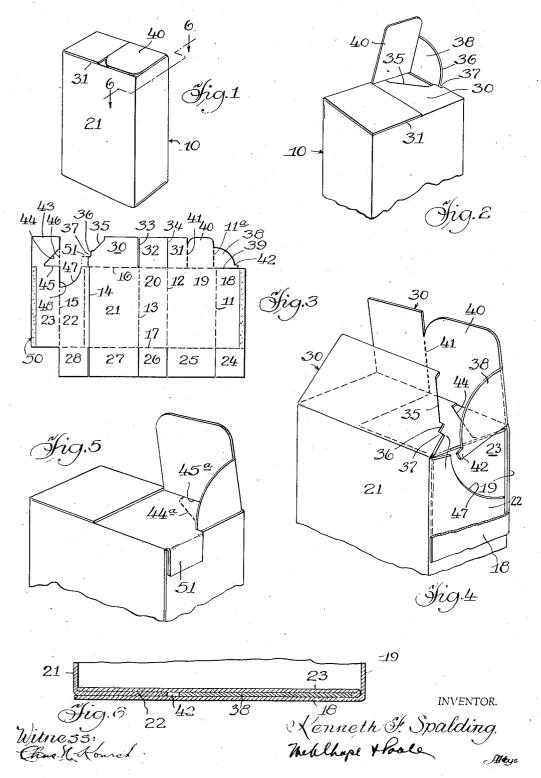
POUR SPOUT CARTON

Filed June 4, 1942



Nov. 14, 1944.

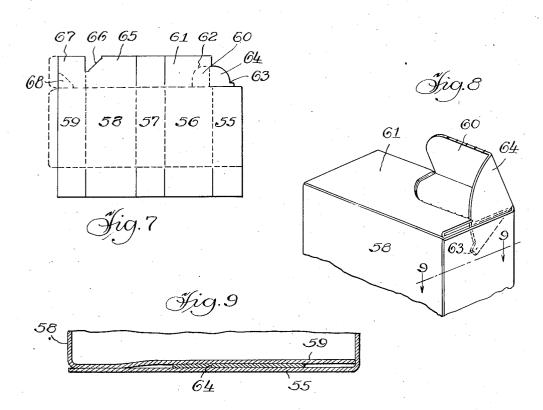
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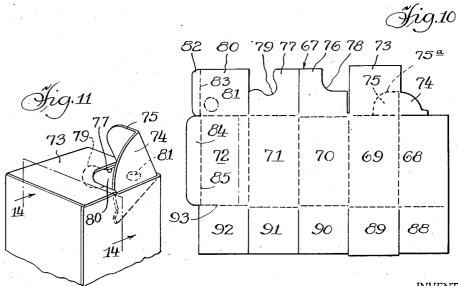
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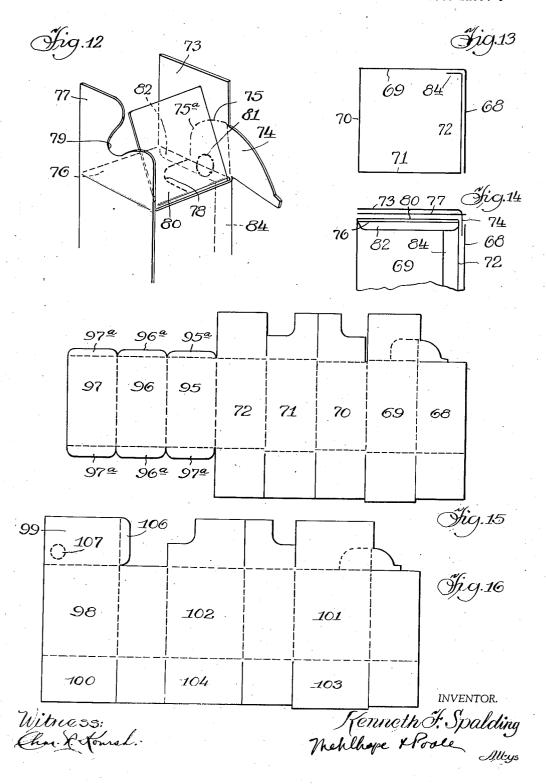
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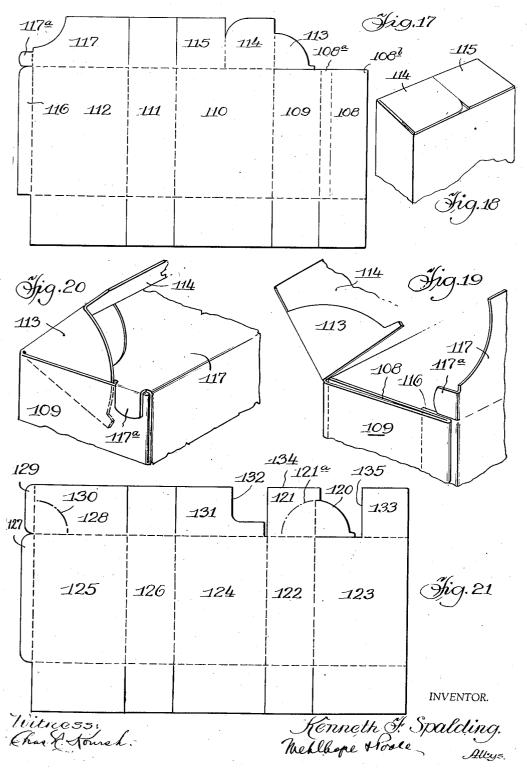
POUR SPOUT CARTON

