

Filed Aug. 8, 1960

RECLOSABLE BOXES

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Feb. 19, 1963

R. T. GORTON
RECLOSABLE BOXES

3,078,030

Filed Aug. 8, 1960

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FIG. 4

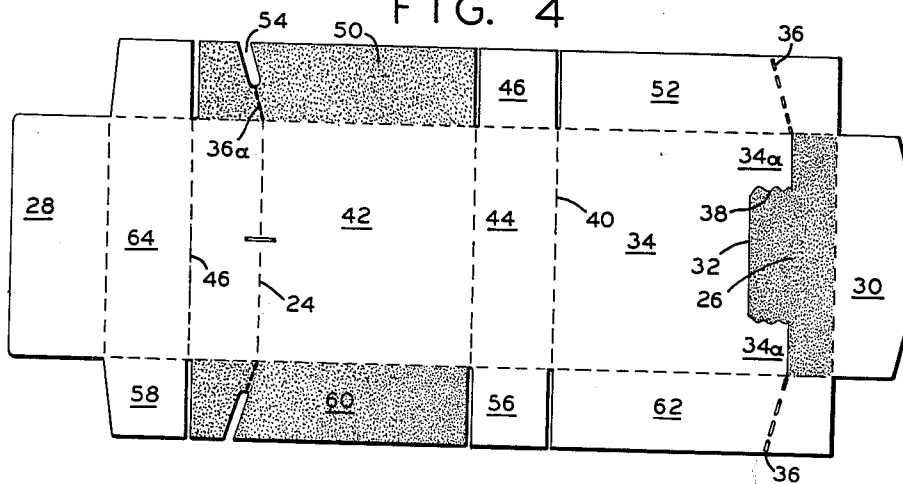


FIG. 5

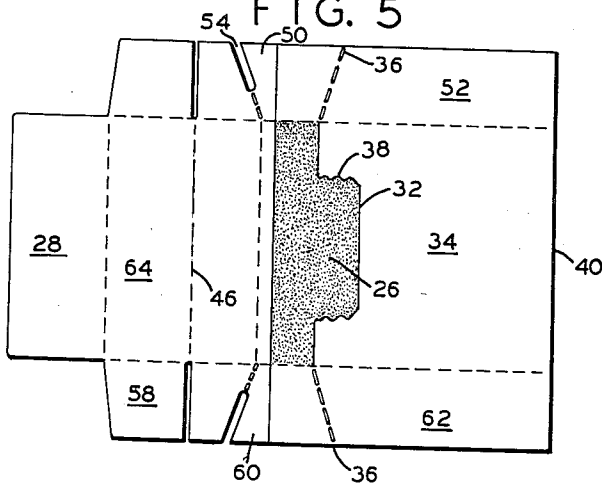


FIG. 6

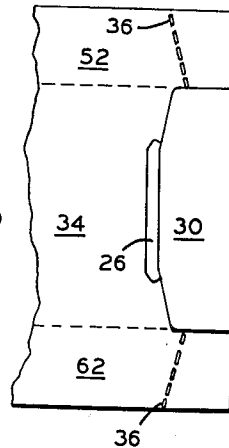
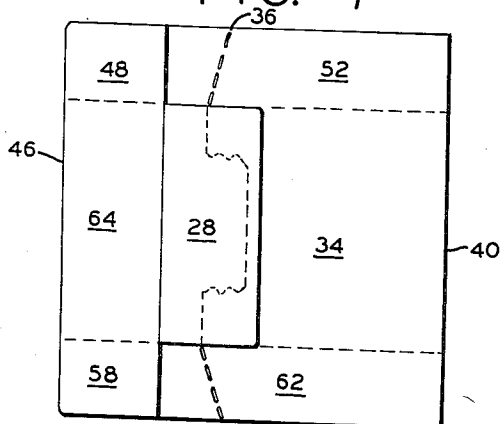


