July 26, 1966 S. R. KOOLNIS 3,262,630

BOX WITH POUR OPENING

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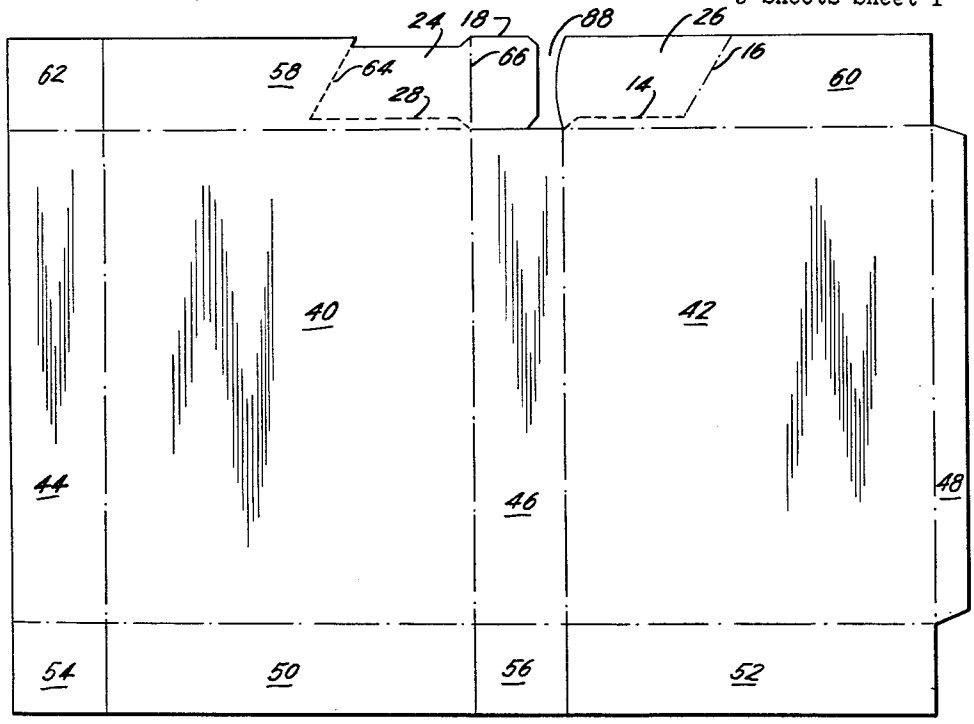


FIG. 1

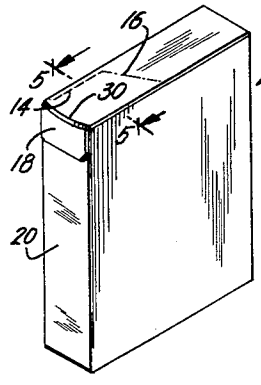


FIG. 2

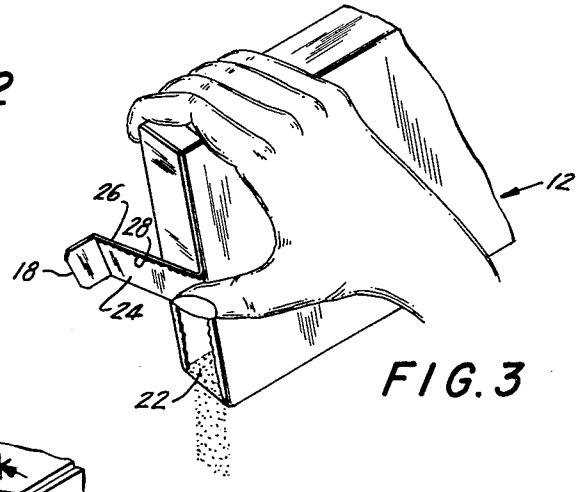


FIG. 3

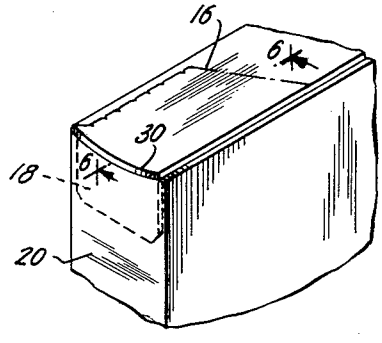


FIG. 4

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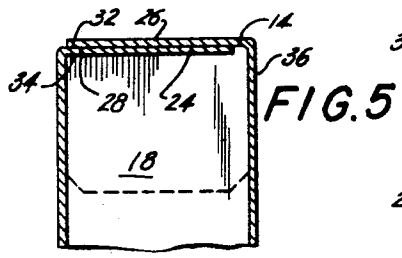


