Oct. 9, 1962 S. M. SILVER 3,057,533

CARTON WITH SPOUT

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FIG. 1

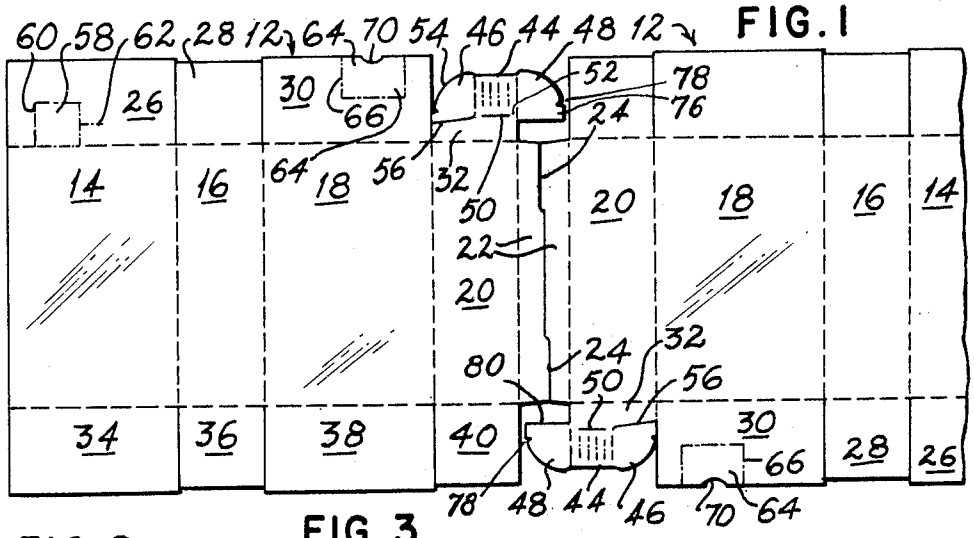


FIG. 2

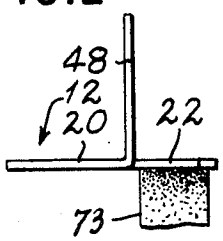


FIG. 3

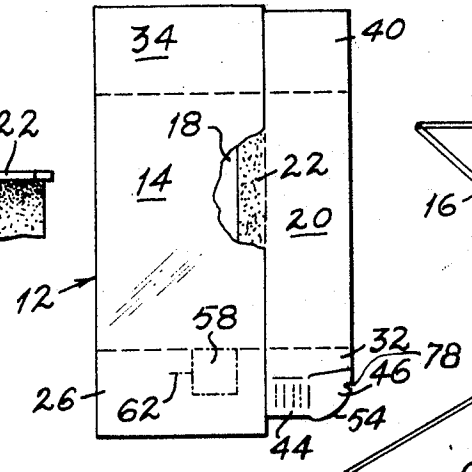


FIG. 4

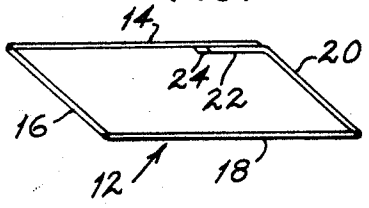


FIG. 5

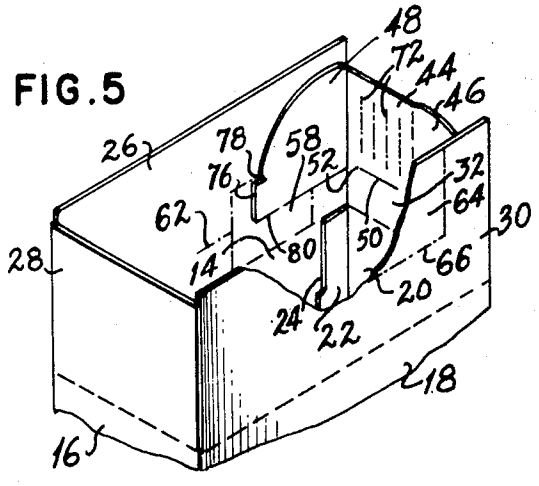
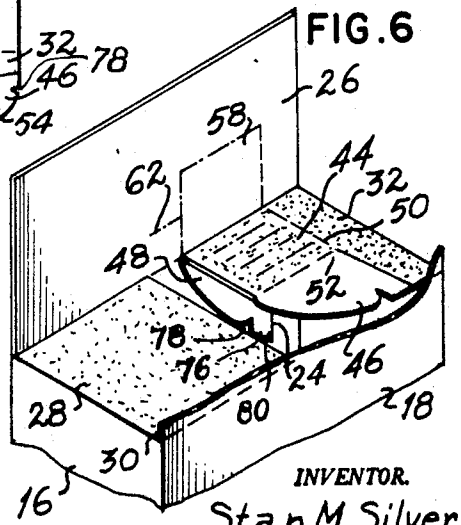


