Feb. 22, 1944. D. LEVKOFF 2,342,551

FOLDING BOX

Filed April 2, 1942 2 Sheets-Sheet 1

FIG. 1.

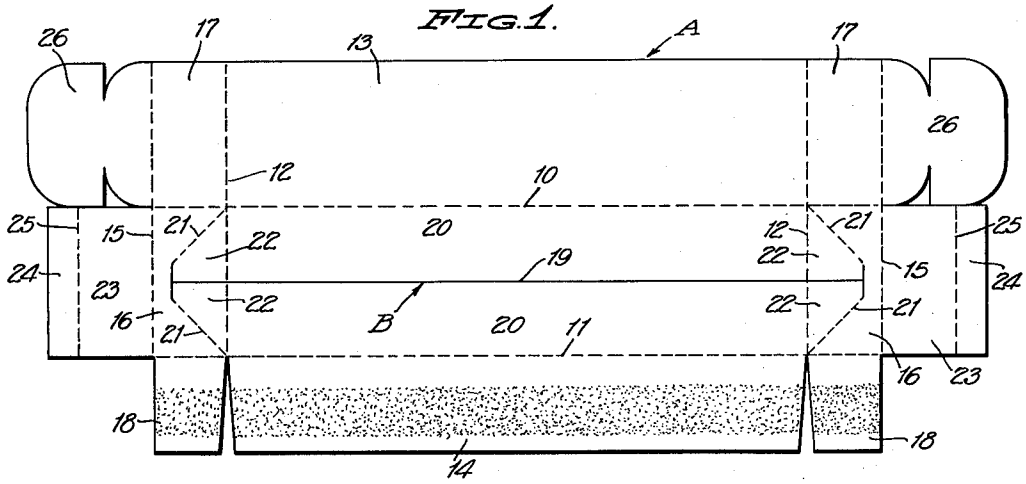


FIG. 2.

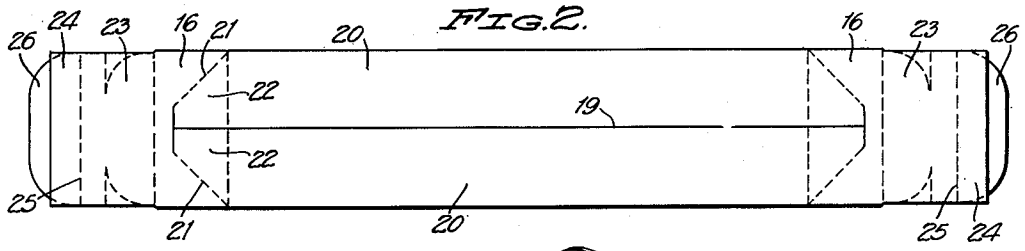


FIG. 3.

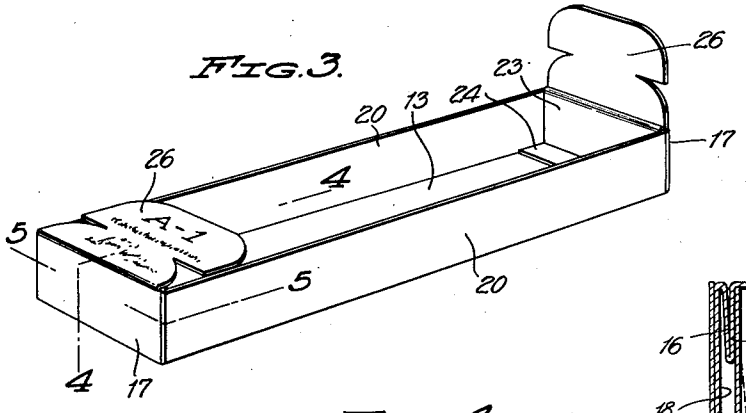


FIG. 4.

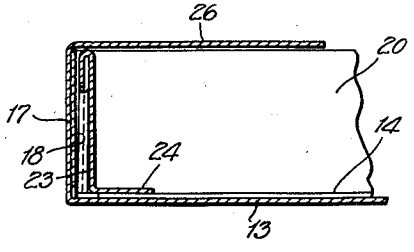
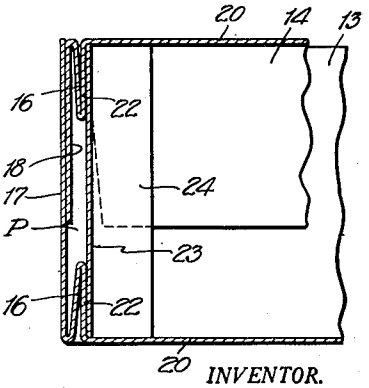


FIG. 5.



