Aug. 13, 1935. A. J. WEISS 2,010,972

RETUCK END CLOSING CARTON

Filed Jan. 2, 1934 2 Sheets-Sheet 1

Fig. 1.

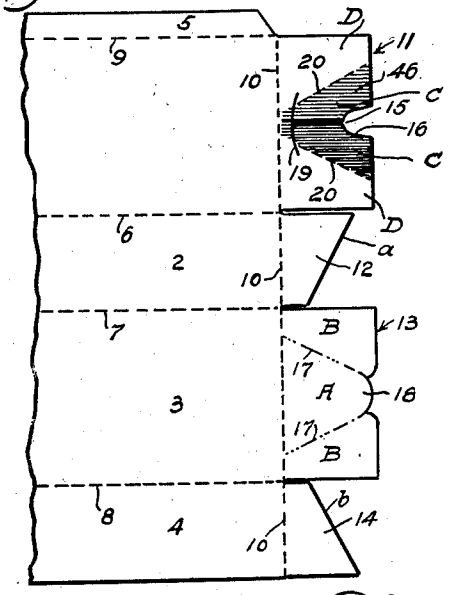


Fig. 2.

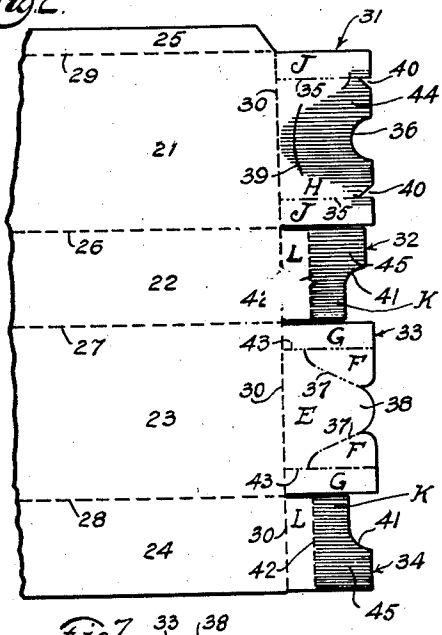


Fig. 4.

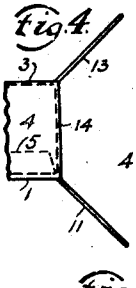


Fig. 3.

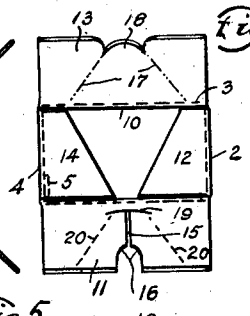


Fig. 7.

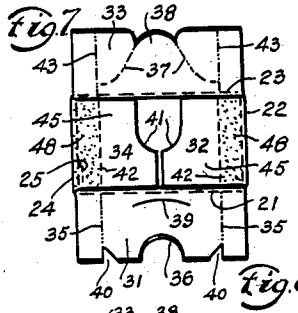


Fig. 10.

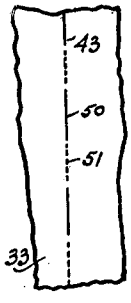


Fig. 8.

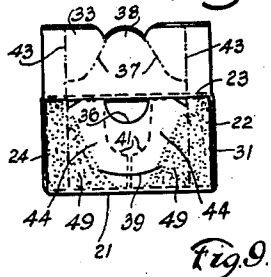


Fig. 5.

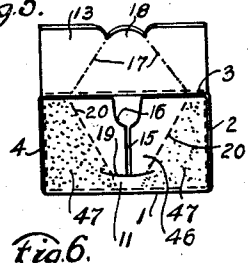


Fig. 6.

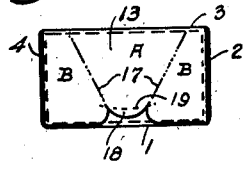
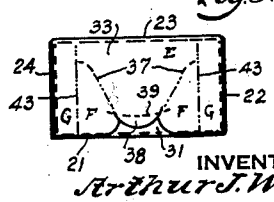


Fig. 9.



