

[54] LOCK BOTTOM BOX WITH MEDIAL
DIVIDER

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[51] Int. Cl. B65d 5/48
[58] Field of Search..... 229/14, 27, 41 B; 220/115;
206/45.28, 45.29, 45.3; 217/60 R

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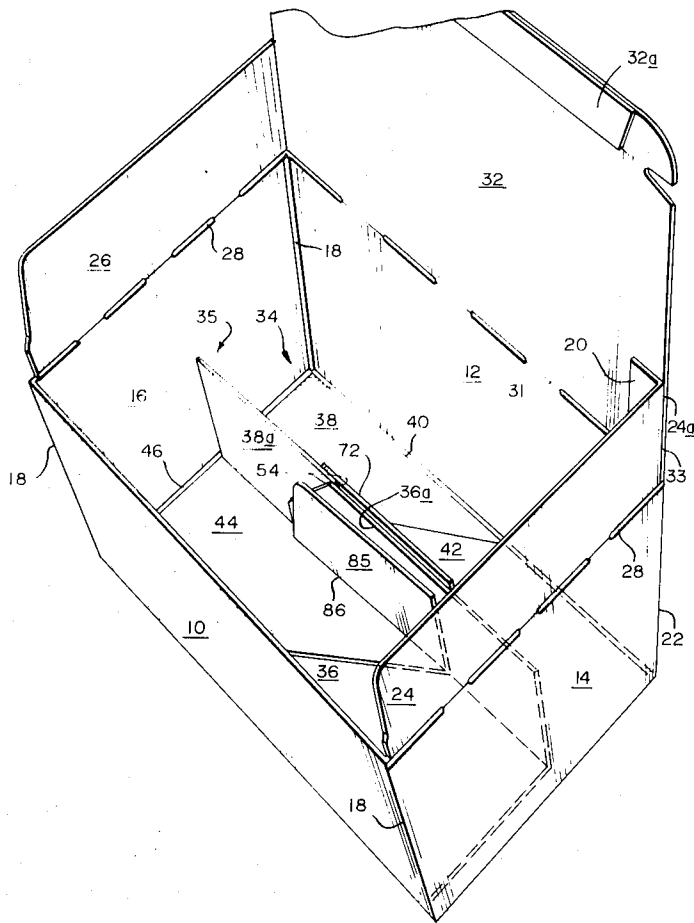
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[57] ABSTRACT

A generally rectangular cardboard box for containing articles lies flat when it leaves the manufacturer and is shipped to the user. When the box is made up, a lock bottom retains it in its fully open condition so that the articles can easily be inserted into the box from above. The lock bottom also forms a center divider within the box itself to help maintain the articles in the proper relation within the box.

