May 23, 1944. D. E. MARSHALL 2,349,362

CONTAINER

Filed Oct. 24, 1941 2 Sheets-Sheet 1

Fig. 1.

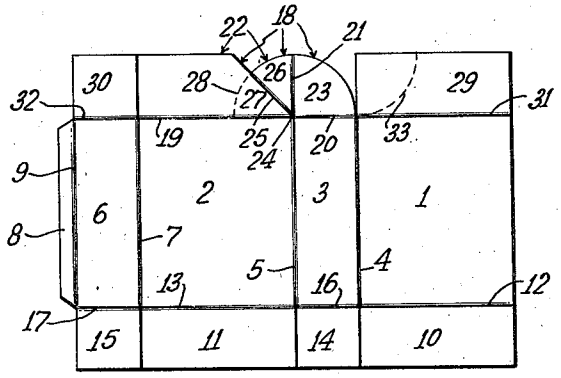


Fig. 2.

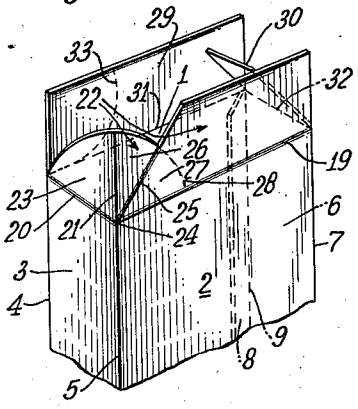


Fig. 3.

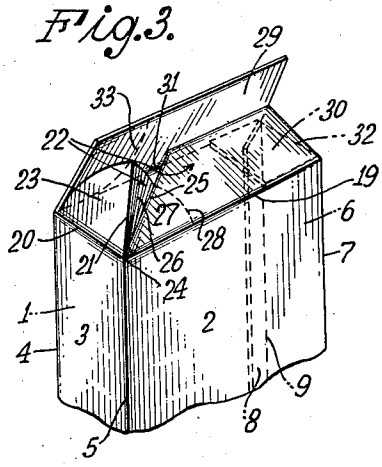


Fig. 4.

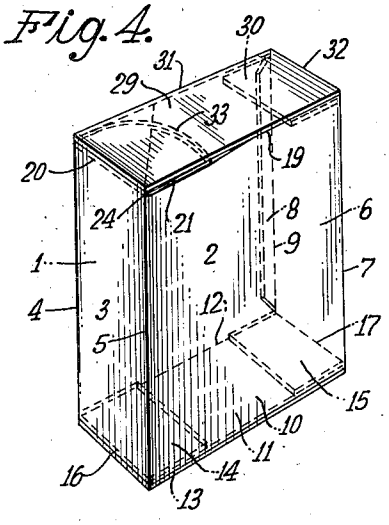
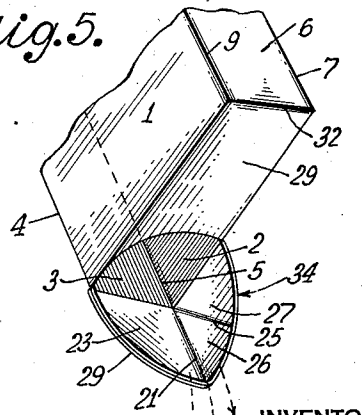


Fig. 5.



INVENTOR
Donald E. Marshall
BY
ATTORNEY

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Fig. 6.

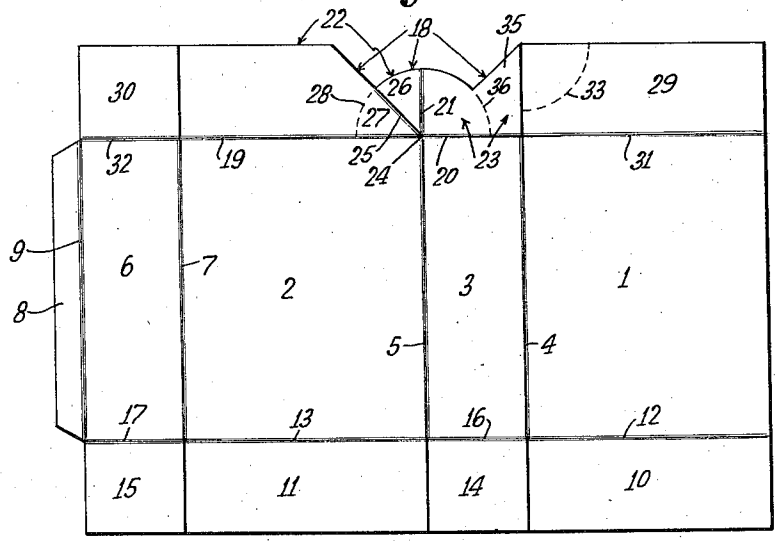


Fig. 7.