FIG. 7



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FIG. 8

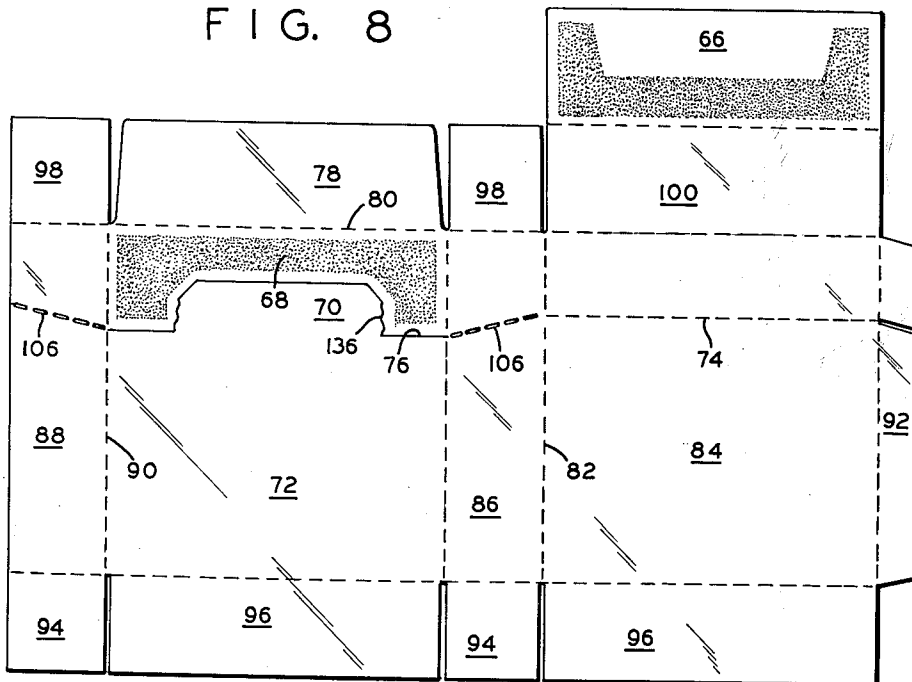


FIG. 9

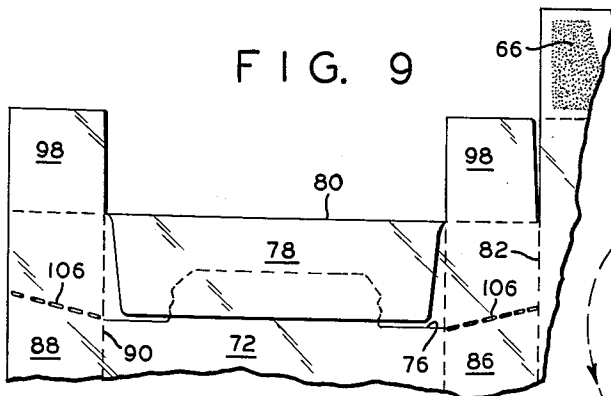


FIG. 10

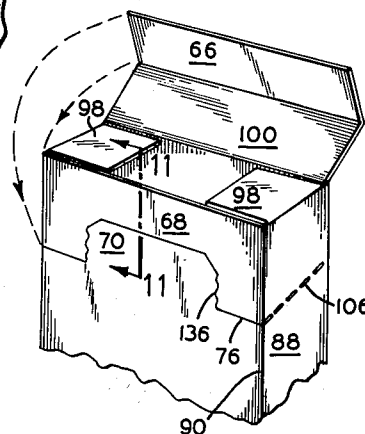


FIG. 11

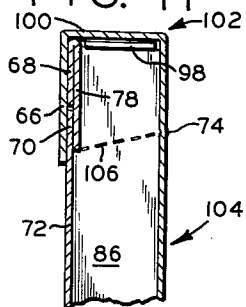
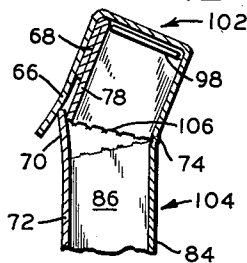