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BY
Harold D. Penna, ATTORNEY.

Aug. 13, 1935. A. J. WEISS 2,010,972

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Filed Jan. 2, 1934 2 Sheets-Sheet 2

Fig. 12.

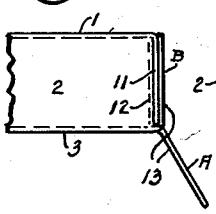


Fig. 11.

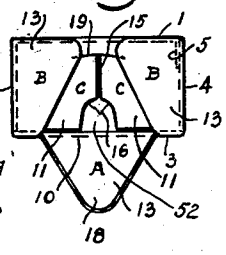


Fig. 17.

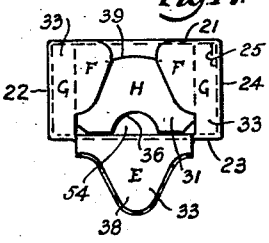


Fig. 14.

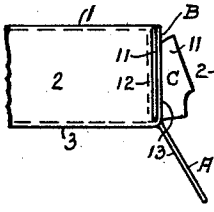


Fig. 13.

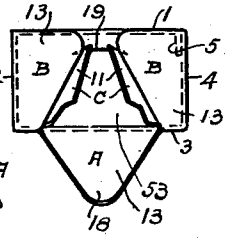


Fig. 18.

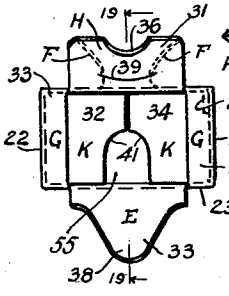


Fig. 19.

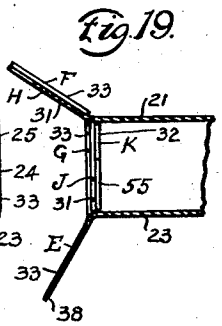


Fig. 15.

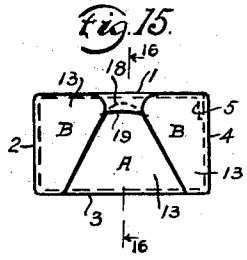


Fig. 20.

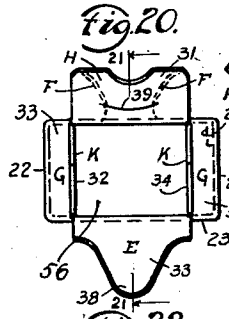


Fig. 21.

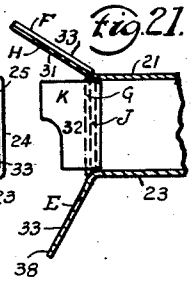


Fig. 16.

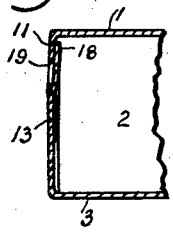
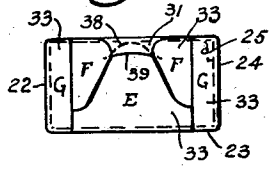


Fig. 22.



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ATTORNEY.

Patented Aug. 13, 1935 2,010,972

UNITED STATES PATENT OFFICE

2,010,972

RETUCK END-CLOSING CARTON

Arthur J. Weiss, St. Albans, N. Y., assignor to Robert Gair Company, Inc., New York, N. Y., a corporation of Delaware

Application January 2, 1934, Serial No 704,903

15 Claims. (Cl. 229—17)

The present invention relates to cartons made of paper board or the like, and has for its principal object the provision of a carton, made from a single blank, which can be shipped knocked-down, or flat to the manufacturer in partly assembled condition, thereafter to be filled with goods by the manufacturer and finally sealed. Thereafter the consumer can open the package along predetermined, perforated and scored lines, to obtain access to the interior of the carton and to form a retuck closure flap, and in other instances to form a series of flap closable openings of successive increasing areas, these being formed out of the over-folded and sealed end closing flaps.

The closing flaps appurtenant to each successive opening may be reclosed, and are held in reclosed position by the outer reclosable end tuck flap.

