

Nov. 25, 1958

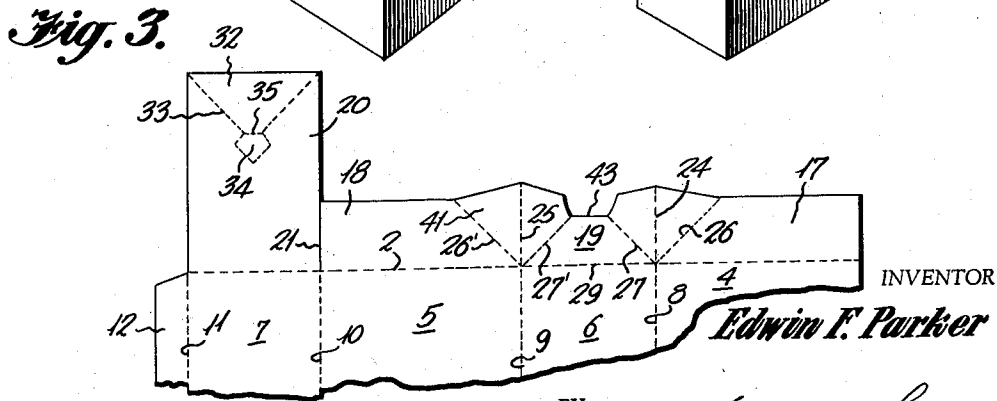
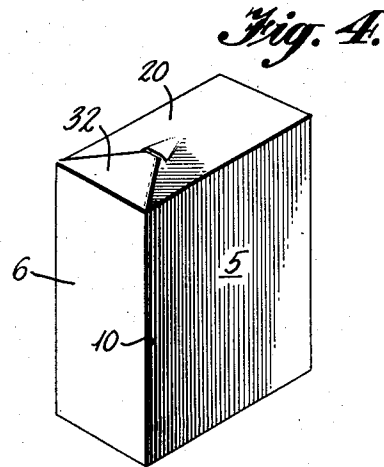
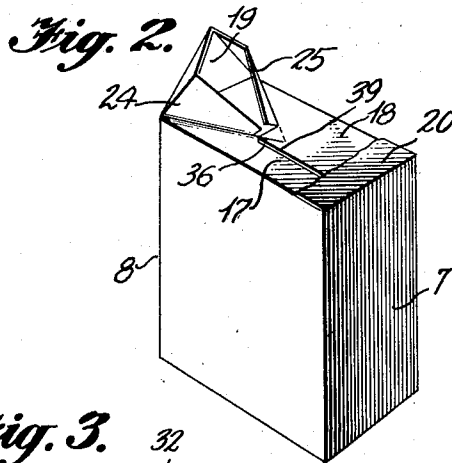
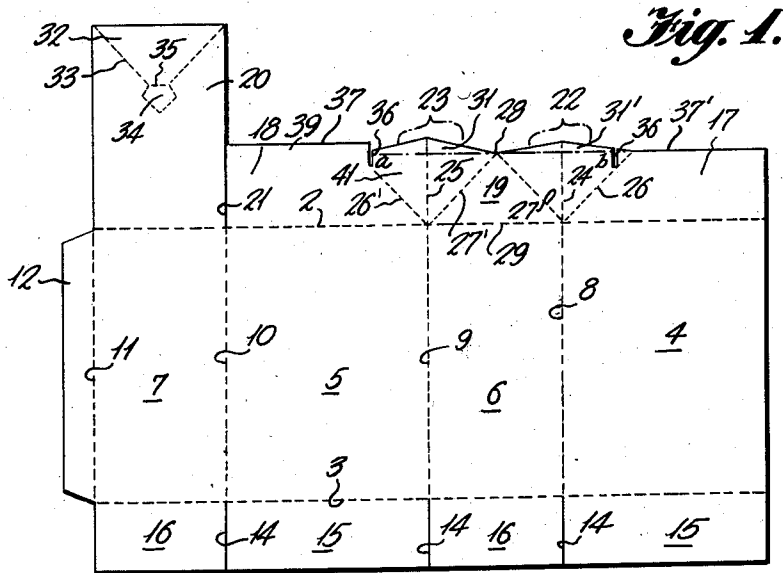
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2,861,732

DISPENSING CARTON WITH POURING SPOUT

Filed Nov. 3, 1954

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5.