FIG. 12



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FIG. 13

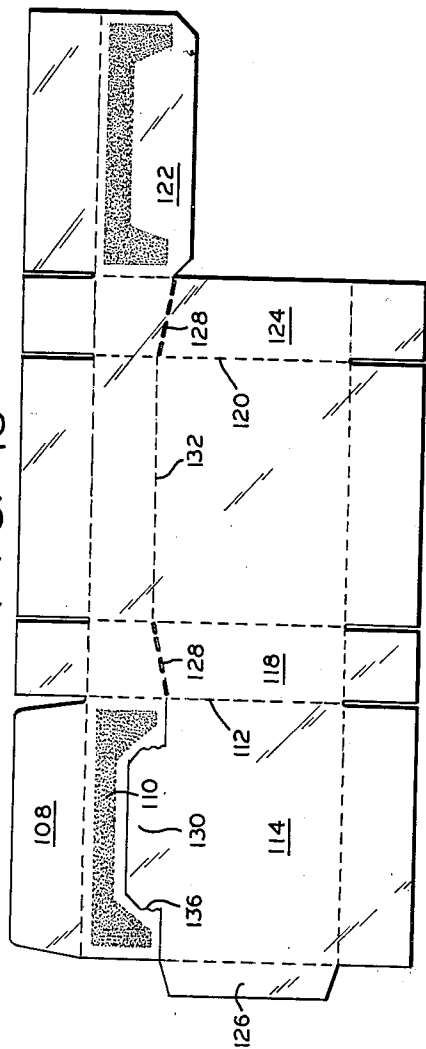


FIG. 14

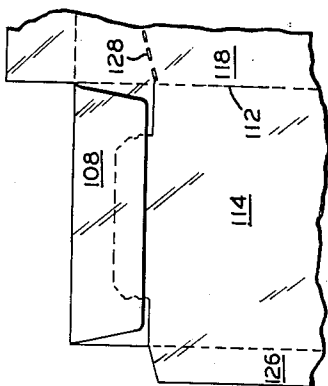


FIG. 15

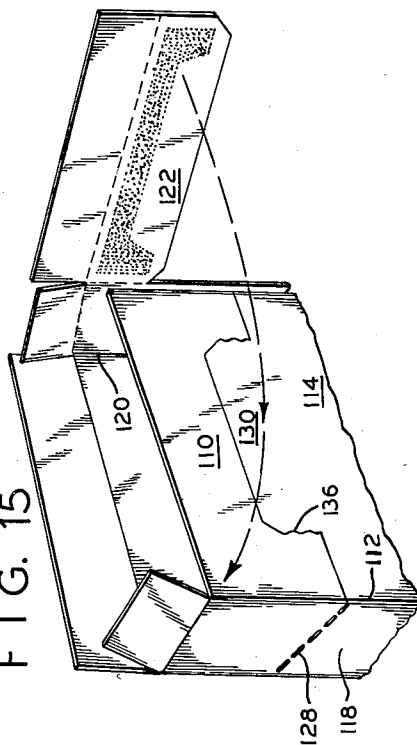
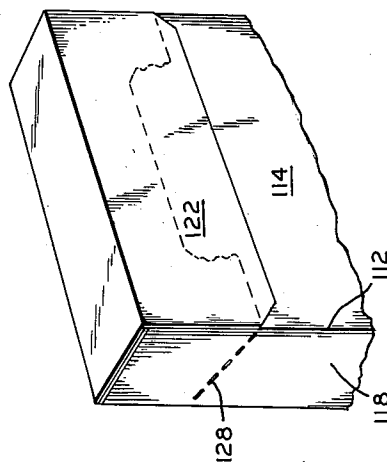


FIG. 16



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RECLOSABLE BOXES

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Filed Aug. 8, 1960, Ser. No. 48,285
6 Claims. (Cl. 229-44)

This invention relates to boxes having integral hinged tops intended to be opened or closed a number of times, and to blanks, methods of assembly and setting-up processes for boxes having hinged tops that are resiliently retained in place when in a closed position.

There have been a number of boxes developed, patented or marketed with tops or lids having an integral hinged construction. The "flip-top" cigarette boxes are examples of this type which have gone into wide use. Boxes of this type are also disclosed in Tyrseck Patent No. 2,367,476 and Bonneville Patent No. 2,396,150.

The prior art "flip-top" boxes have several disadvantages in their manufacture and use. In general, the cigarette boxes require an additional piece which is secured to the upper front portion of the box to engage the top when in a closed position. This additional piece is cut from separate stock and the cutting, handling, and gluing of this additional piece adds to the expense of box manufacture, since the entire box is not made from one blank. Another disadvantage of this type of box construction is that the engaging tab portions on the additional inserted piece are prone to wear after the top has been opened are closed several times. Thus the top is not held securely for the life of the box. These prior art flip-top boxes also require cellophane or other wrapping around them to keep the top closed until the box is opened by the ultimate consumer. A further disadvantage of these boxes is the lack of lateral stability and strength, as the top will be forced open by pressure on diagonally opposed vertical edges of the box.