These and other capabilities will be apprehended as the herein description proceeds, and it is obvious that modifications may be made in the structures herein disclosed without departing from the spirit hereof or the scope of the appended claims.

In the drawings,

Fig. 1 shows one end of a carton blank embodying one form of carton end;

Fig. 2 shows one end of a carton blank of another form of a carton end;

Figs. 3 to 6, inclusive, disclose the blank of Fig. 1 set up to form a rectangular carton, in end views, and indicate the successive steps of closing the flaps inwardly, to finally seal the carton end;

Figs. 7 to 9 inclusive, disclose the blank of Fig. 2 set up to form a rectangular carton, in end views, disclosing the successive steps of closing the end flaps inwardly to finally seal the carton end;

Fig. 10 is an enlarged fragment of one of the outer flaps illustrating, in detail, a preferred form of cut or perforated scoring;

Figs. 11 to 15 inclusive, are end views of the carton formed from the blank of Fig. 1, illustrating the successive steps of breaking out the successive, access end flaps, and reclosing and retucking the same;

Fig. 16 is an enlarged, fragmentary, traversing sectional view, taken on line 16—16, Fig. 15, looking the direction of the arrows, showing the end reclosure details;

Figs. 17, 18, 20 and 22 inclusive, illustrate the successive steps of opening and reclosing the access end flaps of the blank of Fig. 2;

Fig. 19 is a fragmentary sectional view of Fig. 18, taken on the line 19—19, looking in the direction of the arrows; and

Fig. 21 is a fragmentary sectional view taken on the line 21—21, Fig. 20, looking in the direction of the arrows.

In both blanks, as shown in Figs. 1 and 2, only one set of end closing flaps is shown, and it is understood that the opposite end of the carton, not shown, may have similar or unlike, end closing flaps, to complete the carton structures.

In Fig. 1, the carton blank is shown broken away at one end, but in its entirety it comprises a series of connected wall forming panels 1, 2, 3 and 4, defined from each other by score lines 6, 7 and 8. Panel 1 has a glue lap 5, defined therefrom by score line 9. This glue lap is glued on its shown face and, when the carton panels are bent on their score lines to carton form, is affixed to the underface edge of side wall panel 4, as at 5, Fig. 3, for instance.

Panels 1 and 3 may be called front wall panels, while panels 2 and 4 may be called side wall panels.

Panel 1 at one edge has an end closing flap 11 defined therefrom by score line 10, and this flap is provided with a printed on triangular glue resist zone 46 which flares outwardly from score line 10, and is bounded on both outer edges by score lines 20—20, which run from the outer edges of flap 11, inwardly to and ending at a curved retuck slit 19, which traverses the inner short section of the glue resist zone 46. The flap 11, further, has a deep pouring indent 16 cut in its mid-portion from its outer edge, and at the deepest portion of the indent 16 a slit 15 commences and ends at the curved slit 19, thus cutting or dividing the resist zone into two triangular sub-flaps C—C, which are hingedly scored off the glue sub-flaps D—D by the score lines 20—20. As will later be seen, these two scored sub flaps C—C act as inner closure flaps and to form a major pouring opening, when bent outwardly on their score lines 20—20, and the indent 16 acts as a minor pouring spout, when the sub-panels C—C are not utilized.

Side panel 2 has a short triangular end closing flap 12, the triangular edge *a* of which, when the flap 12 is inbent in carton forming position, registers with one of the score lines 20, as partly indicated in Fig. 3, when the end flap 11 is superposed thereover.

Front or main panel 3 has an end closing flap generally denoted by 13, and defined from panel 3 by score line 10, the outer edge of which is so cut as to define a round nosed tab end 18, the ends of which merge with two angularly disposed

cut-score lines 17—17, which terminate at score line 10, thus forming a tear out tuck flap A, and two end closing sub-flaps B—B. When the carton end is normally closed the flaps A—B—B are unbroken and act as a single, end closing flap until tuck flap A is broken out, to gain access to the carton interior.