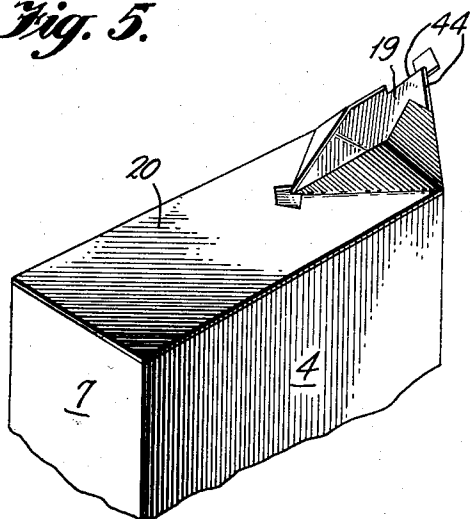


Fig. 7.

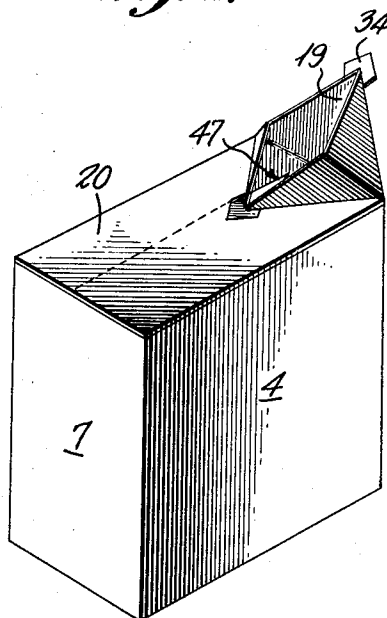
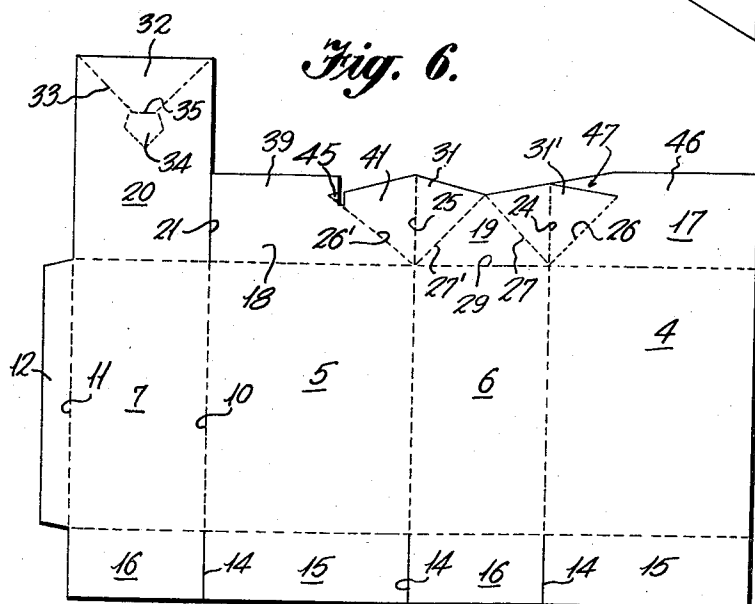


Fig. 6.



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DISPENSING CARTON WITH POURING SPOUT

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3 Claims. (Cl. 229—17)

This invention relates to cartons of paper, cardboard or other suitable sheet material, having a pouring spout, adapted to contain and dispense fluent materials in such forms as powder, granules, flakes, liquids, etc.

