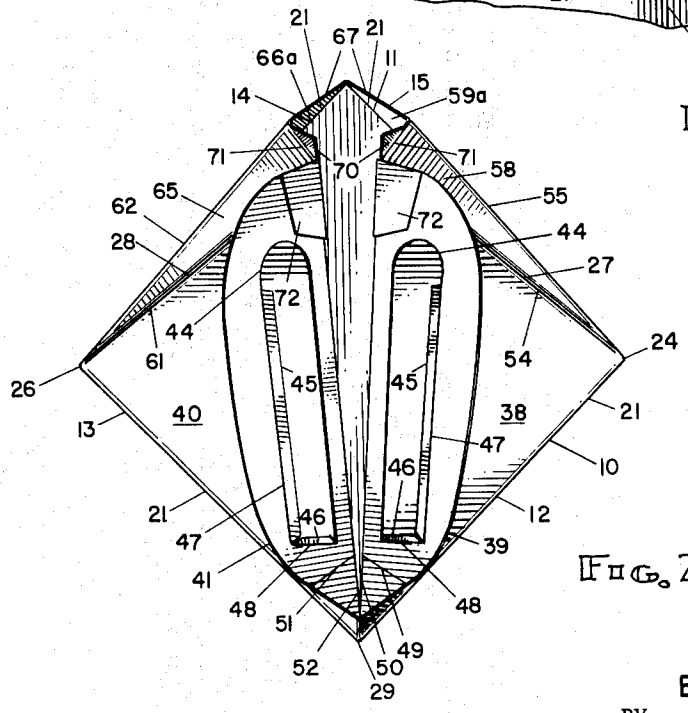


FIG. 7

INVENTOR.
EDWARD L. BUMP
BY Joseph L. Werner
ATTORNEY

Jan. 4, 1966 E. L. BUMP 3,227,353

CARTON WITH HANDLE AND POURING SPOUT

Filed Jan. 11, 1965 4 Sheets-Sheet 4

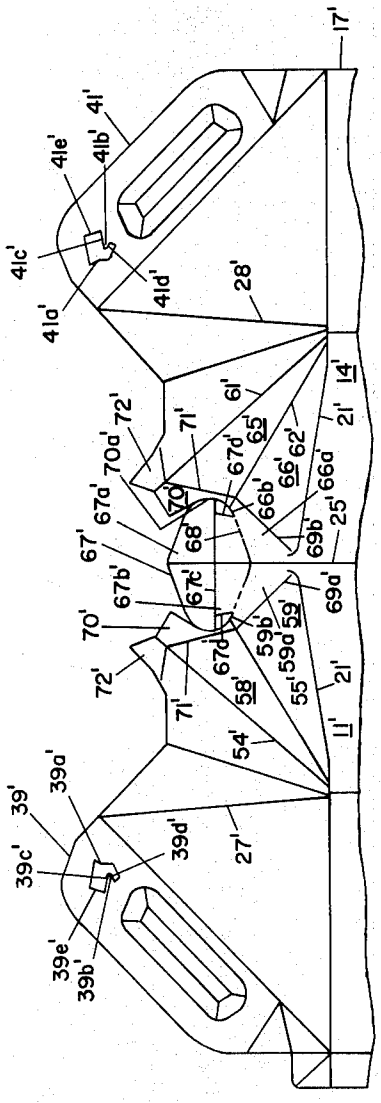


FIG. 8

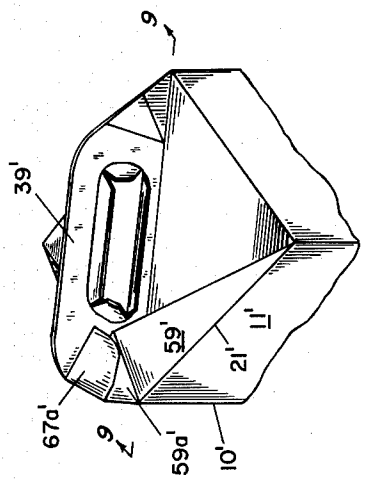


FIG. 10

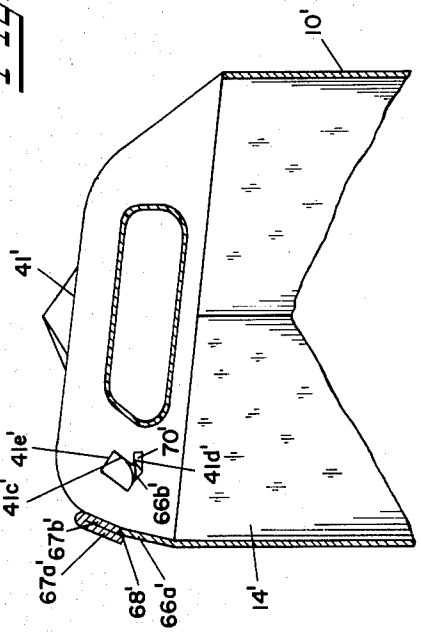


FIG. 9

INVENTOR.
EDWARD L. BUMP
BY Joseph G. Werner
ATTORNEY

United States Patent Office 3,227,353 Patented Jan. 4, 1966

3,227,353

CARTON WITH HANDLE AND POURING SPOUT

Edward L. Bump, Madison, Wis., assignor to Industrial Research and Development Corp., Madison, Wis., a corporation of Wisconsin

Filed Jan. 11, 1965, Ser. No. 424,567
4 Claims. (Cl. 229—17)

This application is a continuation-in-part of my earlier application S.N. 346,180, filed February 20, 1964.

My invention relates in general to cartons made from blanks of sheet material, and more particularly to cartons for liquids and other flowable materials which have handles for carrying and pouring, and pour spouts.

The use of cartons made from coated paper products as containers and dispensers has become widespread in recent years, especially, but not exclusively, in connection with various liquid dairy products. However, in spite of their widespread acceptance, such cartons as have existed prior to my present invention have all been subject to one or more disadvantages. Specifically, such disadvantages include lack of a carrying and pouring handle, top construction which is difficult to open and close, pouring spouts which do not effectively limit the flow of liquid from the carton, complex construction which is difficult and expensive to construct and/or which requires excessive material, and other related shortcomings.

Accordingly, it is a primary object of my invention to provide a single-piece carton which has a spout that discharges the contents of the carton in an easily controlled, smooth flow.

It is another object of my invention to provide a carton with a handle and spout adapted to be formed from a unitary blank and which has means for protecting all portions of the pouring spout which will come in contact with the product during dispensing thereof, from dirt and contamination.

It is a further object of my invention to provide such a carton which has a handle that may be used both for carrying the carton and pouring its contents.