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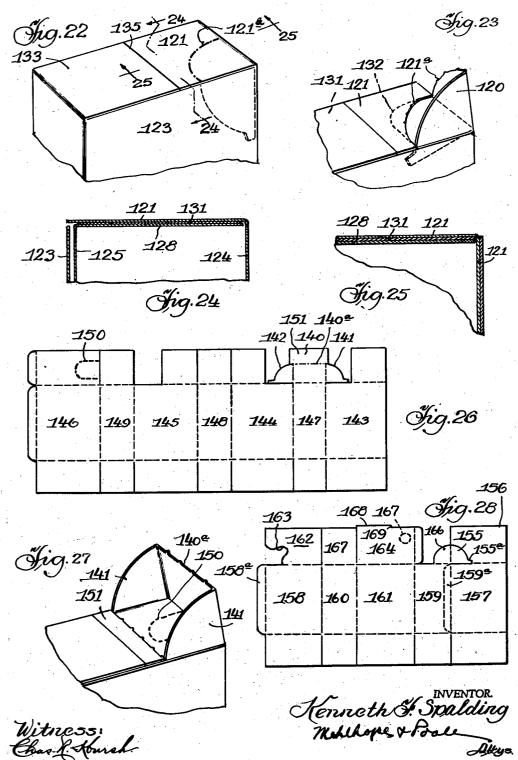
POUR SPOUT CARTON

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POUR SPOUT CARTON

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## UNITED STATES PATENT OFFICE

2,362,942

## POUR SPOUT CARTON

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Application June 4, 1942, Serial No. 445,730

3 Claims. (Cl. 229—17)

This invention relates to improvements in cartons or containers of a type folded from a blank and arranged to include a closure at one end thereof adapted to form a pour spout. My invention is directed to an improved arrangement of the pour spout wherein the latter is hanged along one edge of the carton and has a right angled wing portion slidably contained in a pocket formed between adjacent inner and outer wall portions of the carton, so as to seal 10 the carton against ingress of dirt or excessive moisture and leakage of contents from the carton at this point.