The invention has for its object to provide a carton having an integral pouring spout at its upper end developed from flaps overfolded from the tops of the opposite side panels of the carton and the intervening end panel, into the plane of the top of the carton, said pouring spout being foldable flat into said plane, the remaining side panel having a flap overfolded from its top so as to engage the underlying flaps, being congruent therewith and adhered thereto, and having a tongue overlying said pouring spout, delineated by a line of weakness, and which by rupture of said overfolded flap along said line of weakness, may be lifted to give access to said pouring spout.

Other objects of the invention will appear as the following description of a practical embodiment thereof proceeds.

In the drawings which accompany and form a part of the following specification, and in which the same reference characters have been used to denote identical parts:

Figure 1 is a plan view of a blank for a carton embodying the principles of the invention;

Figure 2 is a perspective view of a carton set up from the blank shown in Figure 1 showing the pouring spout expanded, and having the end wall partly broken away to show the lapping side flaps;

Figure 3 is a plan view of a portion of a blank differing from Figure 1 in that the pouring spout is truncated, providing a wider mouth;

Figure 4 is a perspective view of a portion of a carton embodying the truncated pouring spout, showing the latter closed and undertucked;

Figure 5 is a fragmentary perspective view of a carton showing a modification of the wide mouth construction of the pouring spout;

Figure 6 is a plan view of a modified blank for producing the carton shown in Figure 7;

Figure 7 is a perspective view of a carton set up from the blank shown in Figure 6.

Referring now in detail to the several figures, the blank 1, shown in Figure 1, from which the carton shown in Figure 2 is set up, is formed with parallel fold lines 2 and 3, defining respectively the top and bottom edges of the side panels 4 and 5 and the end panels 6 and 7. Parallel fold lines 8, 9, 10 and 11 delineate the side edges of the end and side panels which, in the form shown, are rectangular. A glue flap 12 extends along the free edge of the panel 7, which in the set up carton, is united to the free margin of the panel 4.

The blank 1 extends above the fold line 2 and below the fold line 3, the extensions being concerned with the structure of the top and bottom walls of the container. The lower extension is conventional, being rectangular and divided by slits 14 into separate side and end flaps

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15 and 16, interfoldable to form a plural ply bottom. The terms "side" and "end," referring to the flaps, indicate that they extend from corresponding side and end panels.

The structure which is comprehended by the present invention is related altogether to the upper extension. This is divided into side flaps 17 and 18, and end flaps 19 and 20. The end flap 20 is separated from the adjacent side of flap 18 by a slit 21 aligned with the fold line 10. The side flaps 17 and 18 are trapezoidal in shape and the end flap 19 has the form of an isosceles triangle. Said side flaps are connected to said end flap by bellows pleats 22 and 23. These have apical fold lines 24 and 25 (see Figures 1 and 2), which in the flat blank are rectilinear extensions of the fold lines 8 and 9.

The bellows pleats are integrally joined to the side flaps along the fold lines 26 and 26' and to the end flap 19 along fold lines 27 and 27'. The groups of fold lines 24, 26 and 27 and 25, 26' and 27', meet respectively at points at the ends of the base line 29 of the end flap 19, the angles between said lines being 45°, so that when the pouring lip is folded flat in the plane of the top of the carton, the fold lines 26 and 26' will lie in said plane, making an angle of 45° with the base line 29, so that their point of mutual intersection 30 lies in the medial longitudinal line through the top wall of the carton. An isosceles triangle is thus defined in the plane of the top wall of the carton which is the same size as the end flap 19 and against which the end flap 19 can rest congruently.

In the set up carton, as shown in Figure 2, it will be seen that the end flap 19 forms the floor of the pouring spout 30', and the bellows pleats form the lateral collapsible sides of said pouring spout. In the transition of the pouring spout from open to collapsed or closed position, the dihedral angles between the sides of the bellows pleats are reversed. Viewed from the outside of the pouring spout when open, the dihedral angles are salient, that is, they project outwardly. To collapse the pouring spout, it is necessary only to push the sides inward sufficiently to cause the said dihedral angles to assume a re-entrant phase. When this is done, the apical fold lines 24 and 25 automatically move toward a position of coincidence with the hinge line 29 through the inherent resiliency of the material.