16 Claims, 6 Drawing Figures



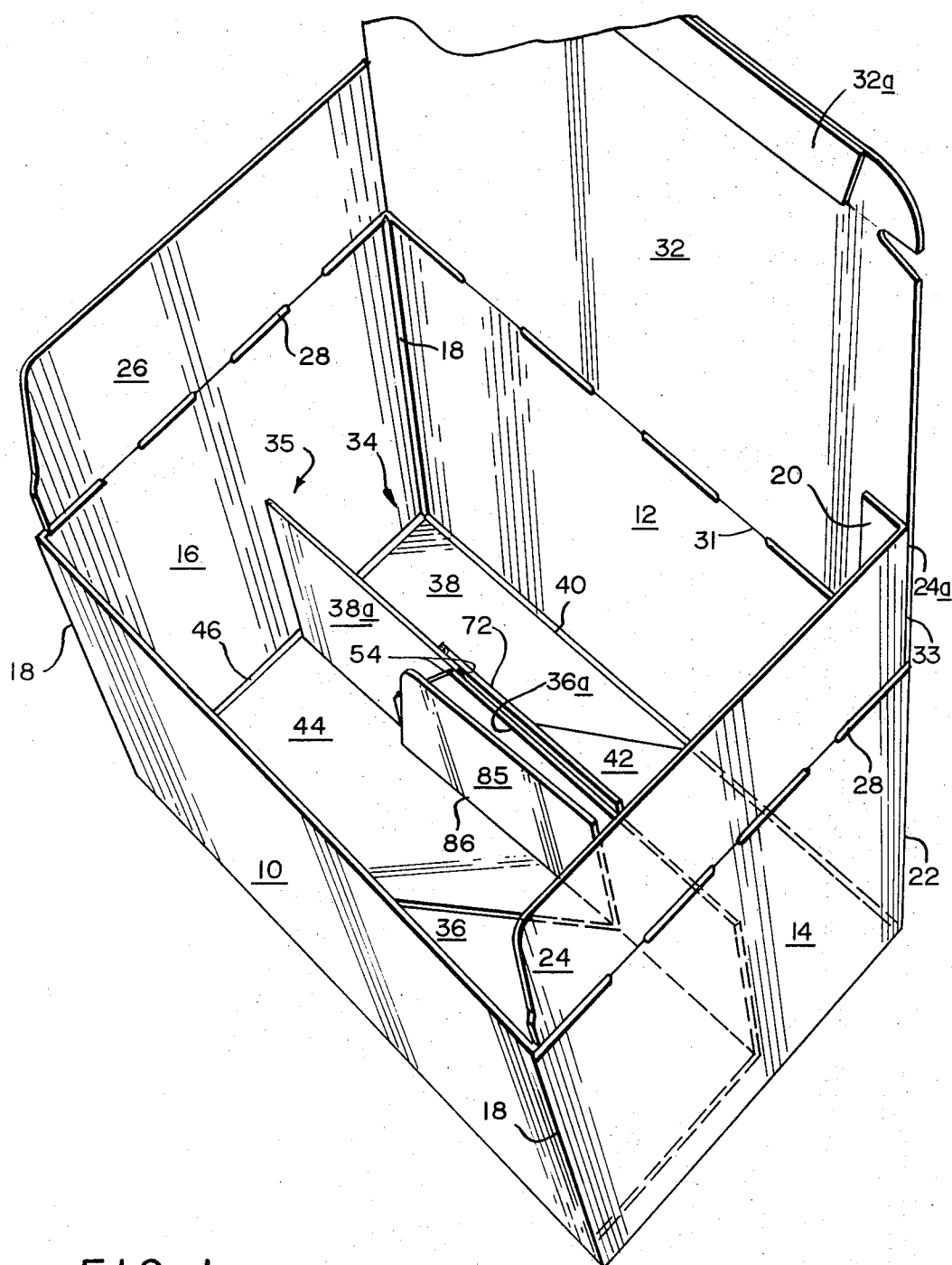