It is a still further object of my invention to provide a carton having a handle and a limiting pouring spout which is easily and inexpensively manufactured and constructed from a minimum of sheeting material.

It is another object of my invention to provide such a carton which has an improved bottom construction that efficiently closes the bottom of the carton.

It is an additional object of my invention to provide such a carton which may be constructed from a variety of sheet materials.

Other objects and advantages of my invention will be apparent from the following description, taken in conjunction with the accompanying drawings, wherein a preferred embodiment of the principles of my invention has been selected for exemplification.

In the drawings:

FIG. 1 is a plan view of a blank of sheeting material from which my novel carton is made.

FIG. 2 is a perspective view of my carton as it is originally sealed.

FIG. 3 is a perspective view of my carton when it is unsealed and the spout is closed.

FIG. 4 is a perspective view of my carton with the spout open for pouring.

FIG. 5 is a perspective view of the bottom of my carton with its bottom flaps partially folded to the position in which they close the bottom of the carton.

FIG. 6 is a perspective view of my carton in a partially assembled condition.

FIG. 7 is a top view of my carton in a partially sealed condition in which it is easily filled.

FIG. 8 is a fragmentary plan view of a blank of sheeting material comprising a modified form of my invention.

FIG. 9 is a fragmentary cross-sectional view taken along line 9—9 of FIG. 10.

FIG. 10 is a fragmentary perspective view showing the modified form of my invention in its fully assembled and sealed condition.

Referring more particularly to the drawings, in which like numerals refer to like parts, my novel carton **10** might typically be constructed from plastic coated paper or cardboard for use as a container for milk or some other pourable liquid or dry material. Preferably made from a single piece of material, the carton **10** has four walls **11**, **12**, **13** and **14**, a pour spout **15** located at the corner defined by the walls **11** and **14**, and a handle **16** usable both for carrying and pouring. The handle **16** extends diagonally from the corner defined by the walls **12** and **13** toward the corner forming the pour spout **15**. The carton **10** may have either a square or rectangular cross-section. For illustrative purposes only, a carton with a square cross-section is shown in the drawings.