FIG. 5

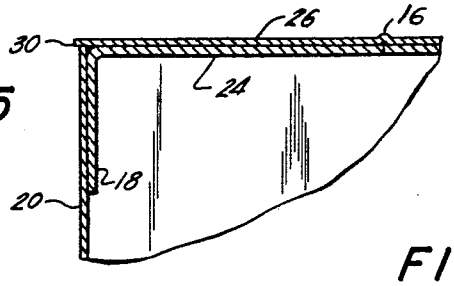
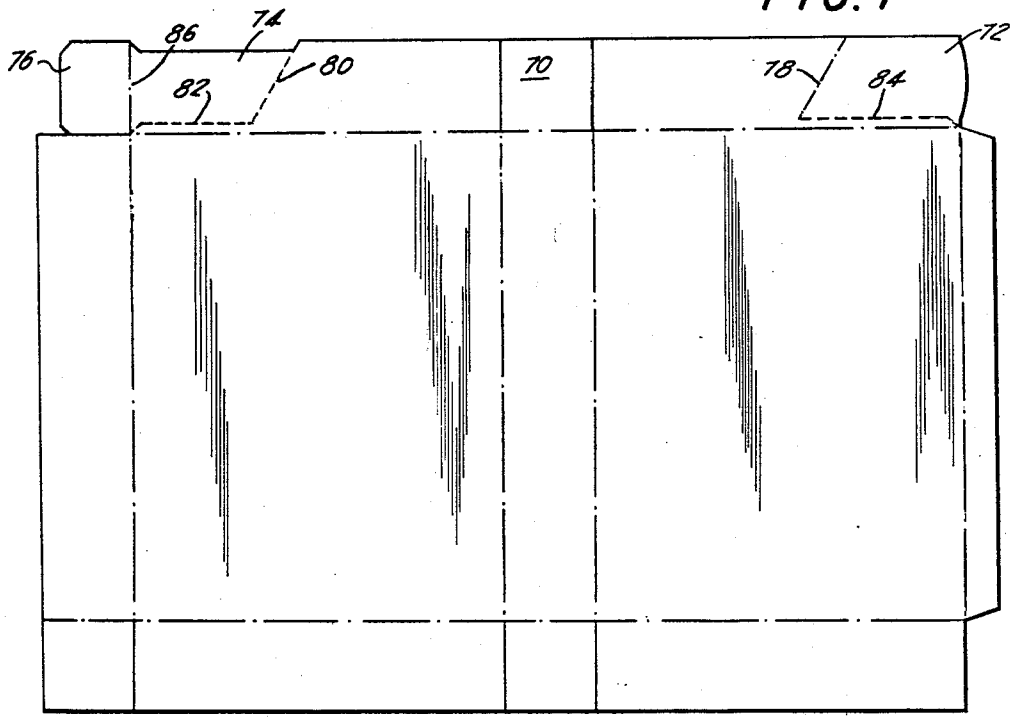