More specifically, my invention constitutes an improvement over the type of pour spout carton 15 disclosed in my prior Patent No. 2,095,720 issued Oct. 12, 1937, wherein the pocket for receiving the pour spout is formed in part by an adjacent portion or portions of an end flap forming part of the carton blank. Although satisfac- 20 tory for some purposes, prior forms of pour spout cartons, including those disclosed in my prior patent mentioned above, are more or less complicated in design, and usually require extreme care in folding so that they cannot be readily 25 partially open position. formed and sealed by machine and particularly Fig. 9 is an enlarged they are unable to provide a sufficiently tight seal against leakage from within when used as containers for fine powdery substances.

In carrying out my invention I provide a pre- 30 formed blank designed so that when folded and sealed to form the carton the pour spout forms an integral sealed part thereof which may be opened by breaking the connection along certain partially cut lines of severance and wherein one 35 the pour spout in partially folded position. of the wings of the pour spout is slidably contained in a pocket which is formed between two side wall portions of the blank rather than an end flap thereof, and wherein the two pocketforming side wall portions provide a complete and 40 effective seal against leakage even after the pour spout has been severed for opening.

I also provide improved folding and sealing arrangements which eliminate much of the hand folding methods necessary with previous forms of 45 cartons of similar character.

Other features and advantages of my invention will appear from time to time as the following description proceeds.

The invention may best be understood by 60 reference to the accompanying drawings, in

Fig. 1 is a perspective view of a completed carton in fully sealed condition, constructed in accordance with my invention.

Fig. 2 is a perspective view of the carton shown in Fig. 1, taken from a different angle and with the pour spout in open position.

Fig. 3 shows the blank used for forming the carton shown in the preceding figures. form of carton is hereinafter referred to as form A.

Fig. 4 is a perspective view of a carton shown in the preceding figures drawn to a somewhat larger scale, with one of the side walls partially broken away and showing the end flaps in partially folded position.

Fig. 5 is & perspective view showing a carton which may be made from a slight modification of the blank shown in Fig. 3.

Fig. 6 is an enlarged detail section taken on line 6-6 of Fig. 1.

Fig. 7 shows a modified form of blank for forming a carton somewhat similar to that shown in the preceding figures, but wherein one less side wall is employed. This modification is hereinafter referred to as form B.

Fig. 8 is a detail perspective view of one end of the carton form B showing the pour spout in

Fig. 9 is an enlarged detail section taken on line 9-9 of Fig. 8.

Fig. 10 shows a blank for a third modified form of carton hereinafter referred to as form C.

Fig. 11 is a detail perspective view of the top of the carton form C showing the pour spout in partially open position.

Fig. 12 is a detail perspective view of the carton form C showing the end flaps which form

Fig. 13 is a diagrammatic horizontal section of the carton form C showing the arrangement for forming the side pocket for the oour spout wing.

Fig. 14 is a diagrammatic vertical section taken on line 14—14 of Fig. 11 to indicate the arrangement of the end flaps and side walls when the carton is in fully sealed condition.

Fig. 15 shows a blank for forming a modified form of carton somewhat similar to that shown in Figs. 10 to 14, but provided with a plurality of additional inner side walls. This modification is hereinafter referred to as form D.

Fig. 16 shows a blank for another modified form somewhat similar to the form of carton shown in Figs. 10 to 14, but wherein the side walls are of different widths. This form is hereinafter referred to as form E.

56 Fig. 17 shows a blank for forming another

modification of my invention hereinafter referred to as form F.

Fig. 13 is a detail perspective view of the upper end of the carton form F.

Fig. 19 is an enlarged detail perspective view showing the end flaps of form F in partially folded position.

Fig. 20 is a detail perspective view somewhat similar to Fig. 19, but showing the end flaps in fully sealed position but with the pour spout in 10 partially open position.

Fig. 21 shows a blank for still another modification hereinafter referred to as form G.

Fig. 22 is a detail perspective view of the end of the carton form G in fully sealed position.

Fig. 23 is a detail perspective view of the carton form G with the pour spout in open position.