FIG. 6



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FIG. 7

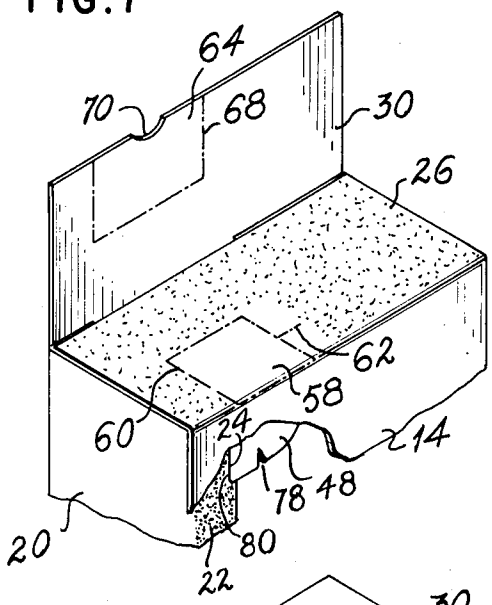


FIG. 8

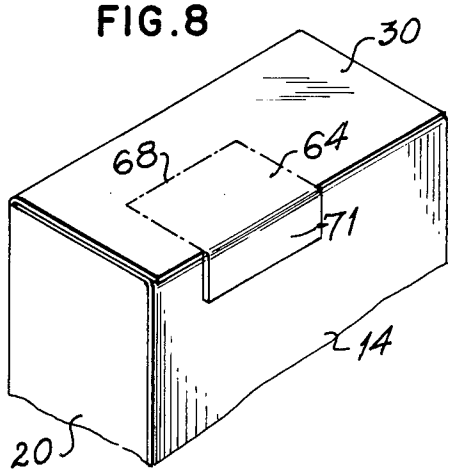
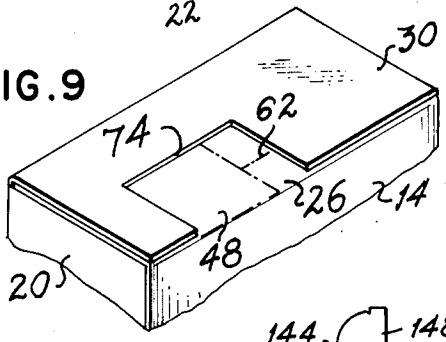