FIG. 6

FIG. 7



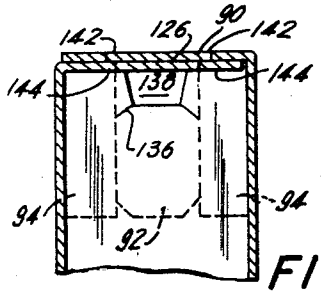


FIG. 12

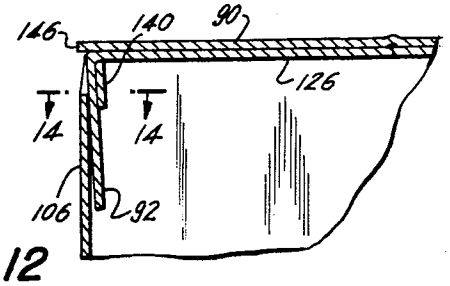


FIG. 13

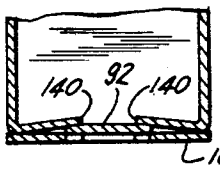


FIG. 14

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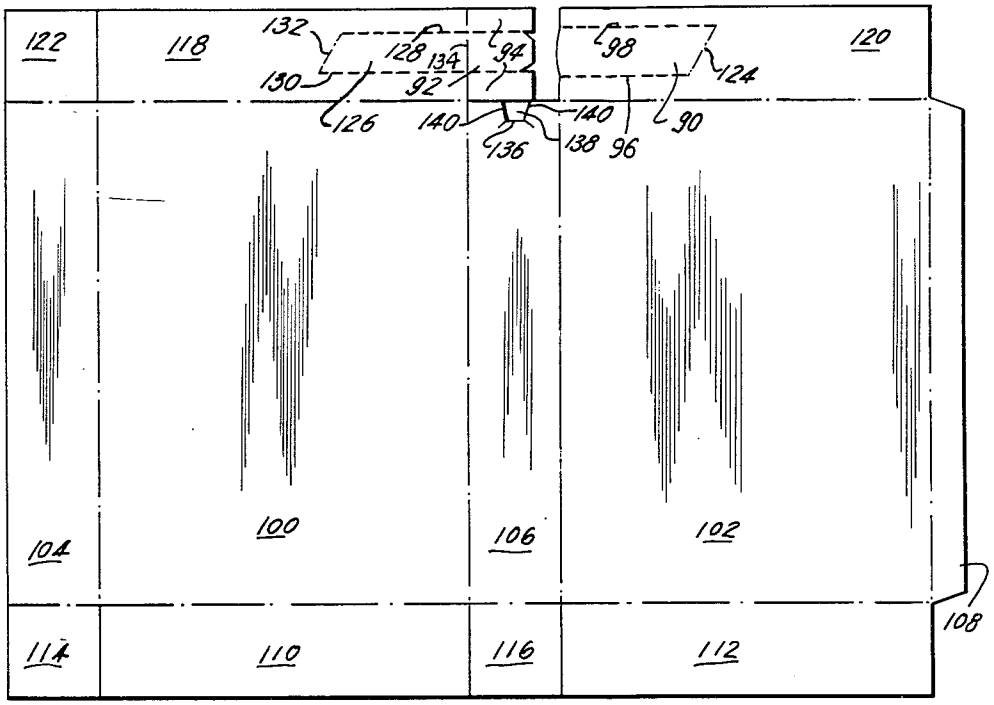


FIG. 8

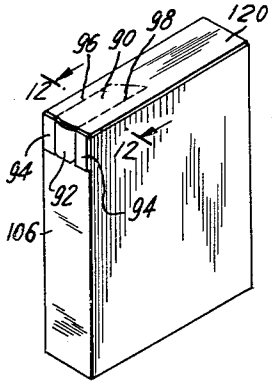


FIG. 9

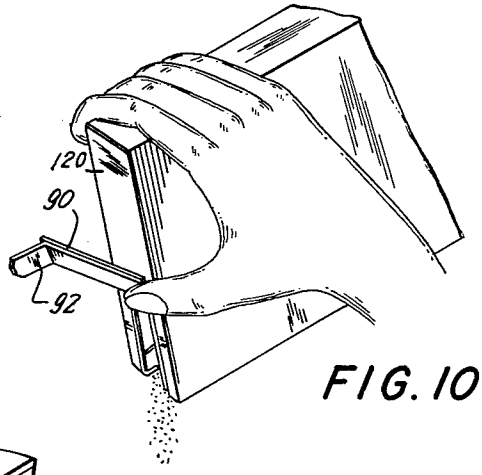


FIG. 10

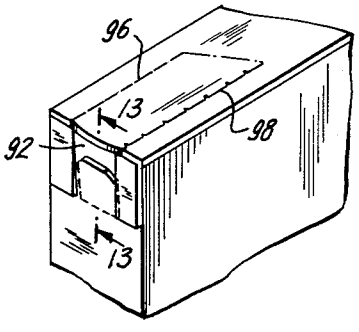


FIG. 11

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3,262,630

BOX WITH POUR OPENING

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Filed Dec. 23, 1963, Ser. No. 332,434
16 Claims. (Cl. 229—17)

This invention relates to boxes, especially paperboard boxes for loose dry material, and more particularly boxes having a pour opening.