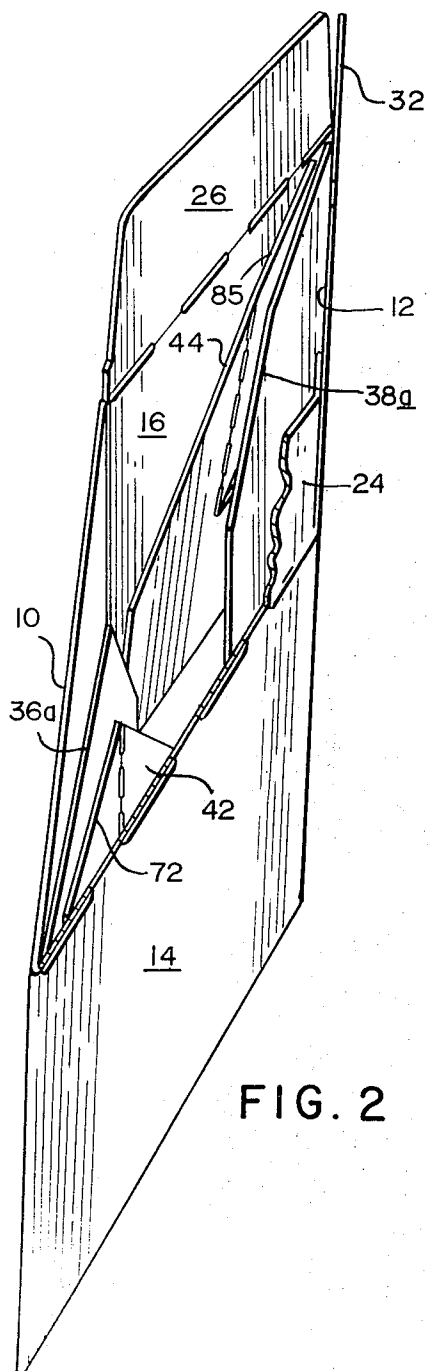
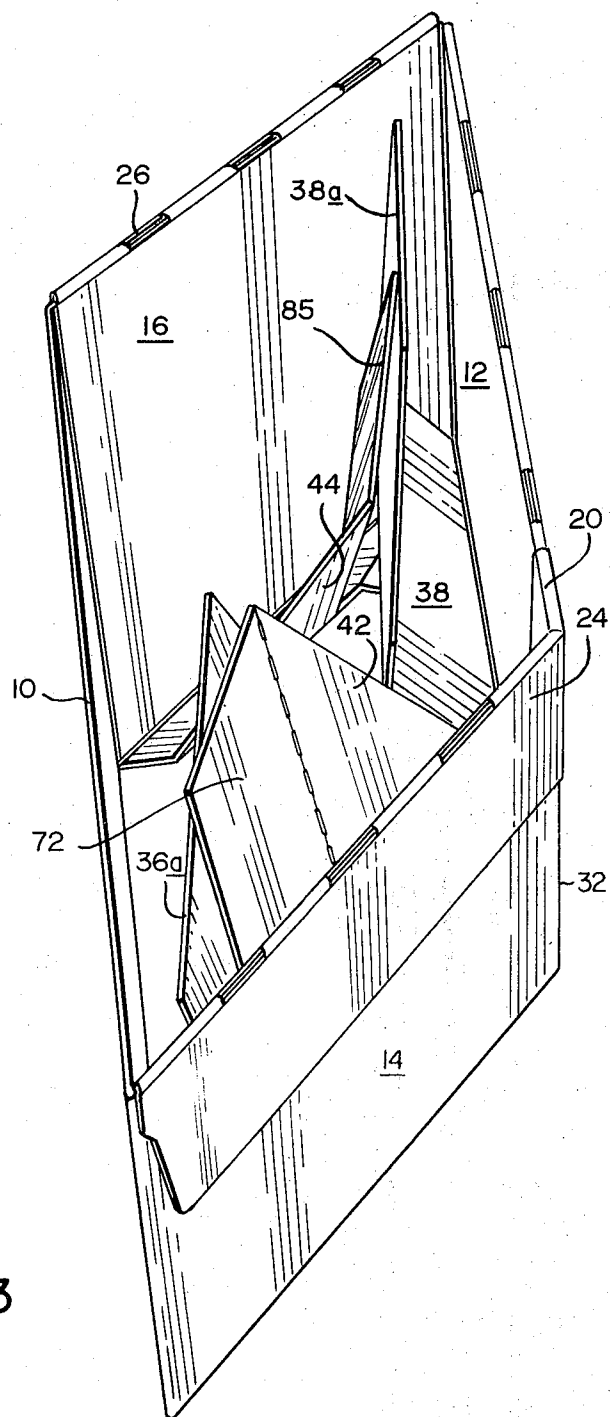