FIG. 9



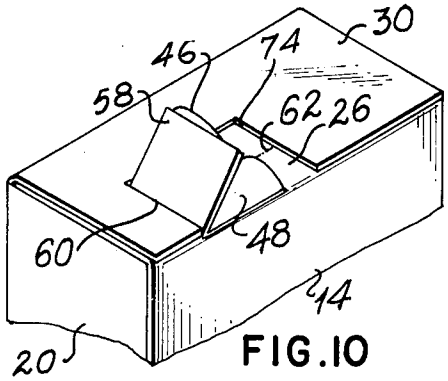


FIG. 10

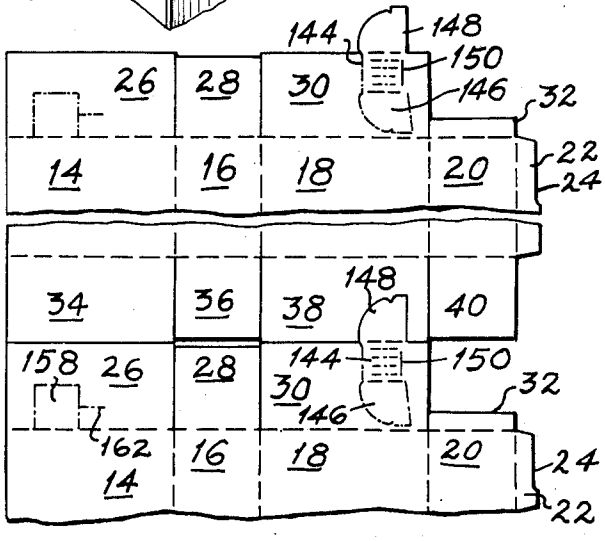


FIG. 11

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United States Patent Office

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CARTON WITH SPOUT

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6 Claims. (Cl. 229—17)

The present invention relates to a dispensing carton, or the like, for ready flowing solids, such as powdered, granular or flaky solids; particularly to such dispensing carton having a pouring spout formed integrally with the cardboard blank from which it is set up.

To be commercially practical and desirable, a dispensing carton of the character described should meet certain standards and satisfy certain requirements. Thus, such carton should be economical in the use of cardboard, and the blank from which it is formed should consume no more cardboard than a conventional, spoutless carton of the same capacity. Also, the carton should be suitable for gluing, folding, setting up, sealing and filling on any of the several conventional straight-line gluing and other apparatus used for the same purposes in the production, setting up and filling of standard, spoutless cartons, without need for materially modifying or altering such apparatus. Additionally, the spout formed on such carton should be sufficiently strong and rigid so as not to buckle, fold or crease during repeated use.

While numerous dispensing cartons with integral spouts have heretofore been devised, none of them has met or satisfied all of the foregoing standards and requirements. It is, therefore, the general object of the present invention to provide a dispensing carton of the character described having an integral pouring spout, which will meet and satisfy all of the principal standards and requirements set forth above, and will possess other characteristics and features to make it practical, desirable and advantageous for commercial and general use.

It is, thus, one object of the present invention to provide a dispensing carton having an integral pouring spout, of the character described, which consumes no more cardboard than a standard, spoutless carton of like capacity.

It is another object of the present invention to provide a dispensing carton of the character described whose blank may be easily and readily die-cut from cardboard rolls with a minimum of waste of raw material.

It is also an object of the present invention to provide a dispensing carton of the character described whose blank may be glued, folded, set up, filled and sealed on any of the several types of conventional apparatus used for similar purposes with the blanks of spoutless cartons of the same general type.

It is still another object of the present invention to provide a dispensing carton of the character described having a pouring spout that is strong and rigid and will not readily buckle, fold or crease during repeated use and will readily and safely last the life of the carton.

It is additonally an object of the present invention to provide a dispensing carton of the character described which is fully glued and sealed around the spout thereof against leakage.

It is a further object of the present invention to provide a dispensing carton of the character described which may be easily and conveniently used and whose pouring spout may be repeatedly opened and closed, from first to last, without any difficulty or fumbling.

The foregoing and other objects and advantages of the dispensing carton of the present invention will become readily apparent to those skilled in the art from the several embodiments thereof shown in the accompanying drawing, and from the description following. It is to be understood, however, that such embodiments are shown by way of illustration only, to make the principles and practice of the invention more readily comprehensible, and without any intent of limiting the invention to the specific details therein shown.