Paperboard boxes which are openable at one corner to provide a reclosable pour opening are already known. The general object of the present invention is to improve such boxes. Another object is to provide the improved box with either a large opening, say for cereal, or a small opening for powdered material, typically a detergent.

Other objects of the invention are to provide such a box having a stop at the end of the closure, a mating flange and receptive ledge along the side of the closure, and a tuck tab with adjacent finger catch to facilitate reopening the box. Another object is to so design the closure that the tuck tab enters easily when closing the box, and yet is restrained against unintended opening of the box.

Many prior pour boxes have perforations along the corners, which has led to unintended opening and leakage of powder in the course of ordinary handling. Customers refuse a broken package, and fear serious prior loss of contents. If the perforations are coarse instead of fine, to prevent such opening, the box may tear elsewhere than on the intended line of perforations when initially intentionally opening the box. One object of the present invention is to avoid this difficulty, and to that end the tear lines or perforations are located inward from the corners of the box.

To accomplish the foregoing general objects, and other more specific objects which will hereinafter appear, my invention resides in the box elements and their relation one to another, as are hereinafter more particularly described in the following specification. The specification is accompanied by drawings in which:

FIG. 1 shows a one-piece blank from which the box may be formed;

FIG. 2 is a perspective view showing the box in initially sealed condition;

FIG. 3 is a perspective view showing the box in open or pouring condition;

FIG. 4 is a fragmentary perspective view showing the box reclosed;

FIG. 5 is a fragmentary transverse section taken on the line 5—5 of FIG. 2;

FIG. 6 is a fragmentary section taken on the line 6—6 of FIG. 4;

FIG. 7 shows a modified blank which makes up into a box substantially the same as that previously described;

FIG. 8 shows a blank for a modified box having a narrow opening;

FIG. 9 is a perspective view of the box in original sealed condition;

FIG. 10 is a perspective view showing the box open for pouring;

FIG. 11 is a fragmentary perspective view showing the box reclosed;

FIG. 12 is a fragmentary transverse section taken on the line 12—12 of FIG. 9;

FIG. 13 is a fragmentary section taken on the line 13—13 of FIG. 11; and

FIG. 14 is a fragmentary horizontal section taken on the line 14—14 of FIG. 13.

Referring to the drawing, and more particularly to FIG. 2, the box 12 has a tear line 14 and a diagonal crease or fold line 16. There is a tab 18 outside the side panel 20 of the box.

To open the box, the tab 18 is pulled upward to produce a tear on the line 14, and another tear located somewhat inward from the opposite edge, these tears running back as far as the diagonal crease line 16 which then acts as a hinge. The closure turns sideward out of the way as shown in FIG. 3, whereupon the contents of the box are readily poured through the resulting pour opening at 22.

The closure has two layers of material indicated at 24 and 26, and the inner or lower layer 24 has a second tear line 28. Such a closure is readily held out of the way by means of one finger while pouring. In FIG. 3 it is the thumb which is holding the closure in its sideward position, but many people prefer to place one hand over the box with the thumb on one side and the fingers on the other side, in which case the index finger is readily used to hold the closure in its offset position.

Referring now to FIG. 4, the box 12 has been reclosed by turning the closure downward about its hinge 16, but this time the tuck tab 18 is slid inside the panel 20 of the box. The tuck tab is an extension of the lower layer of the closure. The edge 30 of the upper layer preferably projects slightly beyond the fold or crease at the top of the tuck tab 18, thus providing a stop which limits the downward movement of the closure. It also acts as a finger catch to assist in opening of the closure.

This relation is also shown in FIG. 6 in which tuck tab 18 is located inside the side panel 20, and the edge 30 of the upper layer 26 of the closure rests against the top edge of the side panel 20 for its stop action, and projects slightly so that it may be used as a finger catch when lifting the closure.