Figs. 24 and 25 are detail sections taken on lines 24—24 and 25—25, respectively, of Fig. 22. Fig. 26 shows a blank for a modification form H somewhat similar to form G, but wherein the pour spout is provided with two side wings.

Fig. 27 is a detail perspective view of a carton form H formed from the blank shown in Fig. 26 25 and showing the pour spout in open position.

Fig. 28 shows a blank for a modification form I, wherein the pour spout wing is initially cut out of an adjacent end flap.

Referring now to details of construction of the 30 embodiment of my invention illustrated in Figs. 1 to 6, both inclusive, which form is referred to herein as form A, the finished carton indicated at 10 in Figs. 1 and 2 is made from a blank shown in Fig. 3 which is substantially rectangular in general outline. Said blank is creased along vertical lines 11, 12, 13, 14 and 15 and horizontal lines 16 and 17 to form side walls 18, 19, 20, 21, 22 and 23. The side walls 18 to 22, both inclusive, have lower extensions of equal length forming bottom flaps 24 to 28, both inclusive, of the usual rectangular shape. The side wall 23 has no bottom flap, but cooperates with the other side wall portions to form a pocket for the pour spout as will presently be described.

The carton top with the spout arrangement is formed from the two top flaps 30 and 31 which are extensions of the side walls is and 21, respectively. An intervening flap 32 severed from 50 flaps 30 and 31 by cuts 33 and 34 is arranged to underlap the top from the side opposite the spout.

The flap 30 is cut along the diagonal line indicated at 35 at the outer corner farthest removed from the flaps 31 and 32. It will be noted that this line of severance terminates short of the crease 14, and a second line of severance 36 is formed parallel with said crease line 14, but offset inwardly therefrom so as to form a shoulder The purpose of this offset cut and shoulder will presently appear.

The flap 31 includes the pour spout which consists of an arcuate portion 38 defined by a crease line !!" which is preferably offset slightly inwardly of the crease line it between side walls 18 and 18. The arcuate portion 38 is separated from the side wall is by a horizontal cut 39 in line with the horizontal crease is. A contiguous 70 wing 40 of substantially the same horizontal width as the arcuate portion 38 is formed of a part of the end flap 31 by a line of severance 41 extending from the horizontal score line 16 to

thereof. A projecting stop 42 is provided at the extreme lower corner of the wing 38.

The side wall 23 has an upper end flap 43 connected thereto, having its lower inner corner cut out along a diagonal line 44 and a horizontal line 45, the latter being in alignment with the horizontal crease line 16. As will presently appear, however, it may be desired in some instances to make the end flap 43 in rectangular shape along the dotted line indicated at 46 and forming the lines of cut 44 and 46 by lines of severance so that the triangular portion defined by said lines will remain intact until the pour spout is finally opened and the triangular portion between lines 44, 45 and 46 is removed.

The side wall 22 is provided with a semi-circular cut-away portion adjacent its upper edge, said cut-away portion being defined by a semicircular cut 47 and an upright cut 48. This cutaway portion is of such shape and size as to accommodate the wing 38 and stop 42 of the pour spout when the carton is in complete folded position, as will now be described.

The method of folding or forming the blank just described into a carton will be understood by reference to Figs. 4 to 6. When the carton is in partly folded position as shown in Fig. 4, the sides of the carton are first arranged as follows: Side wall 23 is folded inwardly on crease line 15 against wall 22, and its outer edge is brought into sealing relation by a strip of adhesive material 50 so as to be secured along the entire length of wall 22 adjacent crease line 14. The wall 18 is then folded in registering position against the opposite outer side of wall 22. The top of the carton is completed as follows: The flaps 32 and 43 are first folded under, the flap 30 is then folded inwardly and flap 31 is folded over the end of the carton. While folding flap 31 downwardly, the wing-like portion 38 is inserted in the pocket or slot formed by the cutaway portion 47 of intermediate side wall 22 between the inner side wall 23 and the outer side wall 18, as clearly 45 shown in Fig. 4.