Side forming panel 4 is also provided, like side forming panel 2, with a short, triangular shaped end closing flap 14, the outer edge *b* being cut at an angle so that when end closing flap 14 is infolded, said edge *b* registers with the other score line 20 on end closing flap 11, about as indicated in Fig. 3, when flap 11 is overfolded on flaps 12 and 14.

After the carton has been erected from its flat condition, and filled with goods, the carton ends of Fig. 1 are closed in the following order; side end flaps 12 and 14 are first turned in as in Fig. 3, leaving flaps 11 and 13 extended, as in Figs. 3 and 4. Then end flap 11 is turned in over end flaps 12 and 14, the outer face of flap 11 being glued, as shown by stippling at 47, Fig. 5. Due to the triangular glue resist printed on the zone 46, of flap 11, when end flap 13 is finally overfolded and glued down on end flap 11, end flap 13 is firmly attached to end flap 11 only at the portions 47—47, Fig. 5, so that the final sealing of end flap 13 to end flap 11 leaves the tear out tuck flap A free of glue attachment to end flap resist zone 46 of end flap 11, but firmly connects sub-flaps B—B of end flap 13 to sub-flaps D—D of end flap 11.

As thus sealed, the carton of Fig. 1 blank is ready for reclosable opening, as follows; as in Figs. 11 and 12, the rounded, contoured tab end 18 of tuck flap A is seized by the fingers and pulled upwardly, this tears and separates the tuck flap A from its associate, glued down sub-flaps B—B, along the perforated lines of weakened resistance 17—17, leaving tuck flap A hinged to front panel 3 at score line 10, as in Fig. 11. This tear-out action exposes the glue resist zone 46 on end flap 11, and the two reclosing sub-panels C—C with their jointly formed, minor pouring orifice or indent 16, as at 52, Fig. 11. If the material or goods packed in the carton is sufficiently pulverulent and fine to flow readily from the pouring orifice 52, sub-flaps C—C are left undisturbed.

If however, the material within the carton, is bulky and does not flow readily from the orifice 52, then the sub-flaps C—C, as in Figs. 13 and 14 are bent up, outwardly from the carton end, on their score lines 20—20, thus enlarging the pouring orifice as at 53, Fig. 13.

After sufficient of the material has been removed from the carton, sub-flaps C—C are closed, tuck flap A is restored to its closing position as in Fig. 15 and its curved nose 18 is introduced into tuck slit 19 in end flap 11, this being fully shown, slightly enlarged, in the sectional view of Fig. 16.

As thus described, the carton of the blank of Fig. 1, provides plural openings usable at will, which are jointly and positively closed by a single tuck flap.

The carton of the blank of Fig. 2, while slightly modified over that of Fig. 1, functions along the same lines and will now be described.

The blank of Fig. 2 comprises front wall and side wall forming panels 21, 22, 23, and 24, defined from each other by score lines 26, 27 and 28.

Front wall panel 21 has a glue lap 25 defined therefrom by score line 29, which is glued to the underfaced edge of side panel 24, as in Fig. 7, at 25, thus to form the foldable rectangular carton body.

Front wall panel 21 has an end flap 31 defined therefrom by a score line 30. End flap 31 has printed thereon a glue resist zone 44, as in Fig. 1, the outline of this zone being contoured to register with the outlines of the tear-out tuck flap E on end flap 33. End flap 31, further has a retuck slit 39 located near score line 30. End flap 31 also has two triangular indents 40—40 in its outer front edge, these indents being spaced from the opposite side edges and each merging with a perforated line of weakened resistances 35—35, which extend to and terminate at the score line 30, thus forming two glue laps J—J and a sub-end flap H, with pouring indent 36 on its front edge.

Side panel 22 has an end flap 32, defined therefrom by score line 30, which has its front edge cut away, as at 41, to later form, with its coacting end flap 34, a pouring orifice. End flap 32 also has a printed on glue resist zone 45 which terminates at a score line 42, leaving a glue zone L between the parallel score lines 30 and 42.