The boxes disclosed in the patents to Tyrseck and Bonneville, also have many of the disadvantages described above. Although the boxes disclosed in these patents can be made from a single blank, both Tyrseck and Bonneville utilize inner and outer boxes to achieve greater box strength and to aid in retaining the top in a closed position on the box. The use of an inner and an outer box requires the use of more material in manufacture and is consequently more expensive.

Accordingly, it is an object of the present invention to provide a box which can be assembled from a single blank and which has a hinged reclosable top.

Another object of the invention is to provide a box of the above character which may be set up and filled in open reclosable condition, or which may be securely retained in a closed condition without additional wrappings around the outside of the box.

A further object of the invention is to provide a box of the above character wherein the reclosable top portion is firmly held in place both against opening inadvertently and against relative lateral movement, distortion or twisting.

Another object of the invention is to provide boxes of the above character which may be filled from the top, bottom or side.

A further object of the invention is to provide a blank for forming a box of the above character that is economical to manufacture.

Another object of the above invention is to provide blanks for boxes of the above character which are easily and inexpensively assembled.

Still another object of the invention is to provide methods of assembling boxes of the above character affording the convenience of top, bottom, or side loading of the box.

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Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the several steps and the relation of one or more of such steps with respect to each of the others, and the articles possessing the features, properties, and relations of elements which are exemplified in the following detailed disclosure, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

FIGURE 1 is a perspective view of an assembled box according to the invention, after the top has been opened and the contents removed;

FIGURE 2 is a fragmentary sectional side view of the assembled box, taken along lines 2—2 of FIGURE 1, before the opening of the box;

FIGURE 3 is a fragmentary sectional side view of the box shown in FIGURE 2, after the box has been opened by breaking along the perforations;

FIGURE 4 is a lay-out view of a box blank for forming the box shown in FIGURE 1;

FIGURE 5 is a fragmentary lay-out view of a portion of one end of the blank shown in FIGURE 1 illustrating the first operation in forming the box;

FIGURE 6 is a lay-out view of the blank of FIGURE 1 showing the second operation in forming the box;

FIGURE 7 is a lay-out view of the blank of FIGURE 1 illustrating the third operation in forming the box;

FIGURE 8 is a lay-out view of a blank of another embodiment of the present invention for use in forming the box shown in FIGURE 10;

FIGURE 9 is a fragmentary view of the blank of FIGURE 8 showing the first operation in forming the box;

FIGURE 10 is a fragmentary perspective view showing the top portion of the partially completed box formed from the blank shown in FIGURE 8;

FIGURE 11 is a fragmentary sectional side view, taken along the lines 11—11 of FIGURE 10 after completion of the box;

FIGURE 12 is a fragmentary sectional side view of the box shown in FIGURE 11, after the box has been opened by breaking along the perforations;

FIGURE 13 is a lay-out view of a box blank incorporating another embodiment of the invention for forming the box shown in FIGURE 15;

FIGURE 14 is a fragmentary view of the blank of FIGURE 13 showing the first operation in the forming of the box;

FIGURE 15 is a fragmentary perspective view of the box formed from the blank shown in FIGURE 13, illustrating the relationship of the top front panel to the remainder of the box;

FIGURE 16 is a fragmentary perspective view of a finished and closed box formed from the blank shown in FIGURE 13.

A box made according to my invention is formed from a single integral blank. The box has a positive locking reclosable top which is secured in a closed condition until opened by the ultimate consumer. In general, the box shown in FIGURE 1 has a reclosable top section which is provided with a tongue portion sandwiched between two panels at the top of the box front. This tongue portion interfits with a mating cut-out in the front of the box when the top is closed. The panels sandwiching the tongue also sandwich the portions of the front of the box adjacent this cut-out when the top is closed. This sandwiching action of the two panels at the front of the box adjacent this cut-out when the top is the box, preventing lateral movement of the top relative to the box. This results in greatly increased structural

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rigidity and prevents opening of the box top under twisting or lateral pressure on the box. As shown in FIGURES 10 and 16, the tongue may be on the front portion of the box with a mating cut-out portion sandwiched between two panels at the top of the box front. In any event, the tongue portion and its mating cut-out are held firmly in the same plane when the top is closed by the sandwiching front panels of the reclosable top.

As can be seen in FIGURES 2 and 3, the scored hinge line of the reclosable top is located below the level of the top of the front portion of the box, thus providing a resilient deflection (FIGURE 3) of the outermost panel at the front of the top as the box is opened or closed. This flexing of the outermost front panel of the top aids in retaining the top in a closed condition after the box has been initially opened and after many subsequent openings and closings of the top. As shown in FIGURE 12, the same resilient flexing, sliding interfit of the box top and front panel of the box occurs in that embodiment of the invention.