A blank **17** from which the carton **10** may be made is shown in FIG. 1. The blank **17** has a top section **18**, a wall section **19** and a bottom section **20**. A lateral crease **21** separates the top section **18** and the wall section **19**, a lateral crease **22** separates the wall section **19** and the bottom section **20**. The lateral creases **21** and **22** are substantially parallel and run the entire width of the blank **17**.

Four wall creases **22**, **24**, **25** and **26** divide the wall section **19** into an attachment flap **27***a* and the four walls **11**, **12**, **13** and **14**. The wall creases **23**, **24**, **25** and **26** are substantially parallel, and are substantially perpendicular to the lateral creases **21** and **22**. The middle wall crease **25** and the outer left wall crease **23** run the entire height of the blank **17**, while the inner left wall crease **24** and the right wall crease **26** run from the bottom of the blank **17** to the lateral crease **21**. A top crease **27** slightly inclined toward the outer left wall crease **23** runs from approximately the intersection of the inner left wall crease **24** and the lateral crease **21** to the top of the blank **17**. A similar top crease **28** slightly inclined toward the right edge **29** of the blank **17** runs from approximately the intersection of the lateral crease **21** and the right wall crease **26** to the top of the blank **17**. The middle wall crease **25**, the left outer wall crease **23** and the top creases **27** and **28** divide the top section **18** into four top panels **30**, **31**, **32** and **33**. The wall creases **23**, **24**, **25** and **26** divide the bottom section **20** into bottom flaps **34**, **35**, **36** and **37**.

The top panels **30** and **33**, which are substantially mirror images of each other, are positioned adjacent to each other when the carton **10** is assembled. The top panel **30** has a triangular section **38** and a handle flap **39**. The top panel **33** has a corresponding triangular section **40** and a corresponding handle flap **41**.

Both triangular sections **38** and **40** are approximately the same shape. One leg of the triangular section **38** is formed by the lateral crease **21**, the second leg is formed by the top crease **27**, and the third leg is formed by a crease **42** which separates the triangular section **38** and the handle flap **39**. One leg of the triangular section **40** is also formed by the lateral crease **21**, the second leg is formed by the top crease **28**, and the third leg is formed by a crease **42** which separates the triangular section **40** and the handle flap **41**.

The handle flaps **39** and **41** have corresponding finger openings **44**. Finger tabs **45** and **46** preferably project into the finger openings **44** to make gripping of the handle flaps **39** and **41** easier. The finger tabs **45** and **46** are foldable along creases **47** and **48** to provide a support

surface for the fingers. Two creases **49** and **50** extend from a common point on the crease **42** in the handle flap **39** slightly to the rear of the finger opening **44**. Corresponding creases **51** and **52** extend from a common point on the crease **42** in the handle flap **41** slightly to the rear of the finger opening **44**. These creases **49**, **50**, **51** and **52** facilitate the filling of my novel carton **10**, as will be described more fully as the description progresses.

Like the top panels **30** and **33**, the top panels **31** and **32** are adjacent each other in the assembled carton **10** and are substantially mirror images of each other. The top panel **31** is divided by inclined creases **53**, **54** and **55** into four generally wedge-shaped sections **56**, **57**, **58** and **59** which lie side by side like sectors of a circle. Similarly, the top panel **32** is divided by inclined creases **60**, **61** and **62** into four corresponding wedge-shaped sections **63**, **64**, **65** and **66**. The inclined creases **53**, **54** and **55** extend from the intersection of the wall crease **24** and the lateral crease **21** to the top of the blank **17**, while the inclined creases **60**, **61** and **62** extend from the intersection of the wall crease **26** and the lateral crease **21** to the top of the blank **17**.

Spout sections **59***a* and **66***a* project, respectively, from the corresponding wedge-shaped sections **59** and **66** to form the spout **15** for my improved carton **10**. The spout sections **59***a* and **66***a* are jointed at the middle wall crease **25**. Each of the wedge-shaped sections **59** and **66** has a portion of the lateral crease **21** as one of its sides. A protective lip **67** projects from each of the spout sections **59***a* and **66***a*. A perforated line **68** lying substantially parallel to the top of the lip **67** separates the lip **67** from the spout sections **59***a* and **66***a*, allowing the lip **67** to be easily detached from them. The spout section **59***a* is separated from the wedge-shaped section **59** by a spout crease **69***a* which runs from the left end **68***a* of the scored line **68** to the lateral crease **21**, crossing the middle wall crease **25** a suitable distance from the crease **21**. The spout section **66***a* is separated from the wedge-shaped section **66** by a corresponding spout crease **69***b* which runs from the right end **68***b* of the scored line **68** to the lateral crease **21**, intersecting the spout crease **69***a* approximately at the middle wall crease **25**.