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FIG. 6.

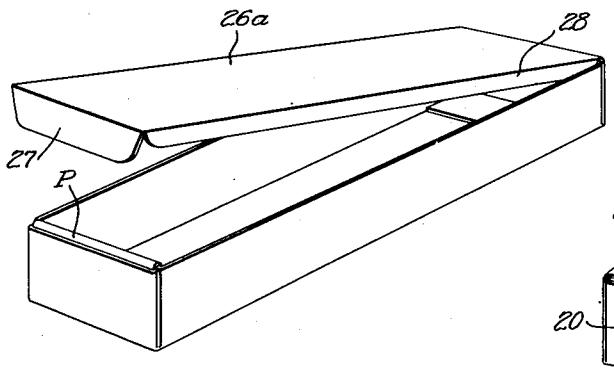


FIG. 7.

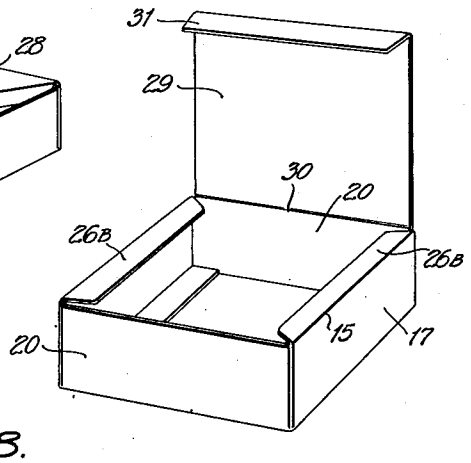


FIG. 8.

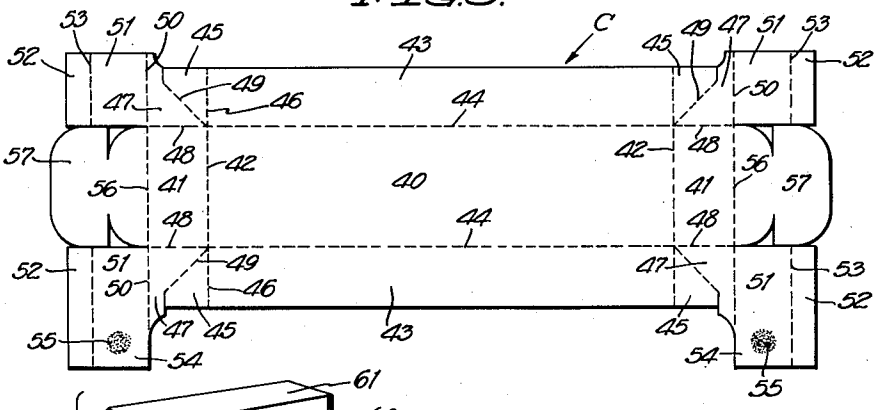


FIG. 11.

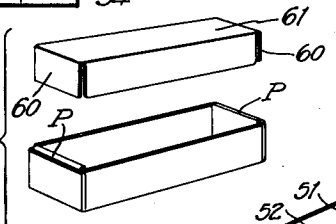
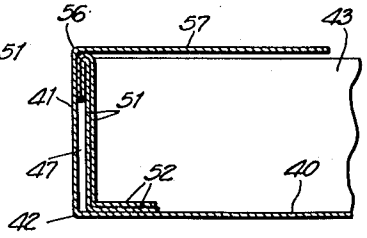


FIG. 9.

FIG. 10.



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UNITED STATES PATENT OFFICE

2,342,551

FOLDING BOX

David Levkoff, Brooklyn, N. Y., assignor of one-fourth to Evelyn G. Levkoff, one-fourth to Henry S. Levkoff, and one-fourth to Edith Rose Levkoff, all of Brooklyn, N. Y.

Application April 2, 1942, Serial No. 437,347

7 Claims. (Cl. 229—31)

This invention relates to folding cardboard boxes and is an improvement over the folding box set forth in my U. S. Letters Patent No. 2,274,-714 granted March 3, 1942.

In my prior patent above referred to, the folding box is constructed from a single blank of cardboard which is cut, scored, and foldable to assume a flat collapsed position during non-use, and by an easy and rapid manipulation, the box may be set up for use. When in set up position, the box is held against accidental collapsing by flaps folded inwardly from two opposed outer walls of double wall structure. However, in the invention about to be described, the opposed locking flaps are foldable inwardly from the inner walls of opposed double wall structures, which enables inwardly foldable top flaps, cover flaps, or cover rest flaps to be formed integral with the opposed outer walls.