The upper end of the carton is sealed by adhesive suitably applied between the meeting surfaces of the end tabs, it being understood, however, that the wings 38 and 48 which form the pour spout are left unsealed.

With the arrangement of form A above described, the pour spout is sealed as long as the severance line 41 remains intact. In opening the spout, the wing 40 may be raised by inserting the finger or a suitable tool beneath the curved corner of said wing so as to break the severance line 41. As the free edge of said wing is raised. the entire spout is hinged upwardly as indicated in Fig. 2. It will be noted that the wing 38 moves 60 in the pocket formed between side walls 23 and is and that the outer edge of said wing is guided in the notched portion 38 at the margin of flap 38. Also, stop 42 on said wing is adapted to engage beneath the shoulder 37 on flap 30 so as to limit the swinging movement of the spout to the substantially upright position shown in Fig. 2.

In order to provide more complete sealing of the top of the carton, a slight modification is shown in Fig. 5 wherein the cut-out lines 44 and 45 on top flap 43 are initially formed by lines of severance 44° and 46°. Thus the triangular section defined by the dotted line 48 in Fig. 3 remains as a part of the flap 43 serving as an inner sealing member until after the pour spout has the outer edge of the flap 31 adjacent the center 75 been opened. Said triangular portion can then

be punched out along the lines 44° and 46° to open the carton.

It may also be found desirable to provide a relatively small tab 51 shown in Fig. 5, hinged to the side of end tab 30 below the shoulder 37, shown in Fig. 3, which tab may be folded downwardly and secured to the adjacent outer face of side wall 18 when the carton is finally completed, so as to reinforce the corner of the carton at the point adjacent the notch 37 which restrains the stop 42 of wing 38.

The construction above described is such that the carton is effectively sealed around the pour spout, especially where the wing 38 enters the pocket formed between the side walls 18 and 23. It will be particularly noted that the walls 18 and 23 which form said pocket, both extend the full length of the carton, so that all of the side walls are capable of being readily formed and sealed on a folding machine. The inner wall 23 of said pocket provides a complete seal from the interior of the carton, whether the pour spout is closed or

open.

Figs. 7 to 9 show a modified form B which embodies the same type of inner sealed pocket 25 for the pour spout, but which is made from a blank, shown in Fig. 7, having one less side wall. This form includes side walls 55, 56, 57, 58 and 59 which correspond in general with walls 18, 19, 20, 21 and 23, respectively, of form A, the 30 wall 22 being omitted. The wall 59 forms the inner sealing wall for the pocket which is formed by inserting the wing between said inner wall and the outer side wall 55 adjacent the hinged side of the pour spout, as shown in Fig. 9. The pour spout arrangement of form B differs somewhat from form A, in that the hinged side 60 of the spout extends only a part of the width of the top flap 61, being separable from the latter on a curved severance line 62. Also, the projecting stop 63 on side wing 64 engages beneath the adjacent overhanging edge of the outer top flap 61 instead of engaging the edge of an inner top flap, as in form A. Form B has a top flap 65 corresponding substantially with flap 30 of form A, including an outer corner cut out along line 66, but the extreme end flap 67 connected with side wall 59 has a triangular section 68 (corresponding in function to the triangular section defined by lines 44, 45 and 46 of form A) disposed on the outer instead of the inner side of said flap, as clearly shown in Fig. 7.

Figs. 10 to 14 illustrate a modified form C of carton especially adapted for use as a container which is substantially square in horizontal section, so that all the side walls are of substantially the same width. In this form the blank has side walls 56, 69, 70, 71 and 72 which correspond generally with side walls 55 to 59, respectively, of the blank for form B shown in 60

Fig. 7.