FIG. 1



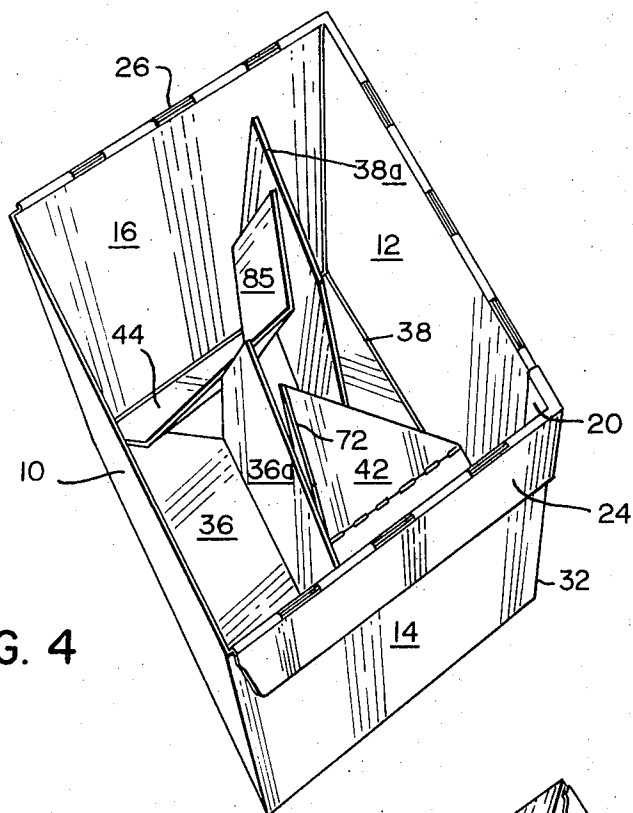


FIG. 4

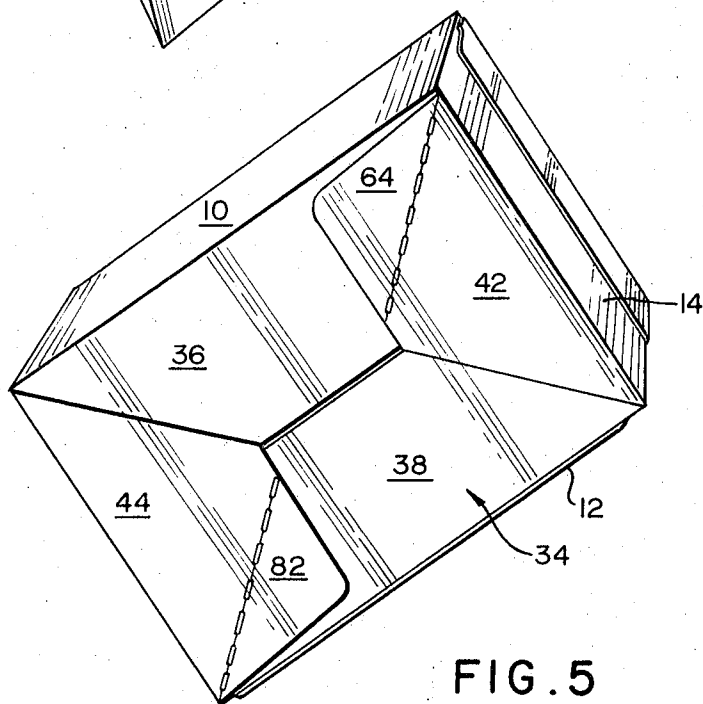


FIG. 5

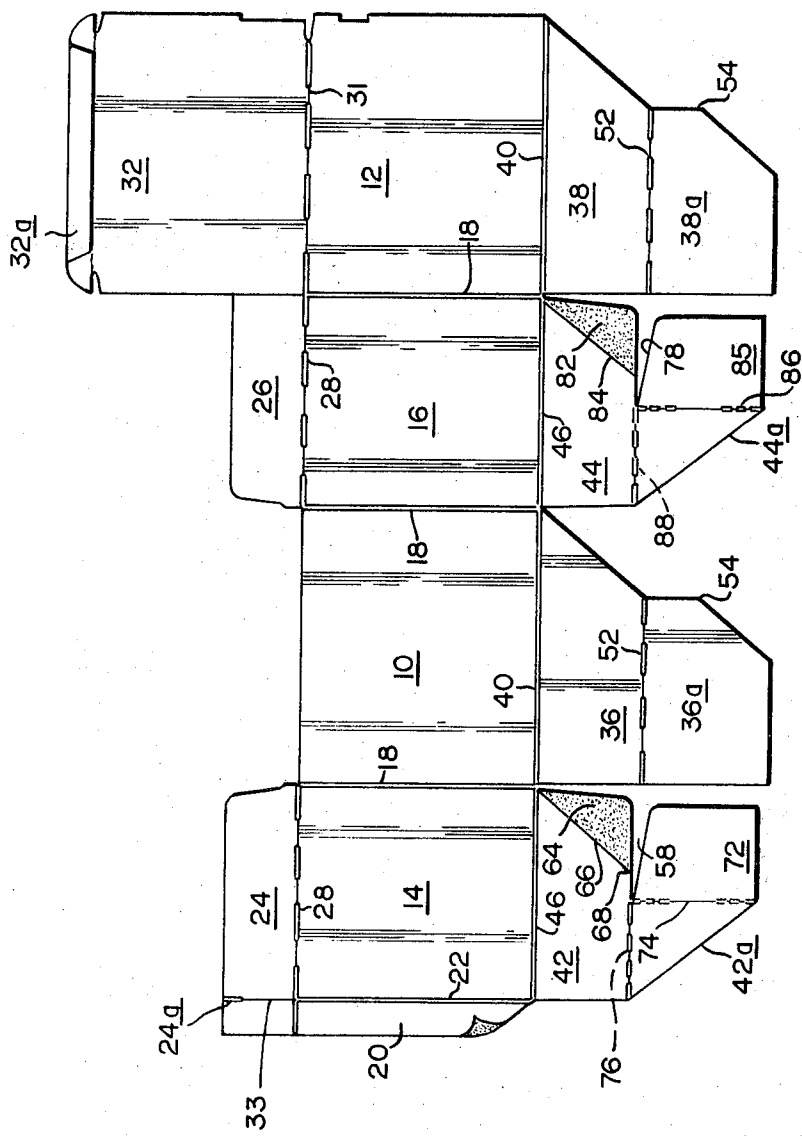


FIG. 6

LOCK BOTTOM BOX WITH MEDIAL DIVIDER

BACKGROUND OF THE INVENTION

This invention relates to a cardboard box for containing articles of merchandise arranged in rows. It relates more particularly to a box design which facilitates loading the box with these articles and maintaining them in their proper positions within the box, and to a one-piece blank for forming the box.

The boxes with which we are concerned here are used to contain and display articles such as lotion and toilet water bottles, talcum powder cans, etc. It is desirable for boxes of this kind to lie flat in a collapsed condition when they leave the box manufacturer. This allows a large number of boxes to be shipped to the user in a minimum amount of space. Then when it comes time to fill the boxes with articles such as lotion bottles, it is very desirable that, when the box is made up, it remains in its fully open condition so that rows of these articles can be dropped into the box either manually or automatically. For this reason, it is common practice to give the box a so-called lock bottom. This constitutes an arrangement of bottom flaps which automatically fall into place when the box is made up to both completely close the bottom of the box and maintain the box in its open condition. Lock bottom boxes of this type are fairly common.

A problem arises, however, because quite often the articles placed in the box have elongated or elliptical cross sections, examples being talcum powder cans, hand-lotion bottles and the like. Because of their elliptical shape, the articles in one row within the box tend to slide between the articles in adjacent rows, with the result that the articles become jumbled and disarranged within the box. Accordingly, when the box reaches the retailer and is opened to display the contents of the box, the articles have to be rearranged to their original positions.

Sometimes, in order to overcome this problem, a center divider is inserted between each row of articles within the box at the time the box is loaded. However, this extra step increases the time it takes to package the product and, therefore, increases its overall cost.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a box having a lock bottom which automatically forms a divider within the box.