Other features of the invention will become apparent as the specification is read in conjunction with the accompanying drawings, in which,

Figure 1 is a plan view of the cardboard blank from which the box is constructed.

Figure 2 is a top plan view of the folding box in collapsed position.

Figure 3 is a perspective view of the box in set up position with one of the top end flaps down and the other up.

Figure 4 is an enlarged detail vertical sectional view on the line 4—4 of Figure 3.

Figure 5 is an enlarged detail horizontal sectional view on the line 5—5 of Figure 3.

Figure 6 is a perspective view of a box having a hinged cover constructed in accordance with the invention.

Figure 7 is a perspective view of a box having cover rest flaps constructed in accordance with the invention.

Figure 8 is a plan view of a blank embodying a modified form of the invention.

Figure 9 is a perspective view of the blank shown in Figure 8 in folded set up position.

Figure 10 is an enlarged detail vertical sectional view on the line 10—10 of Figure 9.

Figure 11 is a perspective view of a further modification of the invention.

Referring to the drawings by reference characters, and at present to Figure 1, the letter A designates a substantially rectangular shaped blank of foldable cardboard which is scored on suitably spaced longitudinal score lines 10 and 11 inwardly of the longitudinal edges of the blank and parallel thereto. The blank is further provided with suitably spaced transverse scores 12—12 inwardly from the ends of the blank. The aforementioned score lines divide the main portion of the blank A into a rectangular shaped bottom wall 13, an intermediate side wall forming panel B, and a narrow glue flap 14. The bottom wall 13 is bounded by one longitudinal side edge of the blank, score 10 and scores 12—12. The intermediate side wall forming panel B is bounded by the scores 10, 11, and 12—12. The glue flap 14 is bounded by the score 11 and adjacent free edge of the blank with its ends terminating free adjacent the scores 12—12.

The blank A is further scored on the transverse scores 15—15 which are parallel to the scores 12—12 and disposed outwardly thereof. The distance between the scores 12 and adjacent scores 15 predetermines the height of the end wall structure of the box. By reason of the scores 15—15, the blank is further formed with inner end walls 16—16 and outer end walls 17—17. The inner end walls 16—16 are bounded by the scores 10, 11, 12, and 15. The outer end walls 17—17 are bounded by the scores 10, 12, 15 and the adjacent edge of the blank. Glue flaps 18—18 are connected to the inner end walls 16—16 along the score 11 and are adjacent the ends of the glue flap 14 and free of the same.

The side wall forming panel B is divided by a medial slit 19 into two like side walls 20—20, the ends of the slit terminating beyond the mid-portion of the inner end walls 16—16. The inner ends of the slit 19 are connected by diagonal scores 21 provided in the inner end walls 16 and which extend to the corners defined by the intersection of the scores 10—12 and 11—12. The diagonal scores provide triangular corner folds or webs 22 which fold flat against the walls 16—16 when the blank is folded to box forming position.

Formed integral with the inner end walls 16—16 and connected thereto along the hinge scores 15—15 are inwardly foldable end wall locking flaps 23—23 of a height and width substantially the same as the inner end walls 16—16 to which they are respectively connected. Relatively narrow bottom wall engaging flaps 24—24 are connected to the flaps 23—23 along hinge scores 25—25. Connected to the outer end walls 17—17 along the hinge scores 15 are inwardly foldable top flaps 26, the outer sides of which may contain printed matter as well as the side and outer end walls.

The blank A is partially folded and glued by machine at the factory. The flaps 14 and 18—18 are passed over a glue roller, after which the blank is folded inwardly on the longitudinal score

10, after which the glue sides of the flaps 14 and 18—18 are folded inwardly over the bottom wall 13 and outer end walls 17—17 respectively. The box is now in flat collapsed position (Fig. 2) for compact packing, shipping, and storage, and may, by a subsequent simple manual manipulation, be further folded to set up position for use. To set up the box from its collapsed position shown in Figure 2, an operator grasps the two ends in the region of the inner end walls 16—16 and pulls upwardly thereon to cause the outer end walls 17—17 to pivot on the scores 12—12, during which time the triangular webs 22—22 fold on the diagonal scores 21—21, and the side walls 20—20 swing upwardly to a position substantially perpendicular to the bottom wall 13. The operator may now fold the locking flaps 23—23 inwardly within the box on the scores 15—15 to a position to lie flat against the folded webs 22—22 at which time the end edges of the flaps 23—23 are in tight frictional contact with the side walls 20—20. Due to outside scoring of the scores 10 and 11, the side walls 20—20 have a tendency to open up and with the end edges of the flaps 23—23 engaging the side walls 20—20 at their corners with the triangular webs 22—22, the box is secured against unfolding. The flaps 24—24 are now folded inwardly on the scores 25—25 to lie flat against the bottom wall 13 and brace the bottom and side walls at their ends. The box is now in set up position, but after articles are packaged therein, such as tomatoes, apples, or the like, the top display flaps 26—26 are folded inwardly on the scores 15—15. The entire box may now be wrapped in Cellophane and sealed, so that the contents of the box are readily visible for inspection.