In the drawings:

FIG. 1 is a plan view of a pair of laterally adjacent blanks, of one embodiment, for the production of the carton of the present invention; shown with their lined face up, in position as cut from a cardboard roll or sheet;

FIG. 2 is a fragmentary edge view of one of the blanks of FIG. 1, lined face down; more or less diagrammatically indicating continuous, untimed, straight-line application of glue to its end gluing tab, for a first folding and gluing step thereof on one type of conventional folding and gluing apparatus;

FIG. 3 is a plan view of the blank of FIG. 1 in glued and folded flat position;

FIG. 4 is a bottom edge view of the glued and folded blank of FIG. 3; shown partly opened for setting up;

FIG. 5 is a fragmentary, enlarged perspective view, showing the top portion of the glued and folded blank of FIG. 3, fully opened; partly broken away to show the arrangement of the spout forming portions of the blank;

FIG. 6 is a view similar to that of FIG. 5, showing the opened glued blank after a first step in the sealing of the top thereof;

FIG. 7 is a view similar to that of FIG. 5, but at an angle of 180° thereto; showing the glued blank after a second carton top sealing step;

FIG. 8 is a view similar to that of FIG. 7, showing the carton top fully sealed; modified to provide a spout-baring aid for use in an overwrap package;

FIG. 9 is a view similar to that of FIG. 8, after a first step in opening the pouring spout;

FIG. 10 is a view similar to that of FIG. 8, with the pouring spout fully opened; and

FIG. 11 is a plan view of a vertically adjacent pair of another embodiment of a blank for the carton of the present invention; shown as die cut from a cardboard roll or sheet, with one of the blanks foreshortened and the other in fragmentary form.

Cartons of the same general type to which the present invention relates have top and bottom walls formed of top and bottom flaps on each of the upright walls thereof that are inwardly folded and adhesively secured over one another. Generally stated, the present invention contemplates the provision of a pouring spout for such carton, in the top wall thereof, that is disposed alongside part of one edge of the top wall of the carton and in spaced relation to the three other edges thereof, and is hinged at right angles to said first edge, and whose floor structure incorporates portions of two superposed wall flaps, to thereby rigidify and reinforce the spout floor or bottom against ready buckling and creasing. This arrangement is effected by forming one of the spout side walls or wings and one layer of its bottom wall from the innermost of the top wall forming flaps and its other side wall or wing from an otherwise waste portion of cardboard between carton blanks, as shown in FIG. 11; thereby avoiding the use of any more than the standard amount of cardboard required for similar, spoutless cartons.

Referring now, in greater details, to the accompanying drawings, and with particular reference to FIGS. 1 and 10, thereof, the same show a carton formed of a cardboard blank, generally designated as **12**, of generally conventional shape and formation; comprising a first side wall, **14**, at one terminal thereof, an end wall, **16**, a second side wall, **18**, and a second end wall, **20**, at its other terminal, formed with a gluing tab extension, **22**, along its outer upright edge, substantially the height thereof, and formed with a narrow cut-away, **24**, extending longi-

tudinally along its upper edge portion, for a purpose which will be made clear.

The side and end walls **14**, **16**, **18** and **20** are formed with inwardly foldable, top-wall forming flaps, **26**, **28**, **30** and **32**, respectively, and with bottom-wall forming flaps, **34**, **36**, **38** and **40**, respectively, all defined from the respective walls by scored fold lines, and separated from one another by cut lines, in the conventional manner; with the side wall flaps **26**, **30**, **34** and **38**, being preferably of a height equal to the width of an end wall, **16** and **20**. In forming the top wall of the carton, after the blank is folded and glued by the tab **22** and set up in rectangular shape, the top end wall flaps **28** and **32** are first folded in; the top side wall flap **26** folded over them and glued thereto, and the top side wall flap **30** folded over the flap **26** and glued thereto.

The spout of the carton, which is of conventional shape, comprises a floor panel, **44**, and a pair of integral, roughly and approximately quadrant-shaped side-wall forming wings, **46** and **48**, respectively, foldably connected to the side edges of the panel **44** and defined therefrom by appropriate scored fold lines. In the embodiment of FIGS. 1 to 10, the spout floor panel **44** is formed at the upper, outer corner of the terminal top wall flap **32**, with its upper edge preferably comprising the upper edge of the flap and with its bottom or hinge edge defined by a cut line, **50**, which is spaced from the flap bottom and which is interrupted at its ends or in the center to provide preferably two or more hinge connections, **52**. One of the spout wings, as **46**, is cut from the portion of the flap **32** laterally adjacent to the floor panel **44**, by the cured cut line forming the outer curved edge, **54**, and the cut line, **56**, defining the inner edge thereof. Preferably, the cut line **56** defines an angle of more than 90° with the adjacent fold line connecting it to the spout floor **44**, to provide a margin to insure against complete withdrawal of the wing from the carton when the spout is fully opened.