The boxes are loaded with the goods to be packaged before the final assembly of the box itself. When the box has been finally assembled around the goods, the top is held securely in place without any outside wrapping required. To open the box, upward pressure at the front of the reclosable top will break perforations across each side of the box, permitting the top to be opened along its scored hinge line, as shown in FIGURES 1, 3 and 12. Thus, the box remains securely closed until the perforations joining the box and the reclosable top are broken by the ultimate consumer. It should be understood, of course, that an additional outside wrapping may be used, and that the perforations may be broken at the time of loading the box, if desired, to provide an open and conveniently reclosable filled container.

As will now be described in more detail, the boxes of present invention are formed from a single integral blank resulting in greater economy in cutting, handling and forming the blank into the completed box. The boxes may be partially assembled and shipped in a flat condition, to be finally assembled after being filled. The embodiments of the inventions shown in the drawings also provide for different modes of loading for compatibility with all existing operations and machinery used in packaging.

In the embodiment of the invention shown in FIGURES 1-7, the finished box seen in FIGURE 1 comprises a main box portion 20 and a reclosable top or cover portion 22. The top is bent backwards along a scored hinge line 24 and is provided with a positive locking front portion including a serrated tongue 26 sandwiched between panels 28 and 30, and held in closed position by interfitting serrations 38. Tongue 26 mates with cut-out 32 when the box is closed, with top panels 28 and 30 slidably sandwiching the portions 34a of front panel 34.

When the box is assembled, the top portion 22 forms an integral part of the box 20, and is opened by breaking along the perforations 36. As seen in FIGURES 2 and 3, the breaking of perforations 36 permits the top 22 to be bent backwards along hinge line 24. Since the hinge line 24 is positioned below the top edge 34b of front panel 34, the front top panel 28 must flex outwardly as the top is opened or closed. Pivotal movement of top portion 22 about hinge line 24 causes top front panel 28 to move upwardly in an arcuate path about hinge line 24, interfering with upper portions 34a of front panel 34, and this interfering movement produces resilient deformation of both panels 28 and 34a. This flexing or resilience of these panels thus resists opening and retains the box in a closed condition after perforations 36 have been broken.

The resilient and flexing action of these "interfering" panels not only positively retain the box in a closed condition but also holds the top portion to the box proper

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after numerous openings and re-closings of the top. Because panel 28 remains resilient after a number of re-closings of the box top, the sandwiching panels 28 and 30 continue to retain tongue 26 and mating cut-out 32 each time the box is closed in the same plane. Retention of tongue 26 and cut-out 32 in a common plane assures lateral stability between the top and the box proper.

Again referring to FIGURE 1, it will be seen that the top is also retained in the closed position by mating serrations 38 on cut-out 32 and tongue 26. The close interfit of tongue 26 with cut-out 32 and the sandwiching of front panel portions 34a between panels 28 and 30 provides very good lateral stability, preventing collapse or skewing of the box when it is in a closed condition.

The box shown in FIGURE 1 may be formed from a single blank as is shown in FIGURE 4. Referring to FIGURES 4-7, the assembly of the box will now be described in detail. The sandwich panel 30 is folded and glued to tongue portion 26 as shown in FIGURE 5. The blank is then folded along score line 40 to place front panel 34 flat against back panel 42 and bottom panel 44 as shown in FIGURE 6. A fold along score line 46 is then made and front cover panel 28 is glued to the tongue portion 26 on the side opposite sandwiching panel 30 to form the partially-assembled box shown in FIGURE 7. The box is now in a flat condition and may be shipped in this form.

When the box is squared for final assembly, both sides of the box will be open, permitting loading from either side. One of the sides may be glued before the box is loaded. Thus the bottom tab 46 will be folded upwardly, top tab 48 folded downwardly, side panel 50 folded inwardly, and side panel 52 folded inwardly and glued to panel 50 so that perforations 36 are aligned with perforations 36a and with slot 54. After the box is loaded, bottom tab 56 and top tab 58 are folded upwardly and downwardly respectively, side panel 60 is folded inwardly, as is side panel 62 which is glued to panel 60 in the same manner as the opposite side. When completed, panel 64 forms the top surface of the cover.