In Figure 6 of the drawings, I have illustrated my invention embodied in a folding box in which a cover 26*a* takes place of one of the top flaps 26. The other top flap 26 is omitted to expose the space or pocket P defined by an outer end wall 17 and adjacent spaced apart wall 16. The cover 26*a* is of a length and width to cover the open top of the box and its free end is provided with a downturned flap 27 for insertion into the pocket P when the cover is in closed position. The cover may also be provided with downturned side flaps 28 for closing the joint between the sides of the cover and the top edges of the side walls 20—20.

In Figure 7 there is illustrated a further adaptation of the invention, wherein the outer end walls 17 have inturned top flaps 26*b* formed integral therewith along the hinge score 15 to provide cover rests for a cover 29. The cover 29 is integral with the top edge of one of the side walls 20 along a hinge score 30 and has a front flap 31 insertible into the box against the other wall 20 when the cover is closed. When closed, the free side edges of the cover 29 rest upon the inturned rest flaps 26*b*.

In Figures 8 to 10, inclusive, I have illustrated a modified form of my invention wherein it is embodied in a folding box construction somewhat similar to that set forth in Ringler Patent No. 2,220,121 granted November 5, 1940. The folding box shown in set up position in Figure 9 is formed from the cardboard blank C illustrated in Figure 8. The blank C is substantially rectangular and comprises a bottom wall 40, outer end walls 41—41 hingedly connected to the bottom wall 40 along the transverse score lines 42—42 and side walls 43—43 hingedly connected to the bottom wall 40 along the longitudinal score lines 44—44. The side walls 43 and end walls 41 are connected by folding corner webs, each of which comprises a triangular shaped web section 45 hinged to one end of the side wall 43 along the score line 46 and a triangular shaped web section 47 hinged to the adjacent end of the outer end wall 41 along the score line 48. The web sections 45 and 47 are hingedly connected along the diagonal score lines 49 which extend from the corners of the bottom wall to the free side edges of the blank.

Connected to the web sections 47 along hinge scores 50 are inner end wall sections 51 having flaps 52 connected thereto along hinge scores 53. The sections 51 along one longitudinal side of the blank are provided with extension portions 54 to receive a dab of glue 55 from a glue roller when the blank is passed through an automatic folding and gluing machine. When the pairs of section 51 at the ends of the blank are folded inwardly, they overlap and are secured together by the glue 55 to provide a single inner end wall. The blank is initially folded on the score lines 44 and 48, with the glue sides of the extension portions facing and engaging the other section 51 of that pair. When the blank C is folded and glued in the manner just described it is in collapsed condition for subsequent hand folding to set up position in a manner to be presently explained.

Connected to the outer end walls 41 along hinge scores 56 are inwardly foldable top flaps 57 similar to the flaps 26 and serving the same purpose.

To set up the box from the initial folded and glued position, the operator grasps the glued together inner end wall sections 51 and pulls upwardly thereon to cause the outer end walls 41 to swing upward on the hinge scores 42, the side walls 43 being simultaneously pulled upwardly by hinging on the score lines 44. As the walls 41 and 43 move to upstanding position, the web sections 45 fold upon and against their companion web sections 50, the latter flatly fitting against the inner side of the adjacent outer end walls 41. The operator now folds the lapped glued together inner end walls 51 inwardly within the box body to a position flat against the folded corner web sections 45, which causes the sections 53 to strike the bottom wall 40 and flatly fold thereagainst by hinging on the score line 53. The end edges of the sections 51 frictionally engage the inner sides of the side walls 43, whereby the box is held in set up position for use. After the box has been filled, the top flaps 57 are folded inwardly to a horizontal position on the hinge scores 56, and the box with its contents is wrapped in a sheet of transparent Cellophane to confine the contents and to expose the same to view for inspection.

Whereas the inner end wall sections or flaps 51 are less than the width of the box, one of said sections 51 may be equal to the full width of the box and the other narrow glue flap if desired. In such construction the seam between the glue sections 51 would be adjacent the corner of a side wall and not visible when the box is in erected position.

In Figure 11 of the drawings, I have illustrated a further modified form which is similar to the box body shown in Figure 6, except that the top flaps 26 are left off both ends to provide pockets P—P to receive the free end walls or tongues 60—60 of a separate removable telescoping cover 61.