Referring now to FIG. 5, the tuck tab 18 is preferably of full width. It is shown in broken lines because this section is taken through a box which has not yet been opened. The perforations or tear line is shown at 14 for the upper layer 26 of the closure, and at 28 for the lower layer 24. It should be noted that the lower layer is preferably narrower than the upper layer, thus providing a flange 32 which rests on a ledge 34. This provides a support along the side edge of the closure when the box is reclosed; and at the opposite edge a somewhat similar result is obtained because handling of the box results in the panel 36 moving inward slightly.

The blank from which the box is formed is shown in FIG. 1. It is a one-piece blank, and it is cut and creased to provide main panels 40 and 42 connected by side panels 44 and 46, and a glue lap 48. There are also bottom flaps 50 and 52, with additional smaller flaps 54 and 56. The top is formed by overlapping flaps 58 and 60, and a smaller flap 62 above panel 44. There is no corresponding smaller flap above panel 46. There is a diagonal crease line 16 for the closure. There might be a corresponding crease line at 64, but it is preferred to cut the lower flap at this point so that the hinge action will be free and easy. The line 64 may be a line of perforations, or an actual cut.

The lines 14 and 28 are perforated for tearing. It will be understood that the term "perforations" includes, and indeed it is usual to use, a series of short slits disposed end-to-end, rather than round perforations. The transverse line 66 is a crease line which acts as a hinge for the tuck tab 18. It will be understood that the upper layer 26 of the closure is glued to the lower layer 24, thus forming a single closure at the same time that flaps 58 and 60 are glued together.

The glue lap 48 and the flaps are provided with glue on appropriate surfaces, in accordance with any conventional or suitable practice. The location of the glue

lines is therefore not shown, and in any case is variable. However, the gluing of the tuck tab is somewhat special, to weaken the adhesion. It may be spot glued, or the surface may be preprinted to weaken the hold of the glue, or any other such means may be used.

The diagonal hinge has the advantage not only of turning the closure sideward out of the way when pouring, but it has some additional advantage when the box is reclosed. The tuck tab approaches its receptive opening at an angle, so that one corner readily enters first, and the tuck tab then straightens out and slides into position as the cover comes all the way down. When moved in opening direction, the tilting of the tuck tab tends to press against the inner side wall of the box. This discourages accidental opening of the closure, but does not interfere with intentional opening. It simply adds to the frictional resistance against unintended opening.

FIG. 7 shows a blank which produces a box substantially the same as that previously described. The blank is generally equivalent to that shown in FIG. 1, but with the difference that the small flap **70** at the top is located in the middle of the blank; the top **72** of the closure is located at one corner of the blank; and the bottom **74** of the closure and its tuck tab **76** are located at the opposite corner of the blank. Here again there is a diagonal crease line **78** for a hinge, with a matching tear line or cut **80** beneath the hinge, and longitudinal tear lines **82** and **84** for the closure, as well as a crease or fold line **86** for the tuck tab. The advantage of the blank shown in FIG. 7 is mainly a manufacturing advantage, in that the trim or scrap is automatically disposed of when cutting the blanks from a web. In the blank of FIG. 1, the trim at **88** between the two parts of the closure may be removed by appropriate special means in the die. The blank of FIG. 7 requires no such special means for trim or scrap removal.

Referring now to FIG. 9, the package there shown is for powder and differs primarily in that the closure **90** is much narrower than the package. The tuck tab **92** preferably has the same narrow width, and the excess material **94** at each side of the tuck tab may be permanently cemented to the outside of the side panel **106**. The tuck tab itself is only lightly cemented.

The operation is much as previously described, the closure being opened by lifting tab **92** and closure **90** along tear lines **96** and **98**, there being two tear lines for the upper layer of the closure, and two tear lines (not shown in FIG. 9) for the lower layer of the closure.

When the package has been opened, the closure **90** is readily held in sideward position as shown in FIG. 10. Here again it may be held in various ways, for example, between the thumb and fingers, with the index finger holding the closure instead of the thumb, as shown in FIG. 10. In FIG. 11, the box has been reclosed, with tuck tab **92** disposed partly outside and partly inside the box.