It will be noted that the bellows pleats are formed with free marginal portions 31 and 31' projecting beyond the broken line *a—b*, Figure 1, which represents the longitudinal medial line through the end of the carton. In the form shown, these marginal portions form with the line *a—b* isosceles triangles of which one has a greater altitude than the other, as for example, the portion 31. While the spout would close and open successfully if the altitudes of the marginal portions were of equal length, the points will frequently meet in the same plane, requiring that one be pressed below the other in order to proceed with the collapsing of the pouring spout. Therefore, it may be advantageous to have the altitudes of the marginal portions of unequal length, as shown, since the shorter point will slide more easily under the longer when moving toward the open or closed positions.

Furthermore, in attempting to open the pouring spout with one hand, in the conventional manner by squeezing the opposite corners of the carton so as to put a stress through the pouring spout, if the marginal portions were of equal altitude the points would be constrained to move in equal arcs, and since one is below the other, the overlying portion would obstruct the path of movement of the underlying point.

The projecting portions 31 and 31' lap in the closed position of the pouring spout, their engaging surfaces forming a seal. When the closed pouring spout is folded flat in the plane of the end of the carton, the lapping

portion which has an embracing relation to the other portion is tensioned, while the embraced portion is stressed in compression. The engaging surfaces are thus pressed together and the efficiency of the seal increased to the extent that it becomes at least dustproof.

Referring to Figures 1 and 2, it will be noted that the side flap 18 is wider than the side flap 17, so that when the carton is set up and the side flaps are side by side in the top wall of the carton, their free edges 37 and 37' form an overlap. The length of said free edges is such that the overlap extends over the point 39, the point of mutual intersection of the fold lines 26 and 26' when the pouring spout is collapsed. Now, in the folding together and fixing of the several laminations which form the top wall of the carton, the overlap becomes fixed in the plane of the top wall. The ends of the bellows pleats which are adjacent the point 30 are held down beneath the overlying portion of said fixed overlap. In order to permit the bellows pleats to rise out of the plane of the top wall in expanding the pouring spout, it is necessary to cut off from the main portions of said bellows pleats the parts which are beneath the overlap. This is done by providing the slots 36 at two places on the blank, as shown in Figure 1, which slots register in the set up carton, forming a single slot, as shown in Figure 2.

Since the apical end 28 of the pouring spout coincides with the point 30, said apical portion may be passed through the slot 36 and tucked away beneath the end of the overlap, so as to be held down by said overlap.

The final closure of the carton is effected by means of the end flap 20. This has the shape and size of the end of the carton and after having first been covered with adhesive on its under side, it is folded down congruently with the upper end of the carton and in surface adhesion with the side flaps and with the outer side of the floor of the pouring spout, that is, with the end flap 19. By the use of a suitable adhesive for pasting down the end flap 20, the carton may be made proof against liquid leakage.

The end flap 20 is formed with an integral tongue 32 above the floor of the pouring spout and in adhesion therewith, preferably at least coextensive in area with the floor of the pouring spout and delineated by a line of weakness 33, which may be a perforated line. Said line of weakness also defines a finger tab 34 which overlies the apex 28 of the pouring spout and extends somewhat beyond it. Said tab is part of the tongue 32. Since the apex of the pouring spout has the thickness of several plies, it forms a high spot outstanding from the surface of the end of the carton. For this reason, the adhesion of the overlying tab to the immediate underlying structure is less perfect than that of the surrounding glue interface so that by the rupturing of that part of the line of weakness which defines the tab, with some instrument such as the point of a knife, the tab can be readily raised, and by pulling on the tab the tongue, which is firmly adhered to the floor of the pouring spout, may be lifted, bringing with it the pouring spout which is thus unfolded into its open or operative position.