A further object of the invention is to provide a cardboard box for containing and displaying rows of articles which preserves the original arrangement of the articles.

Another object of the invention is to provide a box which displays a multiplicity of articles more effectively than prior comparable containers of this general type.

Still another object of the invention is to provide a box for containing rows of articles which facilitates the filling of the box.

Other objects will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the invention will be indicated in the claims.

Briefly, the box is formed from a single blank of materials such as cardboard. It is composed of four generally rectangular panels which are joined together along score lines to form the front, back and sides of the box. The box has the usual auxiliary cover flaps and main cover flap hinged to these panels.

These panels also have hinged bottom flaps which are shaped and arranged so that they all fold flat when the carton is in its knocked-down or collapsed condition. On the other hand, when the carton is made up, these flaps interfit so as to completely close the bottom of the box and lock the carton in its open condition. The flaps also form a relatively high dividing wall within the box, separating the box into two compartments, each of which is sized to receive a row of containers or other such articles.

The specific configuration of the panels and flaps will be described later in greater detail. Suffice it to say at this point that they are arranged so that the boxes can be manufactured with a minimum number of cutting, folding and gluing steps and, therefore, at minimum cost. Further, the box leaves the box manufacturer in a flat condition so that a large stack of the boxes can be shipped at minimum cost. Then, when each box is ready to be filled, once made up, it remains in its fully open condition so that rows of articles can be dropped manually or automatically into the box from above on each side of the dividing wall. Consequently, the packaged product can be loaded and shipped to the retailer at minimum cost. Finally, at the retail level, the box can be opened, placed on a shelf or counter so that the articles therein are readily accessible and attractively displayed. Thus, the present box construction has features which make it attractive both physically and economically in the commercial channels through which it moves.