The blank is shown in FIG. 8, and again the body of the box may be conventional in comprising main panels **100** and **102**, side panels **104** and **106**, a glue lap **108**, bottom flaps **110** and **112**, and small bottom flaps **114** and **116**. At the top there are overlying lower and upper flaps **118** and **120** respectively, and a small flap **122**. The upper layer of the closure is defined by a diagonal crease or hinge line **124** and tear lines **96** and **98**. The lower layer **126** of the closure is defined by tear lines **128** and **130**. These are closer together than the tear lines **96**, **98**, so that the lower layer of the closure is narrower than the upper layer, thus providing flanges and ledges to be described later. The tear line **132** is diagonal, and is located beneath the hinge line **124**. It may be a cut line instead of a tear line. The tear lines **128** and **130** are extended to define the tuck tab **92** between the ears **94**. The line **134** is a crease line.

The side panel **106** has a transverse incision **136** which is located below the top edge of the side panel, and which receives the low portion of the tuck tab **92**. The side panel is preferably cut away above the incision **136**, as shown at **138**, to provide an opening which is narrower than the incision **136** and tuck tab **92**. The side edges **140** of the opening **138** are preferably downwardly convergent. The tuck tab is received outside the edges **140** above the incision **136**, and is received inside the panel **106** below the incision **136** when the box is reclosed. When pouring a thin stream of powder from the box, the opening **138** serves to guide and localize the stream. The material is assumed to be a powder, typically a detergent. For loose bulky material, such as cold breakfast cereal or rice, the larger opening shown in FIGS. 1–7 is preferred.

The closure may be further described with reference to FIGS. 12, 13 and 14 of the drawing. FIG. 12 shows the box from inside, as initially sealed. The tuck tab **92** and ears **94** are outside the box. The opening **138** and the transverse incision **136** may be seen inside the box. FIG. 12 also shows how the upper layer **90** of the closure forms edge flanges **142**, while the lower layer **126**, because it is narrower, provides stop ledges **144** which receive the flanges **142**.

FIGS. 13 and 14 show the box after it has been opened and reclosed. The tuck tab **92** slides downward outside the parts **140** and then inside the panel **106**. The upper layer **90** of the closure (FIG. 13) projects somewhat at **146** beyond the tuck tab **92**, thereby providing an additional stop for the closure, and also providing a finger catch which facilitates opening of the closure. There is resistance to unintended opening by reason of the warping of the parts **140** inside the tuck tab; warping of the tuck tab through the incision; and also the tilt caused by the angle hinge, as previously mentioned.

It is believed that the construction and method of assembly and use of my improved box, as well as the advantages thereof, will be apparent from the foregoing detailed description. It will also be apparent that while I have shown and described the invention in several preferred forms, changes may be made in the boxes shown without departing from the scope of the invention, as sought to be defined in the following claims.

I claim:

1. A box having a reclosable pour opening, said box being formed of a single piece blank cut and creased and folded to provide main and side panels, a bottom, and overlying top flaps, the upper top flap being perforated and ceased to provide the upper layer of a closure which has a hinge crease, the subjacent flap being perforated to provide the lower layer of said closure, the free end of said lower layer projecting well beyond the upper layer to provide a hinged tuck tab which is initially outside the box but on reclosing is received inside the box, said upper layer projecting slightly beyond the hinge of the tuck tab to provide a top stop when reclosing and which serves also as a finger catch when opening the closure.

2. A box as defined in claim **1** in which the tuck tab has the width of the upper top flap, and in which the side panel which is adjacent the tuck tab is left intact all the way up to its top edge, and in which the tuck tab when reclosing is received just inside the side panel.

3. A box as defined in claim **1** in which the upper layer of the closure is formed at one corner of the blank and the lower layer and tuck tab of the closure are formed at another corner of the blank.

4. A box as defined in claim **1** in which the tuck tab has the width of the upper top flap, and in which the side panel which is adjacent the tuck tab is left intact all the way up to its top edge, and in which the tuck tab when reclosing is received just inside the side panel, and in which the upper layer of the closure is formed at one corner of the blank, and the lower layer and tuck tab of the closure are formed at another corner of the blank.

5. A box as defined in claim **1** in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the material at each side of the tuck

tab is retained and cemented to the outside of the side panel.