Another embodiment of the invention wherein the box may be top or bottom loaded is shown in FIGURES 8-12. In this embodiment of the invention, which is formed from the blank shown in FIGURE 8, the top front panel 66 may be sealed last, as shown in FIGURE 10, to interlocking sandwiched portion 68 to permit top loading.

Referring first to FIGURES 8-10, the assembly of the box shown in FIGURES 10-12 is as follows. The sandwich panel 78 is folded along the scored line 80 and is glued to cut-out portion 68 as shown in FIGURE 9. The blank is then folded on scored line 82 to place back panel 84 flat against front panel 72 and side panel 86. Side panel 88 is then folded along line 90 and glued to tab 92. The box is now partially assembled and in a flat position for shipping.

In final assembly, the box is squared and bottom tabs 94 are folded inwardly as are bottom panels 96 which are glued to each other. The box may now be loaded through its top. Top tabs 98 are folded inwardly as is top panel 100, top front panel 66 then being glued to cut-out panel 68 to seal the box.

As shown in FIGURES 11 and 12, the top portion 102 is secured to the box portion 104 along perforations 106 which are broken to open the box.

Referring now to FIGURES 10-12, it will be seen that in this embodiment the sandwiched tongue position has been reversed, the tongue 70 being integral with the top portion of front panel 72. Upon opening and re-closing the box, both the top front panel 66 and tongue portion 70 will flex since the scored hinge line 74 is now positioned above the front edge 76 of front panel 72.

Thus the box is provided with the lateral stability described above and the flexing action positively retains the

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cover in a closed condition. With this embodiment of the invention, the vertical positioning of hinge line 74 above edge 76 causes the inner sandwich panel 78 to pivot upward in an outwardly arcuate path about hinge line 74, urging tongue 70 outwardly into deformed interfering frictional engagement with outer sandwich panel 66. The frictional engagement between the two sandwich panels and the tongue 70 provides flexing, resilient opening and closing of the box, and retains the cover in a normally closed position. Lateral stability is excellent since the tongue and cut-out fit closely as they are both formed by the same slit in the blank. As with the embodiment shown in FIGURE 1, economies of manufacture and assembly are achieved since the box is made from a single, integral blank.

If desired, the box may be bottom-loaded by closing the top of the box by gluing of panel 66 to sandwich panel 68 and sealing the bottom panels 96 after loading.

Still another embodiment of the invention is shown in FIGURES 13-16 which also provide for either top or bottom loading of the box. The box is formed from the blank shown in FIGURE 13. Sandwich panel 108 is first folded over and glued to cut-out portion 110, as shown in FIGURE 14. The blank is then folded along score-line 112 to place front panel 114 flat against back panel 116 and side panel 118. Then a fold is made along score-line 20, and top front panel 122 is glued to sandwich panel 110 (as indicated in FIGURE 15) while side panel 124 is glued to tab 126. The box is now in flat condition for shipping.

As shown in FIGURE 15, the box when squared simply has open top and bottom panels and tabs which may be sealed by existing packaging equipment without modification. The completely-assembled box is shown in FIGURE 16 and is opened by breaking along perforations 128. Since the tongue portion 130 is on the front panel of the box, the hinge line 132 is higher than front edges 134 of front panel 114. Thus a box of this embodiment will open and close in the same manner as the box shown in FIGURES 8-12.

Boxes constructed according to my invention are economical to manufacture, ship and assemble. The box requires no outside wrapping or additional seals to retain it in a closed condition after filling and final assembly, the top being securely held to the box proper by its perforated sides and/or mating serrations 38. If the side perforations have not been broken during loading, the ultimate consumer may quickly and easily open the box by breaking along these perforations, thus providing easy access to the contents.

Once opened, the box may be easily re-closed and positively retained in a closed condition by the novel combination of sandwiching panels and mating portions of the top and box proper. Engagement of the tongue and cut-out portion between the sandwiching panels provides greatly increased lateral stability, not only after the box has been opened, but also during shipping and handling of the filled, assembled box.

In the embodiments shown in FIGURES 8-16, serrations 136 are also provided on the mating tongue portion of the front panel and the cut-out panel of the cover as in the embodiment shown in FIGURES 1-7. Thus the sandwiching panels of the box top retain the mating pieces in engagement, preventing any relative lateral movement between the reclosable top portion and the main portion of the box, while at the same time resiliently retaining the cover in a closed position.