The other spout wing **48** extends laterally from the floor panel **44** thereof, in overhanging relation to the gluing tab **22** and preferably extends slightly below the panel **44**, similarly to provide a margin to avoid complete withdrawal of the wing from the carton when the spout is opened to its full extent.

In order to eliminate waste of cardboard material in die-cutting blanks **12** from a continuous wide strip of cardboard, the spout **42** is of such diamensions and proportions that the radius of its quadrant wings or the bottom edges thereof does not exceed twice the width of a gluing tab **22**, and laterally adjacent blanks cut from the cardboard sheet or roll are cut in inverted relation to one another, with their gluing tabs **22** contiguous and abutting, as shown in FIG. 1, so as to provide a cardboard area equal to twice the width of a gluing strip adjacent the outer side edge of each top wall flap **32**, from which the wing **48** is die cut; which cardboard area would, normally, in a spoutless carton, be discarded as waste.

To overlie the spout floor **44** and serve as a reinforcement therefor, there is provided in the top wall flap **26**, that immediately overlies the spout forming flap **32**, a rectangular section or area, **58**, of substantially equal or slightly larger dimensions than spout floor **44**, whose edge that co-incides with the hinge edge of the spout floor **44** is a scored fold line, **60**, and whose other three edges, one of which co-incides with part of the fold line separating panel **26** from wall **14**, comprise tear away lines. The fold line **60** is situated at a distance from the outer edge of the flap **26** substantially equal to the distance of the cut line **50** from the bottom of panel **32**. A short tear line, **62**, normal to the inner edge of the area **58** at substantially its center, is formed in the flap **26**, for purposes which will hereafter be made clear.

To expose the spout **42** to the exterior of the carton through the outermost top flap **30**, there is provided in the latter a tear away area or section, **64**, in position to overlie the section **58** of flap **26** when the top wall is formed.

Such tear away flap section **64** is of rectangular shape and of a size preferably equal in width to the width of the section **58** of flap **26** and of a length encompassing at least the section **58** and the tear line **62** normal thereto. Such section **64** will have one longitudinal edge co-extensive with the edge of the flap **30** and at least the two opposed of its other three edges defined by a tear-away line, **68**. The fourth edge of section **64**, parallel to the free edge thereof, may be either a tear-away line or a scored fold line, as may be desired. The free edge of the section **64** may be provided with an arcuate notch, **70**, to facilitate the tearing away thereof, as shown in FIGS. 1 to 7, of the drawing; or with a downwardly foldable tab extension, **71**, which depends in unglued state alongside of the adjacent side wall **14**, as shown in FIG. 8, for use in an overwrap package, as a starting point for tearing the overwrap along the edges thereof, as well as to facilitate the tearing away of section **64**. Such extension **71** may be cut from the bottom wall flap **30** of a vertically adjacent blank, without affecting the utility of the latter, thereby avoiding any excess use of cardboard for the purpose.

The carton of the invention is formed from the blank **12** as follows:

As a first step, in forming the carton, the wing **48** may be upset in the direction of the unlined side of the blank and glue is applied to the lined side of the gluing tab **22**, as by the gluing wheel **73**, as more or less diagrammatically illustrated in FIG. 2. Both of the foregoing steps may readily be accomplished on any conventional apparatus, at normal operating speed. Thereafter, end wall **20** is folded over on the adjacent side wall **18**, and side wall **14** is folded over the adjacent end wall **16**, with its edge portion overlying the glue-coated tab **22**, to which it is secured. The thus glued and flat-folded blank may be stored and shipped in this form.

In sealing the carton top, in preparation for filling, which may be done on any of the conventional setting up and sealing apparatus in use, the folded flat blank may be squared, as shown in FIGS. 3 and 5, and set into a three-sided pocket of a constant motion type filler apparatus, or squared and mounted over a mandrel of a mandrel type sealing apparatus; the following procedure being substantially the same in either case.