6. A box as defined in claim 1 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the side panel which is adjacent the tuck tab has a transverse incision located below its top edge to receive the lower portion of the tuck tab, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

7. A box as defined in claim 1 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the side panel which is adjacent the tuck tab has a transverse incision located below its top edge to receive the lower portion of the tuck tab and is cut away above the incision to provide an opening narrower than the incision, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

8. A box as defined in claim 1 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the side panel which is adjacent the tuck tab has a transverse incision located below its top edge to receive the lower portion of the tuck tab, and is cut away above the incision to provide an opening narrower than the incision, the sides of said opening being downwardly convergent, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

9. A box as defined in claim 1 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the material at each side of the tuck tab is retained and cemented to the outside of the side panel which is adjacent the tuck tab, and in which the said side panel has a transverse incision located below its top edge to receive the lower portion of the tuck tab, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

10. A box as defined in claim 1 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the material at each side of the tuck tab is retained and cemented to the outside of the side panel which is adjacent the tuck tab, and in which the said side panel has a transverse incision located below its top edge to receive the lower portion of the tuck tab, and is cut away above the incision to provide an opening narrower than the incision, the sides of said opening being downwardly convergent, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

11. A box having a reclosable pour opening, said box being formed of a single piece blank cut and creased and folded to provide main panels, side panels, a glue lap, bottom flaps, and overlying top flaps, the upper top flap being perforated and creased near one end to provide the upper layer of a closure which is narrower than the said upper flap top and which has a hinge crease, the subjacent top flap being perforated to provide the lower layer of said closure, said lower layer being narrower than said upper layer so that the closure has a flange which engages a subjacent ledge, the free end of said lower layer projecting well beyond the upper layer to provide a hinged tuck tab which is initially outside the box but on reclosing is received inside the box, said upper layer projecting slightly beyond the hinge of the tuck tab to provide a top stop when reclosing and which serves also as a finger catch when opening the closure.

12. A box as defined in claim 11 in which the tuck tab has the width of the upper top flap, and in which the side panel which is adjacent the tuck tab is left intact all the way up to its top edge, and in which the tuck tab when reclosing is received just inside the side panel, and in which the upper layer of the closure is formed at one corner of the blank, and the lower layer and tuck tab of the closure are formed at another corner of the blank.

13. A box as defined in claim 11 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the side panel which is adjacent the tuck tab has a transverse incision located below its top edge to receive the lower portion of the tuck tab and is cut away above the incision to provide an opening narrower than the incision, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

14. A box as defined in claim 11 in which the closure and its tuck tab are substantially narrower than the top flaps, and in which the material at each side of the tuck tab is retained and cemented to the outside of the side panel which is adjacent the tuck tab, and in which the said side panel has a transverse incision located below its top edge to receive the lower portion of the tuck tab, and is cut away above the incision to provide an opening narrower than the incision, the sides of said opening being downwardly convergent, said tuck tab being received outside the side panel above the incision and inside the side panel below the incision.

15. A box having a reclosable pour opening, said box being formed of a single piece blank cut and creased and folded to provide panels, a bottom, and overlying top flaps, the upper top flap being perforated and creased to provide the upper layer of a closure which has an angle hinge, the subjacent flap being perforated to provide the lower layer of said closure, the free end of said lower layer projecting well beyond the upper layer to provide a hinged tuck tab which is initially outside the box but on reclosing is received inside the box, said upper layer projecting slightly beyond the hinge of the tuck tab to provide a top stop when reclosing and which serves also as a finger catch when opening the closure.

16. A box having a reclosable pour opening, said box being formed of a single piece blank cut and creased and folded to provide main panels, side panels, a glue lap, bottom flaps, and overlying top flaps, the upper top flap being perforated and creased near one end to provide the upper layer of a closure which is narrower than the said flap and which has an angle hinge, the subjacent top flap being perforated to provide the lower layer of said closure, said lower layer being narrower than said upper layer so that the closure has a flange which engages a subjacent ledge, the free end of said lower layer projecting well beyond the upper layer to provide a hinged tuck tab which is initially outside the box but on reclosing is received inside the box, said upper layer projecting slightly beyond the hinge of the tuck tab to provide a top stop when reclosing and which serves also as a finger catch when opening the closure.

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