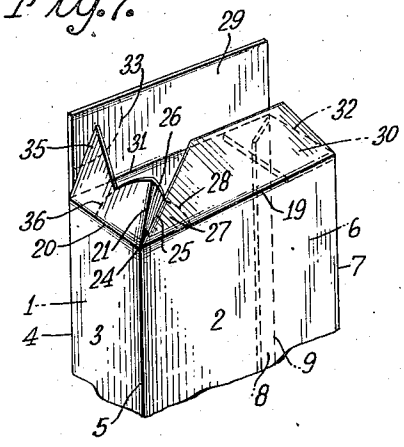
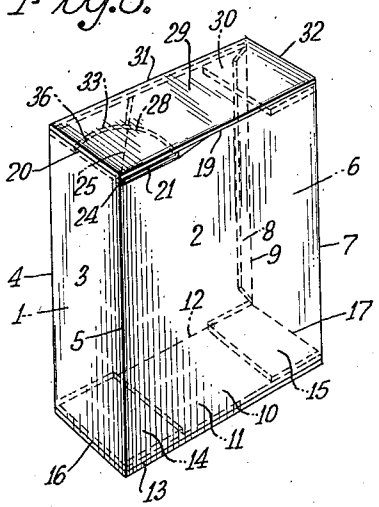


Fig. 8.



INVENTOR
Donald E. Marshall
BY
ATTORNEY

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UNITED STATES PATENT OFFICE

2,349,362

CONTAINER

Donald E. Marshall, Summit, N. J., assignor to Colgate-Palmolive-Peet Company, Jersey City, N. J., a corporation of Delaware

Application October 24, 1941, Serial No. 416,309

10 Claims. (Cl. 229—17)

The present invention relates to cartons and, more particularly, to cartons of pasteboard, cardboard and the like adapted for improved dispensing of pulverulent material.

The container industry has for many years sought to furnish pasteboard and cardboard containers for packaging granular, powdered and flaky material, with a view to providing adequate dispensing means for conveniently pouring the contained material with a minimum of waste and a maximum of protection to the material remaining in the container. Among the constructions employed are those providing perforations or scored sections adapted to furnish a convenient means for puncturing the container.

Another device in use on cartons as a dispensing means is a two-part top, one part being a permanent partial closure and the other part being a spout formed from extensions on the two face sections and a side section of the carton and adapted to be folded down and inserted beneath the edge of the permanent closure to serve as a closure for the remainder of the top. Although this structure has the advantage of providing an easy means for opening the carton and putting the spout in operable dispensing position, merely by introducing the thumb in the ungummed fold at the top and thus raising the spout, it has the concomitant disadvantages of providing neither a good spout nor a good seal for pulverulent materials. The spout is very broad at the lip, furnishing an inefficient pouring edge, and is necessarily so large by reason of its breadth that spillage is difficult to avoid. Furthermore, since the extensions on both face sections are used for the spout, there is no provision for an overlying flap to be gummed down upon this part of the top, and for this reason this type of closure is not well adapted to comminuted materials, as considerable sifting and leakage would result. The prior art has also supplied various special forms of cartons having supplementary pieces for providing a spout not integral with the carton, but none of these, so far as is known, has been entirely satisfactory, especially when used on a practical and industrial scale.

A novel carton construction has now been found to provide a retentive container for comminuted materials with adequate dispensing means integral with said container.

It is an object of the present invention to provide a tight container of novel and improved construction for dispensing pulverulent materials.

It is another object of this invention to provide a carton of such construction that the user can conveniently form at one end thereof a pouring aperture and spout designed to restrain the content of the carton from freely spilling out over the side edges of the spout.

It is also an object of the invention to provide a carton having a curved pouring spout integral with the carton and having a pouring aperture of small area with respect to the effective length of the spout.

A further object of the present invention is to provide a unitary blank so constructed as to be readily and economically formed into a carton adapted for improved dispensing of comminuted materials.