Front wall panel 23 has an end forming flap 33, defined therefrom by score line 30, the outer, front end of said panel being so cut as to delineate a curved finger tab 38 at its mid-section, the said finger tab cut merging with two cut or perforated lines of weakened resistance 37—37, which in turn terminate in two cut or perforated lines of weakened resistance 43—43, which latter lines are spaced away from but are parallel to the side edges of end flap 33, and in turn form two glue laps G—G, which, when the carton end is closed, register with the cut lines and glue sections J—J of end flap 31.

Side forming panel 24 has an end forming flap 34 defined therefrom by score line 30, said flap being, like flap 32, provided with a printed on glue resist zone 45. End flap 34 also has a cut out indent 41 in its front edge forming, with the indent 41 of end flap 32, a coacting portion of a pouring orifice when the carton ends are closed. End flap 34 also has a score line 42 spaced away from and parallel to score line 30, leaving a glue zone L between score lines 30 and 42.

To close the carton of the blank of Fig. 2, as in Fig. 7, the two side end flaps 32 and 34 are first turned in and are glued on their top faces, and due to the action of the glue resist zones 45—45, glue only remains on the sections L—L between score lines 30 and 42, as at the stippled zones 48—48, Fig. 7. The two side end flaps thus jointly form an intermediate sized pouring orifice 41. Then front wall flap 31 is turned in onto flaps 32 and 34 and affixed thereto. Glue is then applied to the top surface of flap 31, and, due to the glue resist zone 44, glue adheres only on the non-resist zones as indicated in Fig. 8, by the stippling 49—49. Then front wall flap 33 is overfolded on flap 31 and adhered thereto, as in Fig. 9, finally completing the end closure of the carton.

As described, this closure leaves cut score lines 43—43 superposed and in registry with cut score lines 35—35 and these latter are both superposed over and in registry with score lines 42—42. The closure also causes superposed registry of the tear-out retuck flap E with the glue zone 44 of end flap 31. The closure, further provides for the superposed registry of the minor pouring orifice 36 over the intermediate sized pouring orifice 41, and both of these are covered and sealed by the retuck flap E.

To open the carton of the blank of Fig. 2,

as in Fig. 17, the partly formed finger tab 38 is seized by the fingers, and lifted upwardly, thus tearing out the retuck flap E from its glued down sub-flaps F—F, along the lines of weakened resistance 37—37. This leaves the retuck flap open and hinged at its score line 30, to panel 23, as in Figs. 12 and 17, exposing the minor pouring orifice 36, as at 54, Fig. 17, and leaves the sub-flaps F—F attached to end flap 31.

If the contained material pours freely through the minor aperture, nothing further is done. If, however, the material does not flow freely enough, then the panel H is grasped by the fingers, through the aperture 36 and pulled upwardly, this tears out sub-flap H along its lines of weakened resistance 35—35, and also tears through the lines of weakened resistance 43—43, and, as in Fig. 18, the sections G—G and J—J are left in their glued in, closed and undisturbed position, but exposing the intermediate sized pouring orifice 41, as at 55, Fig. 18. Thus sub-flap H is left as a secondary closure, hingedly attached at score line 30 to its panel and carrying the sub-flaps F—F thereon.

If the material still does not pour freely from orifice 41, then the end sub-flaps 32 and 34 are bent outwardly on their score lines 42—42, as in Figs. 20—21, thus creating an amplified pouring orifice, as at 56, Fig. 20. Thus, while this latter outlined carton end functions substantially the same as the carton of the blank of Fig. 1, it has the added feature of providing an extra pouring orifice over that of Fig. 1, and it has three superposed, and successively amplified pouring orifices, the dimensions of which orifices are such that they successively overlap each other from the interior to the exterior openings and thereby cover each other in a sift proof manner.

After pouring out the desired amount of material from said carton, it is reclosed by first turning in the flaps 32—34, then reclosing the sub-flap H, and, finally tucking the end 38 of the tuck flap into the tuck slit 39 in panel H of end flap 31.