Similarly the top flap 13 with pour spout wing 74 and associated cut-out portion 75 of top flap 13 correspond with the parts 61, 64 and 62 of form B. The adjacent end flaps 76 and 17 are of substantially the same cross sectional area as the end of the carton, so that the outside corners are cut away along curved lines 18 and 19, respectively. It will be noted that the curved line 79 is a different shape from line 78, being somewhat deeper at its center and shallower towards its edges than the cut line 78. The purpose of this arrangement will presently appear. The fourth end flap 80 hinged to the side wall 72 is provided with a removable cut-out portion 75

corresponding with a similar removable cut-out portion 68 of form B, excepting that in the form of blank shown in Fig. 10 the cut-out portion may comprise a circular line of severance indicated at 81 instead of a triangular line of severance illustrated in connection with previous figures. As an additional protection against leakage, the end flap 80 has a tab 82 extending along the outer crease line 83 thereof. The side wall 72 also has a tab 84 extending along its lateral crease line 85 as clearly shown in Fig. 10.

The pour spout end of the carton form C is folded in substantially the same manner as form B, as indicated in Fig. 12. It will be noted, however, that the two end flaps 76 and 77 are folded under the end flap 73 so that the cut-out portions 78 and 79 will leave an opening beneath the pour spout wing 74 when the latter is in open position, as shown in Fig. 11. The end flap 80 20 is preferably folded between the flaps 76 and 77 as shown in Figs. 12 and 14, with the tab 82 glued to the adjacent upright margin of the side wall 69. The tab 84 connected along the side wall 72 is also glued to the adjacent side of wall 69 as shown in Figs. 13 and 14. The tabs 82 and 84 thus form an additional sealing protection for the pocket formed between the side walls 68 and 12 for receiving the wing 14 of the pour spout.

It will be noted further from Fig. 12 that in folding the end flaps 16 and 17 inwardly, the flap 17 is folded last so as to be immediately below the end flap 13. Due to the cut 19 in flap 17 which extends further from the pour spout corner than the arcuate line of severance 15° of the pour spout portion 15, it will be observed that the cut 19 will form an open space beneath the center of the arcuate line of severance 15° when flap 13 is folded over flap 17 so as to assist in permitting the fingernall or tool to break downwardly through said line of severance and be inserted beneath the pour spout for opening and

raising the same.

As an additional feature of protection against leakage from the bottom of the carton, it will be 45 observed that all five side walls 68 to 72 of form C have rectangular end flaps 88 to 92, respectively, each of which is adapted to be folded, but that one of said end flaps, as for instance flap 92, is formed with its inner crease 93 slightly deeper 50 than the crease lines of the adjacent bottom flaps. With this arrangement I find that when this over-size end flap 92 is folded inwardly, and preferably to form the innermost layer of end flaps in the completed box, it provides an especially efficient close fitting sealing member for the bottom of the carton so that the entire carton is adapted for containing fine powdery material without leakage.

It will be noted further in connection with the blank in Fig. 10 that the lines of cut which separate the end flaps from each other are preferably terminated short of the transverse crease line on which they are to be folded or hinged. In practice I find that about ½ of an inch is satisfactory for this purpose. Allowing this uncut stock at the corners provides a wedge seal, combined with such adhesive or coating material that is used to seal the carton which gives substantial protection against leakage at the corners of the carton.

somewhat deeper at its center and shallower towards its edges than the cut line 78. The purpose of this arrangement will presently appear. The fourth end flap 80 hinged to the side wall 72 is provided with a removable cut-out portion 75 less width than the five side walls 68 to 12. The

additional side walls 95, 96 and 97 are also provided with upper and lower tabs 95°, 96° and 97°, respectively. It will be understood that in folding and assembling the form of carton D, the side walls 95, 96 and 97 are first folded on the inside of the carton and the tabs 95°, 96° and 97° thereof are glued to the adjacent upper and lower end tabs with which they are engaged. I find that a box constructed in accordance with the substitute for tin cans or bottles heretofore employed as containers for liquids or the finest powdered material, and that such liquids or material will not leak or sift from the carton even under the roughest handling and usage to which the carton may be subjected.