Other objects and advantages of the invention will be apparent from the following description, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is an inside plan view of a carton blank illustrating the present invention;

Fig. 2 depicts a fragmented perspective view of a tubular carton during its formation from this carton blank;

Fig. 3 shows a fragmented perspective view of the carton during the closing of the end thereof;

Fig. 4 is a perspective view of the same carton with the top closed;

Fig. 5 illustrates a perspective view of the top end of the carton with its spout open;

Fig. 6 is an inside plan view of a blank for another modification of the novel carton of the present invention;

Fig. 7 shows a fragmented perspective view of this blank during the closing operation; and

Fig. 8 depicts a perspective view of a closed carton formed from said blank.

The carton according to the present invention is of the tubular type and comprises in integral form front and back face sections and side sections, with flaps and tabs dependent from said sections folded across the ends in overlapping relation to seal the same. Upon at least one end of the carton a single broad flap depends from both a side section and a face section and is scored in alignment with a fold line between said side and said face sections to form a division line setting off the broad flap into two parts. The part of the broad flap adjacent the face section of the carton is further scored to permit cooperation of the two parts in foldable relation to each other. The broad flap is indented or cut at both parts thereof for at

least the octant on each side of the division line, and preferably in arcs symmetrical with respect to the division line and enantiomorphic to each other. The other octant on the part of the flap adjacent the side section is either similarly indented or is perforated (that is to say, scored for perforation), preferably in an arc enantiomorphic to the arc in the adjacent octant in the same part of the broad flap. The other octant in the part of the broad flap adjacent the face section is perforated, and it is preferred to perforate it in an arc enantiomorphic to the arc in the adjacent octant. At the same end of each of the opposite face and side sections, there are a flap and a tab, respectively, and the flap is perforated or scored for perforation to cooperate with the perforations in the broad flap when all of the flaps and tabs at this end of the carton are overlapped. The other end of the tubular carton may be of any conventional design and is preferably provided with a flap at each face section and a tab at each side section adapted to be overlapped to give a good seal.

The invention will now be more fully described for the benefit of those skilled in the art with respect to particular embodiments thereof. Reference may be had to the accompanying drawings, wherein like characters denote similar parts in the respective figures.

Referring to Figs. 1 to 5, the novel carton blank of this invention comprises two large rectangular face sections 1 and 2, alternatively the front and back of the carton. These sections are connected by an intermediate rectangular section 3 which forms a side of the carton, fold lines 4 and 5 being provided between sections 1—3 and 2—3, respectively. A similar rectangular section 6 is connected to a face section 2 at the side of the face section opposite section 3, fold line 7 being provided between sections 2 and 6. A tongue 8 is attached to side section 6, fold line 9 being provided at the juncture of the tongue with the side section, and said tongue is adapted to be adhesively connected with face section 1, preferably upon the inner side thereof, whereby a tubular carton can be formed. At the bottom of the carton, rectangular flaps 10 and 11 are respectively attached to face sections 1 and 2, fold lines 12 and 13 being provided at their junctures with the face sections. Side sections 3 and 6 are provided with rectangular tabs 14 and 15 connected to the side sections at fold lines 16 and 17. Flaps 10 and 11 and tabs 14 and 15 are coextensive with the bottom edges of the sections to which they are attached.

The top end of the carton has a broad flap 18 attached to both of face section 2 and side section 3, fold lines 19 and 20 being provided at the junctures with the two sections, respectively. A fold or division line 21 divides the broad flap 18 into two parts, a large part 22 adjoining face section 2 along fold line 19 and a small part 23 adjoining side section 3 along fold line 20. The division line 21 is in alignment with fold line 5 before the blank is folded, and the two lines meet perpendicular to fold lines 19 and 20 at point 24. A fold line 25 starts at point 24 and is so positioned in the large part 22 of the broad flap that it substantially bisects the right angle between fold line 19 and division line 21, thus forming two octants 26 and 27.

The outer edge of the broad flap comprises a circular arc having point 24 as its center and fold line 20 between side section 3 and the small part 23 of the broad flap as its radius, said arc extending from fold line 20 through an angle of about 135° to fold line 25 in the large part 22 of the broad flap. The edge then runs from the intersection of the circular arc with said fold line 25 to the side of the broad flap, said broad flap being substantially equal in width with side sections 3 and 6. From this point on the side of the broad flap, the edge is substantially parallel to fold line 19. The octant 27 of the large part 22 of the broad flap is scored for perforation along arcuate line 28, which is a continuation of the arc described using point 24 as a center and fold line 20 as a radius.