Top wall flaps **28** and **32** are first inwardly folded. This automatically moves wing **48** into the interior of the carton, against wall **14**, its inner edge abutting the edge of cut-out **24**. Glue is then applied to the lined, outwardly disposed surface of the flaps **28** and **32**; excepting to the surface of spout wing **46**, which is left uncoated. This may be effected on any one of the types of timed pattern gluing apparatus. Preferably, and for the purposes of insuring lamination, the surface of spout floor **44** is provided with a plurality of glue pockets, **72**, in the form of perforations or depressions; all as illustrated in FIG. 6 of the drawings.

Following the glue-coating of inwardly-folded flaps **28** and **32**, flap **26** is folded thereover and secured to the glue-coated areas thereof, including the special adhesion of section **58** of flap **26** to the spout floor **44**. The outer, lined surface of flap **26** is then glue coated; except for the rectangular area encompassing the section **58** and the tear line **62**, which is left uncoated, as indicated in FIG. 7. The flap **30** is then folded over and secured to the glue coated surface area of flap **26**, to thereby seal the carton top. It will be seen that wing **46** is free from adhesive connection to the overlying flap **26** and that the rectangular section **64** of flap **30** is free from adhesion to the underlying portion of flap **26**.

To use the carton for dispensing through the spout, the section **64** of the flap **30** is pried open by the user's finger, by engagement at the notch **70**, or by engagement of tab **71**, as the case may be, and torn away along its defining tear line **66**, to provide an opening **74** that exposes the area which includes the spout floor reinforcing section **68**

and the adjacent tear line **62**. Pressure is then applied, by a finger, over the tear line **62**, sufficient to break the same and to depress the adjacent edge portions, without breaking them. This will expose the lead edge of the spout floor **44** and of the reinforcing section **58** secured thereover, and will facilitate the engagement of the spout floor for lifting and upending the same. Such lifting movement will break the tear lines surrounding section **58** on the three sides thereof and will upset wing **46** against the adjacent edge of the opening **74** as the spout is upended into operating position on the hinges **52** and scored fold line **60** of the spout floor **44** and reinforcing section **58**, respectively.

It will be clear that, because of the inherent resilience of the blank forming cardboard, the edge portions of the tear line **62** will rebound into substantially their initial position, to close the slot formed by the broken tear line **62**. It will also be clear that this operation may be repeated every time the spout is opened without permanent distortion of the edge portions of such cut line **62**.

If desired, means may be provided for preventing complete withdrawal of the spout wings through the opening **74**, as the spout is upended, and for locking the spout wings in position. Such means may comprise, respectively, the relatively slight extension, **76** on the inner end of the spout wing **46**, past the line **50** and the notches **78**, on the arcuate edges **54** of the wings **46** and **48**, which lock over the edges of the opening in flap **26** that is left by the upending of the spout.

Overbalanced inward movement of the spout is prevented by the abutment of the inner edge, **80**, of the wing **40** against the edge of the cut-out portion **24** of gluing tab **22**, when the spout floor **44** is level with the top wall, in the closed position of the spout, such cut-out being provided for the inner extension of wing **48** past the hinge line **50**, as seen in FIG. 6.

FIG. 11 of the drawing illustrates a modified form of blank for forming the dispensing carton of the invention. In this embodiment, the spout is shown to be integral with the flap **30** of the side wall **18**, instead of the flap **32** of end wall **20**. The end wall flap **32** is shortened, so as to have no portion thereof underlie the spout. A side edge of the spout floor, **144**, is defined alongside the free, upper edge of the flap **30**, its hinge line, **150**, being perpendicular to such edge and spaced from the edge of the flap contiguous to the edge of flap **32** a distance equal to the height of the latter. One of the spout wings, **146**, is cut out from the floor forming flap **30** and the other, **148**, forms a vertical extension thereof, alongside of the spout floor **144**.