The corresponding wedge-shaped folding sections **58** and **65** are located adjacent to the wedge-shaped sections **59** and **66**. In the assembled carton **10** the folding section **58** extends between the triangular section **38** and the wedge-shaped section **59**, while the folding section **65** extends between the triangular section **40** and the wedge-shaped section **66**. Substantially triangular sealing flaps **70** project from each of the folding sections **58** and **65**. The sealing flaps **70** are separated from the remainder of the folding sections **58** and **65** by the creases **71**. As shown in the drawings, it is preferable that the sealing flaps **70** should not extend to the lateral creases **55** and **62**, so that a space **70***a* is provided between each sealing flap **70** and the protective lip **67**. Such openings **70***a* facilitate folding of the folding sections **58** and **65** with respect to wedge-shaped sections **59** and **66** respectively, along creases **55** and **62**.

The remaining wedge-shaped sections are the connecting sections **56**, **57**, **63** and **64**. The vertex angles of each of the connecting sections **56**, **57**, **63** and **64** are substantially equal. Handle engaging tabs **72** project from the blunt end of the connecting sections **57** and **64**. Creases **74** separate the handle engaging tabs **72** from the remainder of the connecting sections **57** and **64**. Creases **74** preferably extend beyond the creases **54** and **61** separating connecting sections **57** and **58**, and **64** and **65**, respectively to further separate the handle engaging tabs **72** and the sealing flaps **70**, as shown. Small, approximately triangular areas **73**, preferably lie between creases **54** and **74**, and between creases **61** and **74**.

Looking at the bottom section **20** of blank **17** in FIG. 1, the inner flaps **34** and **36** are the first to be folded in assembling the bottom of the carton **10**. The outer bottom flaps **35** and **37** are folded over the inner flaps **34** and **36**. The outer flaps **35** and **37** extend from opposite walls of the assembled carton **10**, as do the inner flaps **34** and **36**.

The outer flaps **35** and **37** are approximately rectangular, and are sufficiently large to cover and seal the bottom of the carton **10**. Preferably, the outer corners **87** and **88** of the outer flap are beveled. The inner flap **34** has a pair of substantially congruent triangular portions **75** and **76**. The preferably identical inner flap **36** has a pair of corresponding triangular portions **77** and **78**.

The triangular portion **75** is outlined by the wall crease **23**, a folding crease **79** extending from the intersection of the wall crease **23** and the lateral crease **22**, and an edge **80** extending from the bottom end of the wall crease **23** to the point where the triangular portion **75** intersects the folding crease **79**. The triangular portion **76** is outlined by the wall crease **24**, a folding crease **81** extending from the intersection of the wall crease **24** and the lateral crease **22**, and an edge **82** extending from the bottom end of the wall crease **24** to the point where the triangular portion **76** intersects the folding crease **81**. The triangular portion **77** is outlined by the wall crease **25**, a folding crease **83** extending from the intersection of the wall crease **25** and the lateral crease **22**, and an edge **84** extending from the bottom end of the wall crease **25** to a point where the triangular portion **77** intersects the folding crease **83**. The triangular portion **78** is outlined by the wall crease **26**, a folding crease extending from the intersection of the wall crease **26** and the lateral crease **22**, and an edge **86** extending from the bottom end of the wall crease **26** to the point where the triangular portion **78** intersects the folding crease **85**.

Preferably the triangular portions **75**, **76**, **77** and **78** are isosceles, with edges **80**, **82**, **84** and **86** and the edges along the folding creases **79**, **81**, **83** and **85** being equal. As illustrated, the outer corners of the inner flap **34** adjacent the edges **80** and **82** are preferably cut away to define a tongue **89**. The outer corners of the inner flap **36** are similarly cut away to define a tongue **90**. The tongues **89** and **90** are sufficiently large to overlap and be secured to each other in the assembled carton **10**.

Assembly

The first step in the assembly of my carton **10** is to cut and crease a blank **17** of sheeting material as shown in FIG. 1. Next, the blank **17** is folded in half about the middle wall crease **25** to bring the left outer wall crease **23** and the right edge **29** together. The attachment flap **27***a* is then secured to the top panel **33**, the wall **13** and the bottom flap **37** along the right edge **29**, preferably on the inside of the carton **10**. If the sheeting material from which the blank **17** is cut is plastic coated paper or all plastic, the flap **27***a* and all other mating surfaces may be secured by heat sealing. If some other material is used, the flap **27***a* may be secured with glue or other similar conventional means. The blank **17** is then squared.