Sections 1 and 6 are provided at their upper edges with flap 29 and tab 30, respectively, each being similar to the respective flap 10 and tab 15 at the bottom edges of the sections, fold lines 31 and 32 being provided at the junctures of flap 29 with section 1 and tab 30 with section 6, respectively. Flap 29 is approximately equal in width to the width of a side section and is scored with arcuate line 33, the arc having as its center the outer corner of the flap in alignment with fold line 4 and having as its radius a distance substantially equal to the width of the side section.

In forming a carton from this blank, sections 1 and 2 are folded inwardly at right angles to section 3 along lines 4 and 5, respectively, to provide a front and back for the carton. Section 6 is folded inwardly along line 7 at right angles to section 2, and tongue 8 is folded inwardly at right angles to section 6 along line 9 and is firmly glued to section 1. Flaps 10 and 11 and tabs 14 and 15 are brought to a horizontal and overlapping position, being folded along lines 12, 13, 16 and 17, respectively, to form a bottom for the carton. The overlapping flaps and tabs are firmly glued together, each upon the surface beneath it, the presence of a form within the carton for permitting sufficient pressure to be applied to provide a good seal being desirable. It is also preferred that the glue or other suitable adhesive material be permitted to dry before the carton is filled with the material to be contained therein.

The bottom and sides of the carton are firmly sealed, and the top is open to receive its ultimate content. After the carton is filled, the tab 30 at the top of side 6 is folded down into a horizontal position along fold line 32, and the broad flap 18 is folded along fold line 19. As the large part 22 of the broad flap adjacent face 2 of the carton is depressed, the broad flap folds along fold line 25 and division line 21, and the small part 23 of the broad flap is then brought into horizontal position, thus forming a triple fold of the broad flap. The entire area of the broad flap is now in horizontal position and is adhesively attached at its under side to the upper side of tab 30. The flap 29 is then folded down along fold line 31 into horizontal position and is glued or otherwise adhesively affixed to the upper surface of the broad flap. The scored line 33 is in matching position with the scored line 28 and with the arcuate edge of the broad flap.

When it is desired to dispense material from the carton, the thumb is introduced into the ungummed folds between octants 26 and 27 of the broad flap under the edge of flap 29 opposite the fold line 31 and at the corner which serves as a center for the arcuate line 33. This is raised

along with the small part 23 of the broad flap and the octant 26, and, as the edge is raised, flap 29 tears along the scored line 33 for a distance of about an octant. As the raising of the edge continues, scored line 33 is torn for a distance of a quadrant and scored line 28 is also torn. When the division line 21 is raised to a vertical position, a curved pouring spout 34 is formed. It will be observed that the opening of this spout leaves only a relatively small aperture, so that the goods contained in the carton are largely protected from external deteriorating influences. The shape of the aperture prevents too free a flow from the carton, especially when nearly full, and restrains the contents from spilling over the side edges of the spout.

Another modification of the present invention is illustrated at Figs. 6 to 8. In this modification, the carton blank adapted for forming a tubular carton and having face and side sections and bottom flaps and tabs as in the modification described supra is provided. Similarly, at the upper end of the carton, there is a broad flap 18 attached to both face section 2 and side section 3, with fold lines 19 and 20 also being provided as before. The broad flap is divided by a division line 21 in alignment with fold line 5 into a large part 22 adjoining face section 2 and a small part 23 adjoining side section 3. A fold line 25 bisects the right angle between fold line 19 and division line 21, thus forming two octants 26 and 27. The outer edge of the broad flap comprises a circular arc having its center at a point 24 where fold line 25 intersects lines 19 and 20. The radius of the arc may be of any convenient dimension, preferably shorter than the width of the carton. The arc extends through an angle of one octant in each direction from fold line 21, and the edge then runs outward from this arc in radial manner to the side of the broad flap, said broad flap being substantially equal in width with side sections 3 and 6. These radial edges thus divide the broad flap into octants, and the octant on each part nearest the fold lines 19 and 20, respectively, viz., octants 27 and 35, is scored for perforation. The scoring 28 on octant 27 and the scoring 36 on octant 35 is a continuation in each case of the arcuate edge of the broad flap. Flap 29 and tab 30 of this modification are similar to the corresponding elements of the carton described above, except that the scored line 33 on flap 29 is relatively smaller to conform with the smaller radius of the arc employed as an edge for the broad flap.