In the embodiment of FIG. 11, the blanks are die-cut in corresponding orientation, in continuous longitudinal order, with the spout wing extension, **148**, of one blank being cut out from the bottom flap **38** of the corresponding side wall **18**, of the blank immediately above. Such provision for the wings **148** does not affect the utility of the bottom flap **38** and avoids the utilization of any cardboard in excess of that required for a similar, spoutless carton blank.

In the embodiment of FIG. 11, the reinforcing tab, **158**, for the spout floor **144** and the tear line, **162**, associated therewith, are formed in the top wall flap **26**, as in the embodiments of FIGS. 1 to 10, inclusive. However, in forming the top wall of the carton, flap **30** is infolded before flap **26**, and is secured to flaps **28** and **32**, and flap **26** is infolded on top of flap **30**, so that section **158** and tear line **62** are directly exposed at the top of the carton, thereby eliminating the need for any tear away section such as **64**.

This completes the description of the dispensing carton of the present invention, the blanks from which it may be formed and the methods by which it may be set up and sealed. It will be clearly apparent from the foregoing that such carton is completely practical from the point of view of the carton manufacturer and packer by

reason of its economy in the use of cardboard and its adaptability for folding, sealing, setting up and filling on any of the various types of apparatus available for the purpose. It will also be apparent that such carton is highly desirable for the consumer, because of the ease and convenience with which the pouring spout thereof may be manipulated and the sturdiness and durability of the spout.

It will be further apparent that numerous modifications and variations in the carton of the invention, the blank from which it is formed, and the methods by which it is set up and filled may be made by any one skilled in the art, in accordance with the principles of the invention hereinabove set forth, and without the exercise of any inventive ingenuity. I desire, therefore, to be protected for any and all such modifications and variations that may be made within the spirit of the present invention and scope of the claims hereto appended.

What I claim is:

1. A carton comprising two pairs of upright walls, one wall of one of said pairs of upright walls having a gluing tab along its longitudinal edge engaging the inner face of the marginal edge portion of one wall of the other of said pairs of upright walls, and a closure for said carton comprising flap extensions on said upright walls hinged to said upright walls at their upper edges and inwardly folded over and secured to one another, a pouring spout formed in said closure and integral therewith said pouring spout disposed along the edge of said one wall of said other pair of upright walls in spaced relation to the edges of the other three of said upright walls, said pouring spout including a portion defined in a flap extension immediately facing the interior of the carton and connected to said extension on a hinge line at substantially right angles to the edge of said one wall of said other pair of upright walls and an approximately quadrant-shaped wing portion integral with said first spout portion and forming a lateral extension of said first portion said quadrant wing portion having its edge facing said one wall of said first pair of upright walls spaced from said last named wall a distance equal to the width of said gluing tab adjacent said closure and adapted to contact the edge of said gluing tab when said spout is in closed position, said wing portion having a sliding contact wth said one wall of said other pair of upright walls when said spout is moved to open and to closed positions.

2. The carton of claim 1, wherein said first spout portion includes a second quadrant-shaped wing portion foldably integral therewith along its edge opposed to said first quadrant portion and wherein a flap extension overlying the flap extension having said first spout portion formed therein is provided with a tear-away portion defining an opening in register with said first spout portion said second quadrant wing portion having a sliding contact with an edge of said opening when said spout is moved to open and to closed positions.

3. The carton of claim 1, wherein said pouring spout is formed on the flap of the upright wall having said gluing tap.

4. The carton of claim 1, wherein said pouring spout is formed on the flap of the wall adjacent the wall having said gluing tab.

5. The carton of claim 1, wherein a tearaway tongue is provided in the flap overlying the flap having said first spout portion formed therein, in register with said first spout portion and adhesively secured thereto, said tongue hinged to the flap thereof along a line substantially in register with the hinge line of said first spout portion.

6. The carton of claim 2 wherein a third flap extension is interposed intermediate said two flap extensions, said intermediate extension having a tear-away tongue provided therein in register with said first spout portion, said tongue hinged to said intermediate flap along the

lines substantially in register with the hinged line of said first spout portion and movable therewith.

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