Since the box can be formed from a single blank, partially assembled, and shipped in a flat condition, important economies are attained in manufacture of the box. Also, since the boxes are initially secured in a closed condition prior to the breaking of the perforations along the sides, no outer wrapping is required to keep the box closed.

It should be understood that although a single projecting tongue is shown in the drawings, any practicable num-

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ber of tongues and cut-outs may be employed in practicing my invention. It should be further understood that the tongue or tongues and mating cut-outs may take any suitable shape or configuration.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and since certain changes may be made in the above construction without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention which, as a matter of language, might be said to fall therebetween.

I claim:

1. In a reclosable top for a box, in combination, a front cover panel, a spacer panel secured on one side of said front cover panel to interfit with a mating upper portion of the front panel of the box, said reclosable top being hinged to said box along a hinge line diagonally displaced from the leading edge of said spacer panel and an inner panel secured to the other side of said spacer panel, whereby said front cover panel and said inner panel extend beyond said spacer portion to sandwich an upper portion of the front panel of the box when said top is closed, with resilient flexing engagement of said front cover panel and said mating upper portion as said top is opened.

2. A box comprising in combination a front panel having means forming a tongue-receiving cut-out therein, a back panel having a transverse scored hinge line, a pair of side panels, each of said side panels having means forming perforations from said hinge line to said front panel, a bottom panel, a top panel, a top front panel extending downwardly from said top panel when the box is closed and covering said cut-out in said front panel, a tongue glued to the inside of said top front panel and positioned to interfit with said cut-out in said front panel, and a sandwich panel glued to the inside of said tongue, said means forming the cut-out portion and said tongue being provided with mating serrations along at least one of their lateral interfitting edges, whereby said top panel, said top front panel, said tongue, said sandwich panel and the upper portions of said side panels form a reclosable top hinged at said scored hinge line of said back panel and separable from the remainder of said box along said perforations.

3. A box comprising in combination, a container portion having front, back, side and bottom panels, a top portion integral with said back panel and hinged along a scored line on said back panel, an upwardly projecting tongue at the top of said front panel, a center spacer panel at the front of said top portion having means forming a mating cut-out for receiving said tongue and a pair of locking panels sandwiching and spacer by said center panel, said scored hinge line being diagonally displaced from the leading edge of said tongue, whereby said top may be held in a closed position with said tongue interfitting with the cut-out means of said top center panel and with said locking panels resiliently engaging said tongue on both sides thereof.

4. A blank for forming a box having a partially detachable and reclosable top comprising front, back, side and bottom panels for forming a container portion of a box, said panels having scored lines for folding said panels upon assembly, an integral reclosable top portion of the blank including means forming a cut-out portion at one end of said front panel, said partially detachable and reclosable top being joined to said box along a scored hinge line positioned to be diagonally displaced from the extreme end of said cut-out portion upon erection of said blank to form said box and a pair of locking panels

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securable to the cut-out portion of said front panel, said locking panels being positioned on said blank to overlie each side of said cut-out portion when the blank is folded on said scored lines during assembly.

5. A box comprising in combination, a container portion having back, front, side and bottom panels, a reclosable top portion integral with said back panel and hinged thereto along a scored line on said back panel, said top portion including a front spacer panel sandwiched between two front locking panels to comprise a three element top front sandwich panel, and means on the upper portion of said front panel of said container interfitting with said spacer panel and between said locking panels, said spacer panel and an upper portion of said container front panel forming an interfitting tongue and cut-out between said locking panels and the side edges of said tongue and cut-out being provided with mating serrations, said scored hinge line being diagonally displaced from the leading edge of said tongue, whereby at least one of said top front locking panels is resiliently flexed when the top portion of the box is opened or closed.

6. A blank for forming a box having a partially detachable and reclosable top comprising front, back, side

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and bottom panels for forming a container portion of a box, said panels having scored lines for folding said panels upon assembly, an integral reclosable top portion of the blank including means forming a cut-out portion at one end of said front panel surrounding a mating front tongue portion of said top and having at least one serrated lateral edge in common with said tongue portion, and a pair of locking panels securable to sandwich the cut-out portion of said front panel, said locking panels being positioned on said blank to overlie each side of said cut-out portion when the blank is folded on said scored lines during assembly and to guide the reclosing re-engagement of the common serrated lateral edges of said tongue portion and said cut-out portion.

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