Fig. 16 illustrates still another modified form E which is similar in most respects to form C shown in Fig. 10, excepting that the blank is intended for use in a carton which is oblong in cross section instead of square. In this instance, however, an additional side panel 98 with upper and lower end tabs 99 and 100 is provided of the same width as the two wider panels 101 and 102 which determine the greater width of the carton. It will be noted that the wider panels 101 and 102 also have bottom flaps 103 and 194 connected thereto. The principal purpose of this additional panel 98 and end tabs 99 and 100 is to insure that the bottom of the carton is closed by three end tabs 100, 103 and 104 so that the inner end tab, which in the present instance is tab 103, may have an extended over-size outer margin 105 which may form an inner sealing member covering the entire area of the bottom of the carton in substantially the same manner as previously described in connection with the bottom tab 92 of form C. The upper flap 99 connected to the additional side wall 98 may be provided with a tab 106 along its inner margin adapted to be glued to the adjacent side wall of the carton when it is in folded position. Top flap \$9 has a suitable cut-out line 107 therein to be removed when the pour spout is open.

Fig. 17 illustrates the blank for a modified 45 form F wherein the side pocket for the pour spout wing is formed in a slightly different manner than disclosed in connection with the foregoing forms. This form includes side walls 10%. 109, 110, 111 and 112. The wing portion 113 of the pour spout is connected to the hinge portion 116 of said spout, which hinge portion forms substantially half of the end tab 115 connected to one of the wider side walls 110. The side pocket for the wing 113 is provided by folding the extreme end wall 108 inwardly in reverse position against the adjacent end wall 109, and gluing the area 108a along one side of wall 108 to the outer face of a tab 116 connected along the outer edge of the side wall 112, as shown in With this form of side pocket, the top flap 117 hinged to side wall 112 has a tab 117a connected to its outer end which is adapted to fold over the outer corner of side wall 109 as shown in Fig. 20, to form a stop for the spout wing 113, as well as a reinforcement for the carton corner.

The form of carton G shown in Figs. 21 to 24. shows an arrangement for locating the spout wing pocket in one of the wider side walls and hinging said spout along a narrower side wall. The blank is shown in Fig. 21, wherein the pour spout consists of a wing 120 hinged to one side of an end tab 121 which is hinged in turn to one

wall panels 123, 124 and 125 are provided, and a narrower side wall 126 is disposed between panels 124 and 125.

The pocket for the single side wing 120 is formed between the side walls 123 and 125, as shown in Fig. 24. The side wall 125 is folded on the inside of the carton, and has an end tab 127 which is glued to the inner face of the side wall 122 adjacent the margin of the side wall blank for form D can be used successfully as a 10 123 so as to form a pocket sealed against leakage from the interior of the container. The inner wall 125 has a top flap 128 provided with an end tab 129 adapted to be glued along the inner surface of the side wall 122 just below the hinged pour spout. The top flap 128 has a suitable cut-out area defined by lines of severance 130. The side wall 124 has a top flap 131 with a cut-out area 132 which is adapted to overlap the top flap 128. The side wall 123 has an end flap 133 generally rectangular in form and preferably of sufficient width that its inner upright wall 134 will be in abutting engagement with the outer edge 135 of the hinged spout portion 121 when the carton is in closed position, as is shown in Fig. 22. The pour spout of form G is formed by a corner of end flap 121, which is cut out along a line of severance 121s after the end flap 121 is in sealed position shown in Fig. 22. When the line of severance 121° is broken, the pour spout can be opened as shown in Fig. 23.