The manner in which the bottom flaps close the bottom of the carton **10** is best shown in FIG. 5. Together, the inner flaps **34** and **36** are folded inward toward each other. The folding occurs at the lateral crease **22**, and the folding creases **79**, **81**, **83** and **85**. As the inner flaps **34** and **36** are folded toward each other they pull the outer flaps **35** and **37** inward toward each other. The inwardly collapsing triangular portions **81** and **83** and outer flap **35**, define an envelope into which the free end of outer flap **37** is adapted to slide. Entry of the outer flap **37** into the envelope is facilitated by the beveled outer corners **87** and **88** of the outer flap **35**. The overlapping portions of the outer flaps **35** and **37**, the overlapping portions of the inner flaps **34** and **36**, and all other required surfaces are then appropriately sealed as indicated above.

The initial steps in assembling the top of the carton **10** are suggested by FIG. 6. First, the connecting flap **63** is folded about the inclined creases **28** and **60** over the con-

necting section **64**, thereby matching the top crease **28** and the inclined crease **61**. Similarly, the connecting section **56** is folded about the inclined creases **27** and **53** over the connecting section **57**, thereby matching the top crease **27** and the inclined crease **54**. Both of these foldings are accomplished substantially simultaneously by folding the triangular sections **38** and **40** toward each other. The triangular section **38** folds at the top crease **27** and the lateral crease **21**; the triangular section **40** folds at the top crease **28** and the lateral crease **21**. This folding laps the triangular section **38** over the now matching connecting sections **56** and **57**, and laps the triangular section **40** over the now matching connecting sections **63** and **64**. At this time the connecting section **56** is suitably sealed to connecting section **57** and to the underside of the triangular section **38**, and the connecting section **63** is sealed to connecting section **64** and to the underside of the triangular section **40**. The handle engaging tabs **72** are then sealed to the inside of the handle flaps **39** and **41** after which the top of the carton **10** appears substantially as shown in FIG. 7.

The carton **10** is most easily filled in the partially sealed condition illustrated in FIG. 7. A substantial opening to the carton **10** is exposed by spreading apart the handle flaps **39** and **41**. The spreading is made easy by the creases **49**, **50**, **51** and **52**. Those creases are located at the rear of the handle flaps **39** and **41**, just about where the top of the attachment flap **27***a* is attached to the inner surface of flap **41**. When spread apart, the handle flaps **39** and **41** fold outward at the creases **50** and **52**, and upward again at creases **49** and **51**. The opening at the spout **15** and between the spread handle flaps **39** and **41** is sufficiently large to permit rapid filling of the carton **10**.

After the carton **10** has been filled, sealing of the top of the carton **10** is completed. The handle flaps **39** and **41** are first pressed against each other to match the flaps **39** and **41** and the handle engaging tabs **72**. The tabs **72** and the matching portions of the handle flaps **39** and **41** are then suitably secured together in the manner indicated above.

The spout **15** and lip **67** are then sealed against the handle **16** in the position shown in FIG. 2 as follows: The folding sections **58** and **65** are folded about the inclined creases **55** and **62** and against the inner surface of the wedge-shaped sections **59** and **66**, respectively. The position of the carton **10** after such folding is substantially as shown in FIG. 3, except that the lip **67** is still attached to the spout **16**, rather than the handle flaps **39** and **41**, as shown. The folding sections **58** and **65** are of such size, and the handle flaps **39** and **41** are of such length along the creases **42** and **43** that the lower front corner **91** of the handle **16** presses the sealing flaps **70** against the spout **15** at approximately the intersection of the spout creases **69***a* and **69***b*. Thus, the triangular sections **38** and **40** are not parallel to the bottom of the sealed carton **10**, but are inclined slightly upward from lateral crease **21** to the intersection of spout creases **69***a* and **69***b*. The spout **15** and the sealing flaps **70**, which are folded and sealed against the inner surface of the spout **15** are now folded against and sealed to the handle **16** in the position shown in FIG. 2. The folding occurs along the spout creases **69***a* and **69***b*, and the creases **71**, **54** and **61** and **21**. The protective lip **67** detachably secured to the spout **15** is also sealed to the handle **16** as shown. If the carton **10** is properly sealed as described above, the seal will be hermetic.