BRIEF DESCRIPTION OF THE DRAWINGS

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 drawings, in which:

FIG. 1 is a perspective view from above of a cardboard box in its erected or made up condition, embodying the principles of this invention;

FIG. 2 is a similar view of the box in its knocked-down or flattened condition as it leaves the box manufacturer;

FIG. 3 is a perspective view similar to FIG. 1 of the box shown partially erected but with the cover flaps folded against the outside of the box;

FIG. 4 is a view similar to FIG. 3 on a smaller scale showing the box erected still further;

FIG. 5 is a perspective view of the box from below on the same scale, the box being in its fully erected condition; and

FIG. 6 is a top plan view showing the blank from which the FIG. 1 box is formed.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now to FIG. 1 of the drawings, the subject box is comprised of a front panel 10, a rear panel 12 and a pair of side panels 14 and 16 which are joined along hinging score lines 18. A glue flap 20 is hinged to the free edge of side panel 14 along the score line 22 and is adhesively secured to the free edge of the rear

panel 12 to form a generally rectangular, collapsible, tubular enclosure.

The top of the box is more or less conventional, having the usual auxiliary cover flaps 24 and 26 hingedly connected to the side panels 14 and 16, respectively, along score lines 28 and a main cover flap 32 hingedly connected to the top edge of rear panel 12 along a score line 31. Cover flap 32 has a conventional hinged tuck 32a (FIG. 6) at its upper edge which retains flap 32 in its closed position covering the box.

As best seen in FIGS. 1 and 6, the hinged glue flap 20 extends up to the top of the auxiliary cover flap 24. A slit 33 is formed along the score line adjacent flap 24 except at the very top thereof which forms a bridge 24a between flaps 20 and 24. Thus, when the flap 20 is glued to the panel 12 as described above, the upper portion of flap 20 becomes adhered to the side of cover panel 32 as seen in FIG. 1. This connects the cover flap 32 to the adjacent flap 24 so that the cover flap is held open as seen in FIG. 1.

Sometimes when the box is made up from its generally flattened condition shown in FIG. 2, the operator first folds flaps 24, 26 and 32 down against the outside of the box. Then, as the box is erected, because the flaps 24 and 32 are attached by the bridge 24a, they are held down against the outside of the box as shown in FIGS. 3 and 4. This facilitates arranging a number of open boxes in a carton and filling them by dropping articles into them from above. Preferably, also, the cover flap 32 is sized so that when it is folded back against the back panel 12, it just reaches the bottom of the box. This makes it easier to stack the boxes or arrange them in a carton. If the cover flap 32 is too long for this, an additional score line (not shown) can be formed across the cover flap 32 so that it hinges at the bottom of the box, with the excess flap material being folded under the bottom of the box. When the boxes reach their destination and are removed from the carton, the bridge 24a can be broken to allow the cover flaps to be folded down so as to close the box. Alternatively, the flaps can be torn away if, for example, it is desired to display the contents of the box.

The carton bottom wall shown generally at 34 (FIG. 1) which is the prime area of interest here is composed of four panels, to wit: a pair of identical panels 36 and 38 hinged to the bottom edges of the front and rear panels 10 and 12, respectively, along score lines 40 and a second pair of identical flaps 42 and 44 hinged to the lower edges of the side panels 14 and 16 along score lines 46. These bottom flaps are shaped and arranged so as to allow the carton to be knocked down to a completely flat condition. Yet, when the box is made up, the bottom flaps interfit so that they not only close the bottom of the box and lock the box in an open condition, but they also form a medial dividing wall shown generally at 35 in FIG. 1. The positions assumed by the bottom flaps as the carton opens are depicted in FIGS. 2 to 5. The actual shapes of these flaps are shown in FIG. 6.

More specifically, flaps 36 and 38 are provided with identical extensions 36a and 38a, respectively, hinged thereto along score lines 52. One edge of each of these flaps, i.e., the right-hand edge in FIG. 6, is cut on a bias. When the carton is made up, the bottom flaps 36 and 38 form portions of the carton bottom wall 34 as shown in FIG. 5, while their extensions 36a and 38a comprise the upstanding dividing wall 35 as shown in FIG. 1. The

extensions actually overlap at their opposing edges 54 so that they alone effectively divide the carton. However, there is a tendency for the extensions not to stand erect when the carton is opened. As will be described presently, the remaining bottom flaps 42 and 44 are designed to prevent this.