Figs. 26 and 27 show a modified form H similar to form G just described, excepting that the pour spout formed from end tab 140 is provided with two similar side wings 141 and 142, each being slidably mounted in side pockets formed between double side walls of the carton. Since two such pockets must be provided for form H, the blank shown in Fig. 26 is provided with four relatively wide walls 143, 144, 145 and 146, with 40 three intervening narrower side wall panels 147, 148 and 149 interposed alternately between said larger side walls. This form when folded provides one pocket for wing 141 between side walls 143 and 145, and a second pocket for wing 142 between side walls 144 and 146. The side wall 146 has a top flap defined by line of severance 150 adapted to register with the pour spout when the latter is in open position as shown in Fig. 27.

With this form of pour spout, the end flap 149 is provided with a line of severance (40° joining the upper margins of the side wings 101, so that the outer end portion 151 of said end flap is permanently sealed against the top of the carton, and remains there after the pour spout is opened, as shown in Fig. 27.

Fig. 28 illustrates a blank for a modified form I which is characterized by the pour spout wing 155 formed by precutting it from an end flap 156. In this form the side pocket for the pour spout wing 155 is formed between the wide side wall 157 at one end of the blank and a wide wall 158 at the opposite end of the blank. Intervening narrow side walls 159 and 160 together with a central, relatively wide side wall 161 are provided. Top flap 162 connected to side wall 158 is provided with a suitable cut-out portion on curved line 163, and end flap 164 connected to side wall 161 also has a suitable knock-out portion on line of severance 165 in registering position with the top wing 166 which in this form consists of a relatively small arcuate shaped end flap hinged to the upper margin of side wall 159.

In folding this form of box, the side wall 158 has an end tab 158s which is adapted to be of the narrower side walls 122. Three wide side 75 glued to the area indicated at 159 of side wall .159, with the side wall 158 on the inside of the side wall 157.

The end flap 167 is first folded under. End flap 164 is then folded down, and the end tab 164a at the side thereof is glued along the upper margin of side wall 159. End flap 162 is then folded over flap 164, and finally the end flap 156 is folded and glued across the top of the carton. It will be observed that while folding the top flap 156, the pour spout wing 155 is fully severed therefrom, so that said top wing can be tucked in the pocket formed between side walls 157 and 158, as previously described.

In the form shown, the end flap 164 has an extended outer margin 168 with a shoulder 169 15 which is adapted to form a stop for the end 155a of the side wing 155 when the carton is in fully

sealed condition.

Although I have shown and described certain embodiments of my invention, it will be understood that I do not wish to be limited to the exact construction shown and described, but that various changes and modifications may be made without departing from the spirit and scope of my invention as defined in the appended 25 claims.

I claim as my invention:

1. In a carton made of a blank including side walls and end flaps precreased and precut so as to form a pour spout closure for the carton, including an outer end flap having a removable area defined by a line of severance, and an inner flap adapted to underlap said outer flap, and formed with an open area generally in registering relation with said removable area, but with a marginal portion thereof extending beyond the

line of severance of said outer flap so as to leave an open space beneath and along said line of severance when said end flaps are in folded position.

2. In a carton formed of a blank including side walls and end flaps, a pour spout closure consisting of a corner portion of one of said end flaps hinged to one of said side walls, and a wing adapted to be folded at right angles to said corner portion, two of said side walls adjacent said wing lapping each other and forming a pocket for receiving said wing and sealed from the interior of the carton, and another end flap hinged to the inner one of said side walls and having a glue flap hinged along one side thereof adapted to be secured along the upper edge of the side to which the corner portion of said pour spout is hinged, when the carton is in assembled condition.

3. In a carton formed of a blank including side walls and end flaps, a pour spout closure consisting of a corner portion of one of said end flaps hinged to one of said side walls and removable from said end flap along a line of severance, and a wing adapted to be folded at right angles to said corner portion, two of said side walls adjacent said wing lapping each other and forming a pocket for receiving said wing and sealed from the interior of the carton, said first named end flap having one edge thereof extended so as to overlap the pocket formed between adjacent side walls so as to form a stop for limiting the upward swinging movement of said wing when the said pour spout closure is in open position.

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