In Fig. 10 there is disclosed a preferred form of cut-perforations for use in the herein mentioned lines of weakened resistances, and it is especially adaptable if the paper board used is a little heavier than usual, or where, as in Fig. 18, multiple lines of weakened resistance in the board are to be broken simultaneously. As in Fig. 10, this weakening consists of a series of sequentially arranged perforations and slits, for instance the cut score lines 43, consist of a row of perforations 51 followed by a slit 50, and this is repeated along the perforated line.

It will thus be seen that the carton closures above described utilize all of the end flaps of the body of the carton to form coacting access means and a single retuck flap therefor. It will also be noted that the successive pouring apertures are of such progressive dimensions from the outer to the inner orifices as to be, when sealed initially, substantially sift-proof. The carton is simple in structure, easy to seal and easy to open and reclose, as desired.

What I claim is:

1. A carton including a closure flap having therein a marginal indent whereby to provide a pouring orifice, said flap having therein a slit which extends from the indent, and a hinge line defining a portion of said flap adjacent the indent, said line cooperating with the slit, so that said portion may be swung to vary the size of the orifice.

2. A carton comprising a glued closure flap having in its margin an ident, said flap having a glue resisting portion marginal to the indent, a second flap covering the first flap and being attached on the glue, said covering flap including a manipulating tab and having therein a severing score which registers with the outer boundary of said portion, said score being extended to the base of the tab, so that the latter may be grasped to sever the flap along said score whereby to uncover the indent, said indent adapted to provide a pouring orifice.

3. A carton comprising a closure flap having in its margin an indent to provide a pouring orifice, said flap having glue laps distant from the orifice and there being a glueless strip marginal to the orifice; a second flap covering the first flap and the indent and having portions attached to said laps, said covering flap having a section thereof displaceably engaging said strip and there being severing scores disposed between said portions and said section, and a manipulating tab extending from said section, whereby on manipulation of said tab the flap may be severed along said scores so as to displace said section and uncover the orifice.

4. A carton according to claim 3, wherein the first mentioned flap is provided with a slit between said laps, said slit adapted to receive said tab in holding relation after the orifice is temporarily opened.

5. A carton including a closure flap having therein a marginal indent whereby to provide a pouring orifice, said flap having therein and extending from the indent a slit, and a score or hinge line disposed in said flap and cooperating with said slit, said hinge line providing a sub-flap marginal to the orifice, for enlarging the latter, said indent being also adapted to receive the finger of a user, whereby to swing the sub-flap outwardly.

6. A carton having an end closure including a flap having coacting sections, said sections having mating marginal indents therein whereby to provide a pouring orifice, said sections having also therein and distant from the orifice hinge or score lines so as to provide sub-flap marginal to the orifice, and flaps removably covering said sections and the orifice, so that the orifice may be uncovered, said orifice adapted also to receive the fingers of a user grasping the sub-flaps to swing the latter outwardly whereby to enlarge the orifice.

7. A carton having an end closure including cooperating sections which form a flap, said sections having in their inner ends coacting marginal indents to provide an enlarged pouring orifice, said sections having glue laps thereon and there being a glue resisting portion marginal to the orifice; a second flap including laps which are attached to the first laps and there being an interposed portion disposed above and displaceably engaging the first portion, said interposed portion having therein a relatively small indent which forms a primary pouring orifice, and their being severing scores disposed between the aforesaid laps of the second mentioned flap and said interposed portion; and a third flap removably covering the second mentioned flap, whereby on removal of said third flap the primary orifice may be uncovered, said latter orifice being also adapted to receive a finger of a user, whereby said interposed portion may be gripped to sever the structure along said scores for displacing said interposed portion to uncover the enlarged orifice.

8. A carton having an end closure which in-

cludes an outer flap having a removable portion at one margin thereof; a second flap having in its margin below said portion a recess, whereby to provide a primary pouring orifice, said latter flap having a removable portion marginal to the recess; a third flap having in its margin below the second mentioned portion an enlarged recess, whereby to provide a secondary orifice; and a removable portion disposed in said third flap and positioned marginal to the associated recess, whereby to provide a further enlarged, main orifice.