The important function of the folding sections **58** and **65** in opening and closing the spout **15** may now be more fully described. The inclined creases **54** and **61** bordering the folding sections **58** and **65** are respectively pivotally secured to the inclined creases **27** and **28** bordering the triangular sections **38** and **40**. Inclined creases **55** and **62** likewise pivotally join the folding sections **58** and **65** to the wedge-shaped sections **59** and **66**, respectively. Thus, folding sections **58** and **65** in effect pivotally link the triangular sections **38** and **40** to the wedge-shaped sections **59** and **66**.

When the handle **16** is in its lower position shown in FIGS. 2 and 3, the inner surfaces of the folding sections **58** and **65** are folded against the inner surfaces of the wedge-shaped sections **59** and **66**, and the spout **15** is closed. When the handle **16** is raised to its upper position, shown in FIG. 4, the folding sections **58** and **65** are extended upwardly from the wedge-shaped sections **59** and **66**, thereby supporting the triangular sections **38** and **40** in an inclined position, and opening the spout **15**. When the handle **16** and folding sections **58** and **65** are moved back and forth between their upper and lower positions, folding occurs at the lateral crease **21**, the creases **42** and **43**, and the inclined creases **54**, **55**, **61** and **62**.

Use of my carton **10** is convenient and simple. The seal holding the spout **15** against the handle **16** is first broken. This is easily done by inserting the thumbs under the downwardly facing folding sections **58** and **65** and applying an upward pressure. As the folding sections **58** and **65** are moved upward by the pressure of the thumbs, the spout **15** and the sealing flaps **70** sealed thereto are pulled away from the handle **16** to the position of FIG. 3. As the spout **15** is pulled away from the handle **16**, it detaches itself from the protective lip **67** along the perforated line **68**, leaving the lip **67** secured to the handle **16**. To insure that the lip **67** does remain on the handle **16**, the seal between the lip **67** and the handle **16** must be stronger than the perforated connection between the lip **67** and the spout **15**. The protective lip **67** insures a sanitary spout by protecting the pouring lip of the spout **15** from dirt or other contamination prior to use.

Once the spout **15** is unsealed, the person pulls the handle **16** upwardly to its upward position thereby pulling the sealing flaps **70** away from the inside surfaces of the spout **15** and opening the spout **15** for pouring, as shown in FIG. 4. After pouring the desired amount, the person pushes down on the handle **16** to place the spout **15** in the closed position of FIG. 3. In that position the carton **10** will be closed and its contents protected.

The advantages of my novel carton **10** are now quite obvious. Its diagonal handle **16** may be used both for carrying and pouring. The corner-pour spout **15** is carefully designed to have an opening of limited size that reduces the possibility of spilling or over-pouring. Furthermore, its design utilizes the normal corner construction of the carton as an aid in pouring, thus eliminating a need for special spouts to be constructed on the sides of the carton as commonly required with prior carton construction. The design of the blank **17** is such that the blank **17** may be made of sheet plastic or other synthetic sheeting material, as well as coated or uncoated paper and cardboard.

A modified form of my invention having improved protective means for the pouring spout is shown in FIGS. 8–10. In this modified form of my invention, when the carton is in its initially sealed condition, all portions of the spout which come in contact with the product during the dispensing thereof are protected from dirt and contamination.

One of the primary differences in my modified form is in the construction of protective lip **67'** has a generally elliptical configuration and comprises an outer protector portion **67***a'* and an inner sealing portion **67***b'* which is detachably connected to spout sections **59***a'* and **66***a'* by a perforated score line **68'**. The crease **67***c'* divides lip **67'** into outer portion **67***a'* and inner portion **67***b'* and vertically extending crease **25'** divides it into right and left portions. Outer protector portion **67***a'* is substantially larger than inner sealing portion **67***b'* so that when the outer protector portion is folded about crease **67***c'* it will completely cover perforated score line **68'** and the upper portions of spout sections **59***a'* and **66***a'*. Protector portion **67***a'* is separated from sealing flaps **70'** by

cut lines 70*a'*. Cut lines 70*a'* also define concave locking edges 59*b'* and 66*b'* on spout sections 59*a'* and 66*a'*. Inner sealing portion 67*b'* has straight edges 67*d'*. Straight edges 67*d'* and concave locking edges 59*b'* and 66*b'* will be discussed more fully hereinafter in connection with the assembling and sealing of the carton.

It is understood that protective lip 67' is not intended to be limited to a generally elliptical shape but can take other suitable shapes as well.