A line of weakness 35 crosses the tongue 32 at the base of the tab so that the latter may be torn off from the rest of the tongue, if desired, to prevent its being in the way of material being poured from the spout. In re-sealing the pouring spout, the user merely tucks the apex 28 of the pouring spout into the slot 36 and beneath the end of the adjacent underlying side flap extension.

Referring now to Figure 3, this shows a portion of the blank illustrated in Figure 1, in which the mouth of the pouring spout instead of terminating in an apex is truncated, as shown, by cutting off the apical portion of the end flap 19 to form the transverse edge 43, and diverting at least parts of the free edges of the adjacent sides of the pleat flaps to meet the ends of said edge.

As the edge 43 is closer to the base of the end panel 19 when the pouring spout is closed, than is the apex 28 in Figure 1, obviously, the underlying side flap extended portion must extend to a point closer to the base of end flap 19 in order to be in a position to be undertucked by the mouth end of the pouring spout, this being illustrated in Figure 4.

A modified form of pouring spout is shown in Figure 5, in which the floor of the pouring spout constituted by the end flap 19 preserves its triangular form, retaining the apex 28, which is adapted to be tucked beneath the adjacent end of the underlying flap extension shown in Figures 1 and 2, in order to give width to the mouth. Sides of the pleat flaps are cut off adjacent the apex along the fold lines between the end flap 19 and said sides, providing spaces 44 laterally of the apical end of the pouring spout through which material is discharged, as well as over the apex.

Figure 6 shows the blank of a modified form of carton, which is similar to the blank shown in Figure 1 in most respects, including the provision of side flaps so constructed that both of them extend beyond the medial longitudinal line through the top of the carton, but differing to the extent that the underlapping extension projects into the throat of the open pouring spout from above, forming a stop for holding back lumps of material which it is not desired to dispense.

Referring in detail to the blank in Figure 6, it includes side flaps 17 and 18, end flaps 19 and 20, and bellows pleats 22 and 22, these elements being essentially the same as those shown in Figure 1. The side flap 18 has the extending portion 39, which like the corresponding part in Figure 1 terminates in an end edge that intersects the base corner 45 of the adjacent bellows pleat, said edge being perpendicular to the fold line 2. The side flap 17 has an extended portion 46 formed with a prolongation 47 which extends for an appreciable distance along the adjacent side of the projecting portion 31', being separated from said side by a slit coinciding with said side, so that the prolongation 47 does not participate in the folding of the pouring spout, but remains substantially planiform with the side flap 17, from which it emanates. In the carton set up from this blank the extended portion 46 underlies the extended portion 39 and the closed pouring lip is between them, the apex 28 of the pouring lip tucking beneath the end of the extended portion 39 and the prolongation 47 projecting into the space constituting the throat of the pouring lip, this being shown in Figure 7, in which the pouring lip is open, the prolongation being positioned so as to intercept and hold back lumps of minimum size, which size is determined by the length of the prolongation.

While I have in the above description disclosed what I believe to be a practical embodiment of the invention, it will be understood by those skilled in the art that the specific details of construction and arrangement of parts, as shown and described, are by way of example and not to be construed as limiting the scope of the invention.

What I claim is:

1. In a carton having opposite side and opposite end panels, a top construction which includes infolded side flaps hinged to the side panels and a convergent end flap hinged at its base to the intervening end panel, bellows pleats between said end flap and the adjacent side flaps, said pleats and end flap constituting a pouring spout of which said end flap forms the floor and said pleats the sides, said pleats being collapsed against the floor in the closed position of said pouring spout, at least one of said side panels being wider than half the width of said top construction whereby said side panels form a lap in the longitudinal middle region of said top construction, said pleats each including a pair of facets folded re-entrantly in the closed position of said pouring spout, their adjacent angles being equal whereby the fold lines of the

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corresponding facets of each pair coincide and converge toward coincident apices, the apex of the underlying facets being overlain by said lap, said underlying facets being transversely divided by a slot adjacent and outside the overlying end of said lap, to free the parts of said underlying facets not overlain by said lap from the restraint imposed by said lap, said slot providing access for tucking the apex of said pouring spout beneath said lap.