The pockets P may also be used to receive leaf-

lets containing printed matter pertaining to the merchandise packed in the box. Also, a price tag may be inserted into the pocket when the box containing merchandise is placed on display.

From the foregoing description it will be understood that in all adaptations of the invention, the box is provided with folding end wall structures wherein inner and outer walls are provided, the outer walls having integral inwardly folding top flaps which may be used for display purposes, for a cover, or for cover supporting flaps. Whereas several adaptations of the invention have been disclosed herein, it is to be understood that other modifications of the invention may be resorted to as come within the scope of the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A folding box comprising a single blank of cardboard which is cut, scored, folded, and glued to provide a rectangular bottom wall, opposed upright side walls integral with the bottom wall, opposed foldable side wall structures cooperating with the aforementioned side walls to complete the four side walls of the box, each of said foldable side wall structures comprising an inner wall, triangular shaped folding webs connecting the inner wall with the respective side walls along hinge scores, said webs being flatly foldable against the inner wall, a locking flap integral with the top of the inner wall and connected thereto along a hinge score, said locking flap being of a width and height approximating that of the inner wall and folded inwardly thereover with its free end edge frictionally abutting the first named side walls and bottom wall, an outer wall having one of its ends connected to one end of the inner wall along a hinge score and its bottom edge integral with the bottom wall and connected thereto along a hinge score, and a glue flap integral with the other end of the inner wall and glued to the inner side of the outer wall.

2. A folding box as set forth in claim 1, including top flaps integral with the top of the outer walls of the folding side wall structures and connected thereto along hinge scores, said top flaps being foldable inwardly to overlie the open top of the box.

3. A folding box as set forth in claim 1, in which the space between the inner and outer walls of one of the folding side wall structures constitutes an open pocket, a cover integral with the outer wall of the other opposed folding side wall structure and connected to the top thereof by a hinge score, and a downturned locking flap provided on the cover for reception in said pocket when the cover is swung to a closed position over the open top of the box.

4. A folding box formed from a single blank of cardboard including a bottom wall, a pair of side walls and a pair of outer end walls hinged to said bottom wall, folding corner webs hinged to the adjacent ends of said side and end walls, a score line extending diagonally across said corner webs dividing each of said corner webs into substantially triangular shaped web sections with one section hinged to the side wall and the other section hinged to and overlying the adjacent outer end wall, inner end wall flap sections hinged to those sections which are hinged to the adjacent outer end wall, the pair of flap sections at each end overlapping and being adhesively secured to provide a single inner end wall locking flap which is folded inwardly and downwardly against the folded corner web sections and having frictional engagement with the side walls, and top flaps hinged to and integral with the outer end walls and folded inwardly therefrom to a substantially horizontal position.

5. A folding box formed from a single blank of cardboard including a bottom wall, a pair of side walls and a pair of outer end walls hinged to said bottom wall, folding corner webs hinged to the adjacent ends of said side and end walls, a score line extending diagonally across said corner webs dividing each of said corner webs into substantially triangular shaped web sections with one section hinged to the side wall and the other section hinged to and overlying the adjacent outer end wall, inner end wall flap sections hinged to those sections which are hinged to the adjacent outer end wall, the pair of flap sections at each end overlapping and being adhesively secured to provide a single inner end wall locking flap which is folded inwardly and downwardly against the folded corner web sections and having frictional engagement with the side walls, the space between each outer end wall and the adjacent folded corner webs constituting a pocket opening at the top thereof.

6. A folding box as set forth in claim 5 including in combination, a separable telescoping cover having downwardly extending end flaps respectively disposed in the pockets for securing the cover over the open top of the box.

7. A folding box comprising a single blank of cardboard which is cut, scored and folded along the scores to provide a rectangular bottom wall, opposed side walls hingedly connected to the bottom wall, opposed outer end walls integral with and hingedly connected to said bottom wall, inner end walls of a width approximating that of the outer end walls and being connected thereto and to the side walls along hinge scores, diagonal converging hinge scores provided in each of the inner end walls to provide foldable corner webs foldable flat against the adjacent outer end walls, inner end wall locking flaps connected to the top of the inner end walls along a straight hinge score and folded inwardly and downwardly relative thereto to a position overlapping the folded corner webs to prevent unfolding of the same to maintain the aforesaid walls in fixed set up position, the fold between the locking flaps and the inner end walls constituting the top edges of the inner end walls, and a folding top flap integral with the top edge of one of the outer end walls and connected thereto along a hinge score parallel to the hinge score between each locking flap and its related inner end wall for horizontal infolding over the open top of the box.

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