Referring to FIGS. 1 and 6, flap 42 has a wedge-shaped cutout or slot 58 extending in from its lateral edge opposite the straight or unbiased edge of flap 36. The cutout 58 is positioned with its open end opposite score line 52 in panel 36. A corner 64 of flap 42 forming the innermost bound of cutout 58, i.e., the corner closest to panel 14, is hinged along a diagonal score line 66 which extends in a straight line from score line 18 connecting panels 10 and 14 making an angle of 45° with score line 46, i.e., to a point 68 approximately two-thirds of the way along cutout 58. This corner 64 constitutes a triangular flap which is designed to be adhesively secured to the underside of flap 36 as shown in FIG. 5.

The portion 72 of flap 42 beyond cutout 58, i.e., the side away from panel 14, is also hinged along a score line 74 which extends from the inner end of cutout 58 in a direction parallel to score lines 18 to the end of the flap. Also, in some cases, it may be desirable, although not necessary, to include an additional score line indicated in dotted lines at 76 in FIG. 6 extending from the inner end of cutout 58 across flap 42 perpendicular to score lines 18. This additional fold line causes flaps 72 and 85 to assume positions relatively high up on wall 35 so as to help keep the wall erect. Finally, a corner of flap 42 is cut off along the line between the ends of score lines 74 and 76 leaving an oblique edge 42a which helps the flaps to interfit properly when the box is erected.

The corresponding bottom flap 44, being identical to flap 42, has a wedge-shaped cutout 78 extending in from the lateral edge facing flap 38. A triangular glue flap 82 hinged along line 84 is arranged to be adhesively secured to the underside of flap 38 as seen in FIG. 5. Also, the portion 85 of the flap below cutout 78 is hinged along the score line 86 with an additional score line 88 similar to score line 76 being provided if deemed desirable. Finally, the corner of flap 44 opposite flap 36 is cut to form the diagonal edge 44a.

When the carton leaves the manufacturer, the glue flaps 20, 64 and 82 are all secured and the carton is folded completely flat, see FIG. 2, with bottom flaps 36 and 42 disposed opposite one another inside the carton at one corner and flaps 38 and 44 lying opposite each other inside the carton at the opposite corner. As these two corners of the carton are pushed together to make up the carton, the bottom flaps at the opposite corners of the carton are moved toward one another and fold down. As best seen in FIGS. 3 and 4, flap 36 slides under flap 44 with its extension 36a being forced between flap extension 38a and the hinged portion 85 of flap 44. In a similar fashion, flap 38 slides under flap 42 with its extension 38a being forced between extension 36a and the hinged portion 72 of flap 42. The oblique edges 42a and 44a on flaps 42 and 44 provide clearance for the extensions 36a and 38a as they assume their vertical positions at the center of the carton and guide them into these positions.

As the carton assumes its fully erected condition, flaps 42 and 44 finally clear the upstanding flap extensions 36a and 38a. When this occurs, the flaps 42 and

44 snap down flush against flaps 38 and 36, respectively, on opposite sides of the dividing wall formed by flap extensions 36a and 38a. Thus, the flaps complete the bottom wall 34 of the box as shown in FIG. 5 and they also lock the carton in its fully open condition shown in FIG. 1. At the same time, their hinged portions 72 and 85 are folded upwards so that they lie flush against extensions 38a and 36a, respectively, near the middle of the dividing wall 35.

For best results, hinge lines 74 and 86 are set back from the center line of the box so that flap portions 72 and 85 tend to be biased toward extensions 36a and 38a and thus help them to stand erect. In actual practice, it has been found that if the fold lines 74 and 86 are set back approximately one-fourth inch on each side of the carton center line, i.e., fold lines 52, the tops of the flap portions 72 and 85 press toward one another with sufficient force to maintain the dividing wall 35 substantially perpendicular to the bottom wall 34. This, of course, makes it easier to fill the box from above, with the proper number of articles being deposited on each side of the dividing wall 35.

It is, of course, possible to change the configuration of the bottom flaps to some extent and still achieve the desired end result, namely, a one-piece collapsible carton having a lock bottom and a medial dividing wall. For example, the bottom flaps could all be reversed or translated. However, such changes should obviously be considered to be within the scope of the invention herein described.