When the carton is folded for sealing contents therein, as aforesaid, a part of octant 35 folds into cooperating position with octant 27 of the large part of the flap, so that practically all of the free space below the top flap 29 is eliminated. This has the great advantage of providing greater freedom from leakage and sifting. It will be observed from the foregoing that the same result is obtainable with the first modification discussed by merely slitting the blank along the arcuate edge of octant 26 in the large part of the broad flap instead of indenting the broad flap along said edge, thereby leaving an ear in position to fill this opening when the carton blank is folded.

Because of the rectangular shapes of the blanks depicted in the drawings, it has been found expedient to show the tabs of the carton of the invention as being square in shape. Although it is desired to employ tabs of substantially the same dimension as the width of the side of the carton for greater effectiveness, such elements may be of any convenient length in their other dimension. Similarly, it is preferred that the tongue which unites the carton sections be located at the corner of the carton farthest away from the spout, as such location gives least interference with smooth pouring.

While the present specification has described the novel carton with respect to a particular position for holding the same, it will be appreciated that printing and labels may be so applied to the outer surface thereof that the ultimate consumer will be induced normally to hold the carton in a manner and position other than that in which it will ordinarily have been filled. Thus, while it is preferred to introduce the contents through the top end of the carton, as set forth supra, it may alternatively be filled through the bottom end and/or intelligence may be printed upon the carton upside down or in any other desired position. Similarly, while the construction of the carton from the blank has been described with reference to a particular order of folding operations, those skilled in the art will appreciate from the foregoing that such order is merely illustrative and that any suitable order may be employed. Thus, it may be desirable to fold down tab 30 after broad flap 18 has been folded instead of folding the tab before and beneath it.

Although the present invention has been described with respect to particular embodiments and particular constructive features, it will be appreciated that equivalent elements can be used and variations and modifications of the invention can be made without departing from the spirit thereof. For example, the arcs which indent and perforate the broad flap 18 have been described and illustrated as parts of a circle centered about point 24, whereas circular arcs centered about other suitable points or arcs of other curvilinear plane figures are also adaptable for the present purpose. In this connection, however, while it is not essential that the arcuate lines described be symmetrical, it is preferred for improved efficiency and appearance that the arc in octant 26 (with respect to point 24) of the broad flap be enantiomorphic to the arc in each adjacent octant and that arcuate line 33 of flap 29 be congruent with the curved line of quadrant 23, the small part of the broad flap, whether said curved line is fully indented or partly indented and partly scored.

It will be apparent from the foregoing description of the invention that the cutting and scoring of the broad flap can be modified by those skilled in the art to obtain any desired shape of spout. The line forming the edge of the spout starts at a point on the juncture of the large part of the broad flap with the face section, runs to a point on the division line between the two parts of the broad flap and goes from there to a point on the juncture of the small part of the broad flap with the side section. Between these points, the line, whether cut or scored for perforation, may follow any course desired, except that it never reaches a distance equal to the width of the broad flap on either side of the division line. Thus, a straight or even a serrated edge, while not preferred, is contemplated as a modification of the invention in its broader aspects. These and other variations and modifications are believed to be within

the scope of the present specification and within the purview of the appended claims.

I claim:

1. As a new article of manufacture, a carton blank having face and side sections, and flaps and tabs thereon in foldable relation to said sections, said flaps including a broad flap dependent from both a face and a side section for the full width of said sections, and said broad flap having fold lines for folding said flap in multiple layers and having an edge indented along a portion of a line extending from the juncture of the broad flap and said side section to the juncture of the broad flap and said face section through a point on the broad flap in alignment with the juncture of said face and said side sections.

2. As a new article of manufacture, a carton blank having face and side sections, and flaps and tabs thereon in foldable relation to said sections, said flaps including a broad flap depending from both a face and a side section, coextensive therewith and having a division line dividing said broad flap into a small part adjacent the side section and a large part adjacent the face section and a fold line dividing said large part into two octants, said broad flap having an edge indented for an octant immediately adjacent the division line in each part along a line extending from the juncture of said small part and said side section to the juncture of said large part and said face section through a point on the division line.

3. As a new article of manufacture, a carton blank having face and side sections, and flaps and tabs thereon in foldable relation to said sections, said flaps comprising a broad flap depending from both a face and a side section, coextensive therewith and having a division line dividing said broad flap into a small part adjacent the side section and a large part adjacent the face section and a fold line dividing said large part into two octants, said broad flap having a curvilinear edge for an octant immediately adjacent the division line in each part, the octant adjacent the division line in the large part being enantiomorphic to the octant adjacent the division line in the small part, and the other octant in each part being scored in arcuate lines enantiomorphic to the curvilinear edge of the respective adjacent octant, and a flap depending from the other face section and scored at a corner thereof in a line congruent with the arcuate delineation of the small part of the broad flap.