9. A carton comprising an end closure which includes an outer flap having a removable marginal portion, a tab extending from said portion for removing the latter; a second flap having in its margin below said portion a recess, whereby to provide a primary pouring orifice, said latter flap having a removable portion marginal to the recess; a third flap having in its margin below the second mentioned portion an enlarged recess, whereby to provide a secondary orifice, and removable portions provided in the third flap and disposed marginal to the associated recess, whereby to provide a further enlarged or main orifice.

10. A carton comprising an end closure flap having in its margin an indent to provide a pouring orifice, said flap having therein a slit, another flap covering the first flap and adhesively attached thereto on opposite sides of the indent; said second flap having a removable portion disposed above the indent, and a manipulating tab integral with said portion and disposed above and extending beyond said slit, whereby said tab may be manually grasped to remove said portion for opening the indent, said tab being adapted to be tucked into said slit so as to reclose the indent.

11. An end closure for a carton having rectangularly disposed walls, comprising a flap having opposed outer glued portions and interposed coacting glueless portions, said flap being continuous with one of said walls and having between the glueless portions and adjoining the opposite wall a manipulating indent, said glueless portions having therebetween and extending from the indent a dividing line and there being a slit in said flap adjacent the first mentioned wall and to which slit said line extends; a second flap continuous with said opposite wall and having thereon a marginal manipulating tab, said tab extending beyond said slit and said second mentioned flap having its outer portions fixedly attached to said glued portions, said second flap having therein and extending from the base of said tab weakened lines so as to provide a tear-out tuck flap, the latter being in registry with the glueless portions, so that said tab may be manually grasped to tear the structure along the weakened lines, whereby a finger of a user may be inserted in the indent to bend said coacting portions outwardly so as to provide a pouring orifice, said tab being adapted to be tucked into the slit so as to reclose said orifice and said indent.

12. A carton including an end closure flap having therein a marginal indent to provide a pouring orifice, said flap having on opposite sides of the indent glue strips and there being an interposed glueless portion which is marginal to the indent; a second flap having strips coactir , in attached relation with the first strips and having an interposed portion removably covering the indent, and a manipulating tab carried by the second mentioned portion whereby to remove the latter so as to open said indent, said coacting strips adapted to rigidify the closure.

13. An end closure for a carton having opposed front walls and opposed end walls, comprising flaps of limited area which are turned inwardly from said side walls and provided on their outer portions with glue strips, said flaps providing a pouring orifice therebetween; a flap turned inwardly from one of said front wall and having outer portions attached on their under faces to said strips, said second flap having in its margin adjoining the opposite front wall a manipulating indent and there being a glueless portion marginal to the indent, said second flap having on the upper faces of its outer portions glue strips, said glueless portion having therein and extending from the indent a dividing line so as to provide adjustable sub-flaps; and a cover flap turned inwardly from said opposite front wall and having its outer portions attached on the glue strips of said upper faces, said latter flap having a removable section disposed above said glueless portion, and a manipulating tab extending from said section, so that on manually grasping said tab said section may be removed, so that a finger of a user may be placed in the indent whereby to move said sub-flaps and adjust the size of the pouring orifice, said respective glue strips adapted to reinforce the closure.

14. A carton comprising a flat end closure including a flap having therein a marginal pouring orifice, said flap providing a bendable margin which bounds at least one side of the orifice, and another flap having an outer portion adhesively engaging the first mentioned flap outside of said margin, said second flap having an inner portion removably covering the orifice and its margin, so that when said inner portion is removed said margin may be bent to enlarge the orifice.

15. A carton formed from a blank of paperboard comprising a substantially flat end closure including a flap having therein a marginal indent to provide a primary pouring orifice, said flap having therein and marginal to the indent a weakened line, and a second flap engaging the first flap and having a portion removably covering the indent and its margin, said indent adapted also to receive the finger of a user so that said margin may be bent outwardly at said line to enlarge the orifice.

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