Handle flaps 39' and 41' may also preferably have cut out portions 39*a'* and 41*a'* which are mirror images of each other. Flaps 39' and 41' have respective protrusions 39*b'* and 41*b'* which extend into cut out portions 39*a'* and 41*a'*, respectively. Protrusions 39*b'* and 41*b'* have upper edges 39*c'* and 41*c'* and lower edges 39*d'* and 41*d'*, respectively. Cut out portions 39*a'* and 41*a'* have edges 39*e'* and 41*e'*, respectively.

In my modified construction, as shown in FIG. 8, those portions of crease 21' defining the top edge of panels 11' and 14' are inclined to the horizontal so that when the carton is in its assembled and sealed condition the top edges of panels 11' and 14' will be in juxtaposition with creases 27' and 28', respectively.

The bottom of blank 17' is identical to the bottom of blank 17 shown in FIG. 1.

Modified assembly

The assembly of my modified carton 10' will now be discussed insofar as it differs from carton 10 shown in FIGS. 1–7.

The first step in the assembly of my modified carton 10' is, of course, to cut and crease a blank 17' of paperboard as shown in FIG. 8. Next, the outer protector portion 67*a'* of protective lip 67' is folded about crease 67*c'* to overlie the outside of inner sealing portion 67*b'* and these portions are then heat-sealed together. The blank 17' is then formed into a flat shell in the same manner as carton 10. The carton 10' is then ready to be shipped to the user as a flat shell.

To put the carton 10' into use, the user first squares the carton and forms and seals the bottom in a manner identical to that discussed in connection with carton 10.

The initial steps in assembling the top of carton 10' and filling it are also substantially identical to those steps discussed in connection with carton 10.

After the carton 10' has been filled, the sealing of the top is completed. The handle flaps 39' and 41' are first pressed against each other to match flaps 39' and 41' and the handle engaging tabs 72', and the tabs 72' and the matching portions of handle flaps 39' and 41' are heat-sealed together.

The spout and protective lip 67' are then sealed against the handle as follows: The folding sections 58' and 65' are folded about the inclined creases 55' and 62' and against the inner surface of wedge-shaped sections 59' and 66', respectively. When this fold has been completed the parallel and overlying creases 27' and 54', and 28' and 62' are in respective juxtaposition with those portions of crease 21' defining the inclined top edge of panels 11' and 14'. Also, creases 71' are in juxtaposition with creases 69*a'* and 69*b'*, respectively. The sealing flaps 70' are sealed to the inner surface of spout sections 59*a'* and 66*a'* in fluid-tight relation. The upstanding folding sections 58' and 65' and wedge-shaped sections 59' and 66' are then folded backwards about their respective creases causing the sealing flaps 70', spout sections 59*a'* and 66*a'*, and inner sealing portion 67*b'* of lip 67' to be brought into contact with handle 16'. As shown in FIG. 9, the sealing flaps 70' and spout sections 59*a'* and 66*a'* are brought into such a position that the concave locking edges 59*b'* and 66*b'* engage the lower locking edges 39*d'* and 41*d'* of protrusions 39*b'* and 41*b'*, respectively. The sealing lip 67' is brought backwards to such a position that the flat edges 67*d'* of inner sealing portion 67*b'* engage edges 39*c'* and 41*c'* of protrusions 39*b'* and 41*b'*. The rear ends of the common edge defined by crease 67*c'* between inner sealing portion 67*b'* and outer protective portion 67*a'* are engaged by edges 39*e'* and 41*e'* of cut out portions 39*a'* and 41*a'*. Heat and pressure are then applied to the spout sections 59*a'* and 66*a'* and to the protective lip 67', thus, sealing the sealing flaps 70', spout sections 59*a'* and 66*a'* and the inner sealing portion 67*b'* of lip 67' to the handle 16. The inner sealing portion 67*b'* of lip 67' is also sealed to itself in the area of cut outs 39*a'* and 41*a'*, thus providing a strong attachment for protective lip 67'. The carton is now hermetically sealed against leakage.

It is readily apparent that in its closed and sealed condition the outer protector portion 67*a'* of lip 67' completely covers perforated score line 68' which defines the pouring edge of the spout 15' as well as all other portions of the spout which will come in contact with the product during the dispensing thereof. The spout is, therefore, protected from dirt and contamination.

The modified carton 10' may be opened, used, and reclosed in substantially the same manner discussed hereinbefore in connection with carton 10.

It is understood that my invention is not confined to the particular construction and arrangement of parts illustrated and described, but embraces all such modified forms thereof as come within the scope of the following claims.