4. As a new article of manufacture, a carton blank having face and side sections, and flaps and tabs thereon in foldable relation to said sections, said flaps comprising a broad flap depending from both a face and a side section, coextensive therewith and having a division line dividing said broad flap into a small part adjacent the side section and a large part adjacent the face section and a fold line dividing said large part into two octants, said broad flap having a curvilinear edge for an octant immediately adjacent the division line in each part, the octant adjacent the division line in the large part being enantiomorphic to the octant adjacent the division line in the small part and having the other octant in the large part scored and the other octant in the small part indented, both in lines enantiomorphic to the curvilinear edge of the respective adjacent octant, and a flap depending from the other face section and scored at a corner thereof in a line congruent with the arcuate delineation of the small part of the broad flap.

5. As a new article of manufacture, a carton blank having face and side sections, and flaps and tabs thereon in foldable relation to said sections, said flaps including a broad flap depending from both a face section and a side section, coextensive therewith and having a division line dividing said broad flap into a small part adjacent the side section and a large part adjacent the face section and a fold line dividing said large part into two octants, said broad flap having an edge of circular curvature for at least an octant immediately adjacent the division line in each part, the octant adjacent the division line in the large part being enantiomorphic to the octant adjacent the division line in the small part, and the other octant in each part being adapted to cooperate with the octants adjacent the division line to form a curved spout in the carton.

6. As a new article of manufacture, a dispensing carton which comprises faces, sides and ends, at least one of said ends comprising a broad flap depending from both a face and a side for the full widths of said face and said side, folded in multiple layers and having an edge indented along a portion of a line extending from the juncture of the broad flap and said side to the juncture of the broad flap and said face through a point on said broad flap.

7. As a new article of manufacture, a dispensing carton which comprises two faces, two sides and two ends, at least one of said ends comprising a broad flap depending from both a face and a side for the full widths of said face and said side and folded along a division line dividing said broad flap into a small part adjacent the side and a large part adjacent the face and along a fold line dividing said large part into two octants, said broad flap having a curvilinear edge for at least an octant immediately adjacent the division line in each part, the octant adjacent the division line in the large part being congruent with the octant adjacent the division line in the small part in the folded position, and the other octant in each part being adapted to cooperate with the octants adjacent the division line to form a curved spout in the carton, and a flap depending from the other face and scored at a corner thereof to cooperate with the broad flap in releasing a spout.

8. As a new article of manufacture, a dispensing carton which comprises two faces, two sides and two ends, one of said ends comprising a broad flap depending from both a face and a side for the full widths of said face and said side and folded along a division line dividing said broad flap into a small part adjacent the side and a large part adjacent the face and along a fold line dividing said large part into two octants, said broad flap having an edge of circular curvature for at least an octant immediately adjacent the division line in each part and having the other octant in each part arcuately delineated to cooperate with said edge in forming a spout, and a flap depending from the other face section and scored at a corner thereof in a line congruent with the arcuate delineation of the small part of the broad flap.

9. As a new article of manufacture, a carton blank having face and side sections, and flaps and tabs thereon in foldable relation to said sections, said flaps including a broad flap dependent from both a face and a side section, coextensive therewith and having a division line dividing said

broad flap into a first part adjacent the side section and a second part adjacent the face section and a fold line dividing one of said parts into two octants, said broad flap having an edge indented along a portion of a line extending from the juncture of said first part and said side section to the juncture of said second part and said face section through a point on the division line.

10. As a new article of manufacture, a dispensing carton which comprises two faces, two sides and two ends, at least one of said ends comprising a broad flap depending from both a face and a side for the full widths of said face and said side and folded along a division line dividing said broad flap into a first part adjacent the side and a second part adjacent the face and along a fold line dividing one of said parts into two octants, said broad flap having a curvilinear edge for at least an octant immediately adjacent the division line in each part, the octant adjacent the division line in the first part being congruent in the folded position with the octant adjacent the division line in the second part, and the other octant of each part being adapted to cooperate with the octants adjacent the division line to form a curved spout in the carton.

DONALD E. MARSHALL.