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 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 herein described.

I claim:

1. A one-piece collapsible lock bottom box comprising

A. four wall panels hinged together to form a tube,

B. a first pair of similar flaps hinged to the bottom edges of a first pair of opposite wall panels, each flap of said first pair having an additional hinge extending generally parallel to the center line of the box, the flap portion on one side of the additional hinge comprising the bottom wall of the box and the flap portion on the other side of the additional hinge comprising an upstanding divider within the box, and

C. a second pair of similar flaps hinged to the bottom edges of a second pair of opposite wall panels adjacent the first pair of flaps, one flap of each pair being secured to an adjacent flap of the opposite pair and said flaps being hinged so that they interfit as the box tube is opened up.

2. The box defined in claim 1 wherein said one flaps have portions which engage the dividing wall at opposite sides thereof so as to lock the box in its fully erected condition.

3. The box defined in claim 2 wherein the hinges in said one flaps are arranged on opposite sides of the cen-

ter line of the box so that said one flaps are biased toward one another with said other flaps between them, thereby maintaining the dividing wall in a generally erect position inside the box.

4. The box defined in claim 1 and further including

A. a cover flap hinged to the top edge of one of the wall panels,

B. an auxiliary cover flap hinged to the top edge of another wall panel adjacent to the one wall panel, and

C. means for detachably connecting the cover flap to the auxiliary cover flap.

5. A one-piece box comprising

A. four wall panels hinged together to form a tube,

B. a first pair of flaps hinged to the bottom edges of a pair of opposite wall panels, each flap of said first pair having an additional hinge extending generally parallel to the center line of the box, the flap portion on one side of the additional hinge comprising the bottom wall of the box and the flap portion on the other side of the additional hinge comprising an upstanding divider within the box, and

C. a second pair of flaps hinged to the bottom edges of the remaining two wall panels, each flap of the second pair having a first portion which underlies one flap of the first pair of flaps at one side of the divider and overlies the other flap of the first pair at the opposite side of the divider, each said first flap portion

1 being secured to the flap of the first pair which it underlies,

2 comprising the bottom wall of the box, and

3 engaging the divider so as to lock the box in its erected condition.

6. The carton defined in claim 5 and further including a cover flap hinged to the top edge of one of the wall panels.

7. The carton defined in claim 6 wherein the height of the cover flap corresponds to the height of the panel to which it is hinged.

8. The carton defined in claim 5 and further including

A. an auxiliary cover flap hinged to the top edge of a wall panel adjacent said one wall panel, and

B. means for detachably connecting the cover flap and the auxiliary cover flap.

9. The carton defined in claim 5 wherein each flap of the second pair of flaps includes a second portion

A. hinged to the first portion along a line extending generally parallel to the divider, and

B. lies more or less flush against the divider.

10. The carton defined in claim 9 wherein the hinges between the first and second portions of the second flap pair are set back a small distance from the divider so that the flaps tend to tilt toward the divider so as to maintain it in a generally erect condition inside the box.

11. a blank for forming a lock bottom box with an internal divider comprising

A. four wall panels, hinged together,

B. a first pair of similar flaps hinged to the bottom edge of two non-adjacent wall panels, each flap in the first pair having a second hinge parallel to and spaced from its hinge to the wall panel,

- C. a second pair of similar flaps hinged to the bottom edge of the other two non-adjacent wall panels, each flap in the second pair having a lateral slot positioned opposite and generally in line with the second hinge in one flap of the first pair.
12. The blank defined in claim 11 wherein the edges of the first pair of flaps not facing said slots are cut on a bias.
13. The blank defined in claim 11 and further including another hinge in each flap of the second pair extending generally perpendicular to the second hinge from the inner end of the corresponding slot to the free edge of the flap.
14. The blank defined in claim 13 and further includ-

- ing an additional hinge in each flap of the second pair extending parallel to the hinges between the flaps and the panels from the inner end of the corresponding slot to the edge of the flap.
15. The blank defined in claim 13 wherein the edge portion of each flap of the second pair opposite the other hinge at the non-slotted side of the flap is cut on a bias.
16. The blank defined in claim 11 and further including another hinge in each flap of the second pair extending from the corresponding slot obliquely to the edge of the flap containing the slot generally to a point thereon where the flap joins its wall panel.
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