I claim:

1. A carton for flowable materials comprising:
(a) a bottom,
(b) a first, a second, a third and a fourth wall, said first and fourth walls being substantially parallel, and said second and third walls being substantially parallel,
(c) first and second wedge-shaped sections projecting upwardly from said first and second walls, respectively,
(d) a pair of spout sections projecting from said wedge-shaped sections and being joined to define a spout extending from the corner of said carton formed by said first and second walls,
(e) a first folding section pivotally connected to said first wedge-shaped section and a second folding section pivotally connected to said second wedge-shaped section,
(f) a first triangular section pivotally connected to the top of said third wall and to said first folding section, and a second triangular section pivotally connected to the top of said fourth wall and to said second folding section, said first and second triangular sections having mating diagonal edges,
(g) corresponding handle flaps projecting from said diagonal edges of said triangular sections, said handle flaps being secured to each other to form a handle for said carton,
(h) said handle and said triangular sections having an upper position wherein said folding sections extend upwardly from said wedge-shaped sections to open said spout and a lower position wherein said triangular sections cover the top of said carton and said folding sections are folded downwardly against said wedge-shaped sections to substantially close said spout, and
(i) a protective lip having an inner portion detachably secured along a perforated score line to said spout sections and an outer portion overlying said perforated score line, said protective lip being sealed to said handle.

2. A single-piece blank for a four-walled carton, said blank comprising:
(a) a top section, a bottom section and a wall section,
(b) a first crease dividing said top section from said wall section, and a second crease dividing said wall section from said bottom section and being substantially parallel to said first crease, said first and second creases extending for the full length of said blank,

(c) a left wall crease, a middle wall crease and a right wall crease dividing said wall section into four walls, said wall creases being substantially perpendicular to said first crease and extending for the full height of said blank,

(d) said three wall creases dividing said bottom section into a first, a second, a third and a fourth bottom flap adapted to form the bottom of the carton, and dividing said top section ino a first, a second, a third and a fourth top panel adapted to form the top of the carton, said first and second top panels and said third and fourth top panels to be adjacent in the completed carton,

(e) said third and fourth top panels having corresponding triangular sections and handle flaps,

(f) each of said triangular sections having one side formed by said first crease, a second side formed by a wall crease, and a diagonal side,

(g) a pair of corresponding handle flaps extending from said diagonal sides in pivotable relation and being adapted to be secured together to form a handle for the completed carton,

(h) said first and second top panels each being divided by three inclined creases into corresponding first, second, third and fourth wedge-shaped sections, each of said first wedge-shaped sections having one side formed by a wall crease forming one side of a triangular section, and each of said fourth wedge-shaped sections having one side formed by a part of said first crease,

(i) spout sections projecting from said fourth wedge-shaped sections of said first and second top panels and being secured together along the middle wall crease separating said first and second walls to define a spout for the completed carton,

(j) said third wedge-shaped sections being folding sections adapted to movably link said fourth wedge-shaped sections and said triangular sections,

(k) said first and second wedge-shaped sections being connecting sections adapted to be folded together and to be secured to said triangular sections to connect said third wedge-shaped sections and said triangular sections in abutting relation,

(l) a handle engaging tab pivotally secured to each of said second wedge-shaped sections and being adapted to be secured to said handle flaps,

(m) a sealing flap pivotally secured to each of said third wedg-shaped sections and being adapted to be secured to said adjacent spout sections and said handle flaps,

(n) a protective lip having an inner portion detachably secured along a perforated score line to said spout sections and an outer portion adapted to overlie said perforated score line, said protective lip being adapted to be sealed to said handle flap,

(o) said spout sections and said sealing flaps being adapted to define a spout opening for said completed carton.

3. A blank as specified in claim **2** wherein said handle flaps have cut-out portions therein for permitting said protective lip to be sealed to itself in the area of said cut-out portions.

4. The blank as specified in claim **2** wherein said handle flaps have cut-out portions therein adapted to receive a portion of said spout sections and permitting said protective lip to be sealed to itself in the area of said cut-out portions.

References Cited by the Examiner

UNITED STATES PATENTS

Re. 25,532	3/1964	Asman	229—17
2,810,508	10/1957	Braunstein	229—17 X
2,900,124	8/1959	Leone	229—52
2,916,195	12/1959	Gatward	229—52
3,147,904	9/1964	Larson	229—17

JOSEPH R. LECLAIR, *Primary Examiner.*