2. In a carton having opposite side and opposite end panels, a top construction which includes infolded side flaps hinged to the side panels and a convergent end flap hinged at its base to the intervening end panel, bellows pleats between said end flap and the adjacent side flaps, said pleats and end flap constituting a pouring spout of which said end flap forms the floor and said pleats the sides, said pleats being collapsed against the floor in the closed position of said pouring spout, at least one of said side panels being wider than half the width of said top construction whereby said side panels form a lap in the longitudinal middle region of said top construction, said pleats each including a pair of facets folded re-entrantly in the closed position of said pouring spout, their adjacent angles being equal whereby the fold lines of the corresponding facets of each pair coincide and converge toward coincident apices, the apex of the underlying facets being overlain by said lap, said underlying facets being transversely divided by a slot adjacent and outside the overlying end of said lap, to free the parts of said underlying facets not overlain by said lap from the restraint imposed by said lap, said slot providing access for tucking the apex of said pouring spout beneath said lap, and means for sealing said carton and protecting said pouring spout comprising an end flap hinged to the remaining end panel, the last named end flap being of substantially the same shape and size as the top of said carton and overfolded congruently therewith in surface engagement with the surfaces afforded by said side flaps and the floor of said pouring spout, and adhered to said surfaces, said last named flap having a tongue delineated by a line of weakness, including the area of said flap which overlies said pouring spout, which tongue by rupture of said flap along said line of weakness may be lifted, expanding said pouring spout.

3. In a carton having opposite side and opposite end panels, a top construction which includes infolded side flaps hinged to the side panels and a convergent end flap

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hinged at its base to the intervening end panel, bellows pleats between said end flap and the adjacent side flaps, said pleats and end flap constituting a pouring spout of which said end flap forms the floor and said pleats the sides, said pleats being collapsed against the floor in the closed position of said pouring spout, at least one of said side panels being wider than half the width of said top construction whereby said side panels form a lap in the longitudinal middle region of said top construction, said pleats each including a pair of facets folded re-entrantly in the closed position of said pouring spout, their adjacent angles being equal whereby the fold lines of the corresponding facets of each pair coincide and converge toward coincident apices, the apex of the underlying facets being overlain by said lap, said underlying facets being transversely divided by a slot adjacent and outside the overlying end of said lap, to free the parts of said underlying facets not overlain by said lap from the restraint imposed by said lap, said slot providing access for tucking the apex of said pouring spout beneath said lap, and means for sealing said carton and protecting said pouring spout comprising an end flap hinged to the remaining end panel, said last named end flap being of substantially the same shape and size as the top of said carton and overfolded congruently therewith in surface engagement with said side flaps and the floor of said pouring spout, and adhered thereto, said last named flap having a tongue delineated by a line of weakness, including the area of said flap which overlies said pouring spout, said tongue including a tab overlying the apex of said pouring spout and having a line of weakness thereacross at the base of said tab along which line said tab may be torn off, said tongue being freed by rupture of said end flap along said line of weakness in the region of said tab whereby said tongue may be lifted by said tab to expand said pouring spout.

References Cited in the file of this patent

UNITED STATES PATENTS

40	1,138,469	Goodkind	May 4, 1915
	2,205,068	Potter	June 18, 1940
	2,218,670	Bennett	Oct. 22, 1940
	2,300,703	Ray	Nov. 3, 1942
	2,337,730	Berch	Dec. 28, 1943
45	2,470,388	Ball	May 17, 1949
	2,731,188	Alden	Jan. 17, 1956