

March 30, 1965

F. H. BURGESS

3,175,751

CARDBOARD BOX CONSTRUCTION AND BLANK THEREFOR

Filed Dec. 18, 1963

2 Sheets-Sheet 1

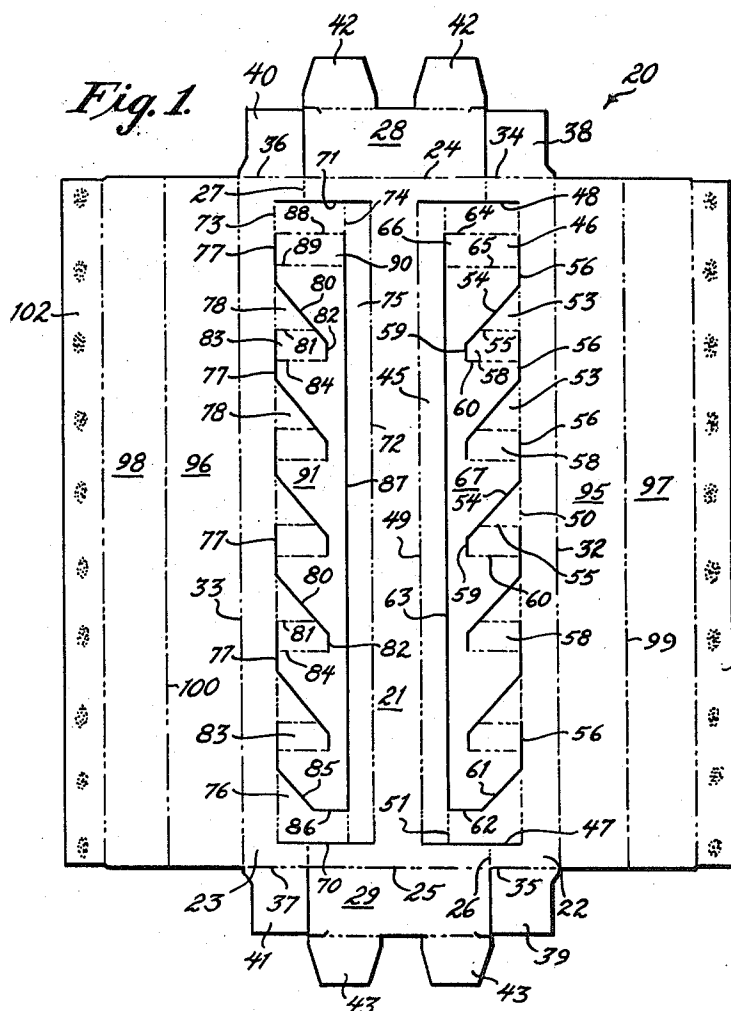


Fig. 1.

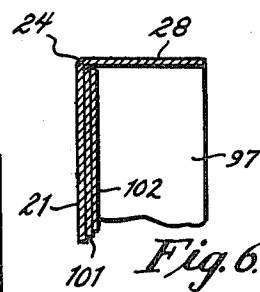


Fig. 6.

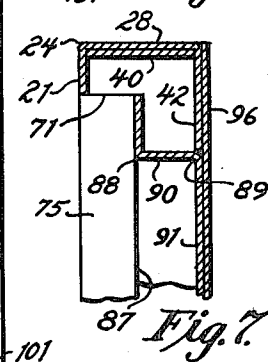


Fig. 7.

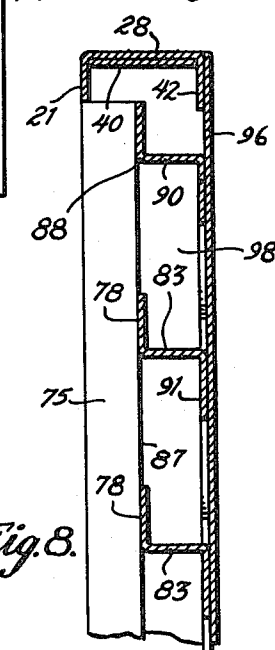


Fig. 8.

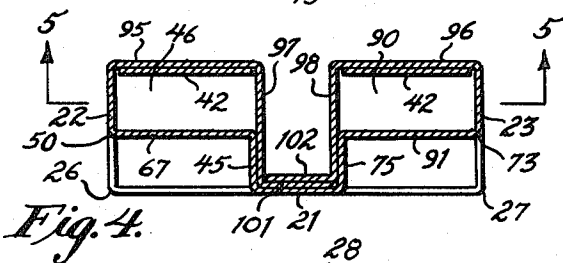


Fig. 4.

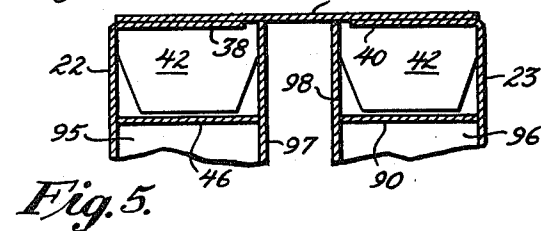


Fig. 5.

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CARDBOARD BOX CONSTRUCTION AND BLANK THEREFOR

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2 Sheets-Sheet 2

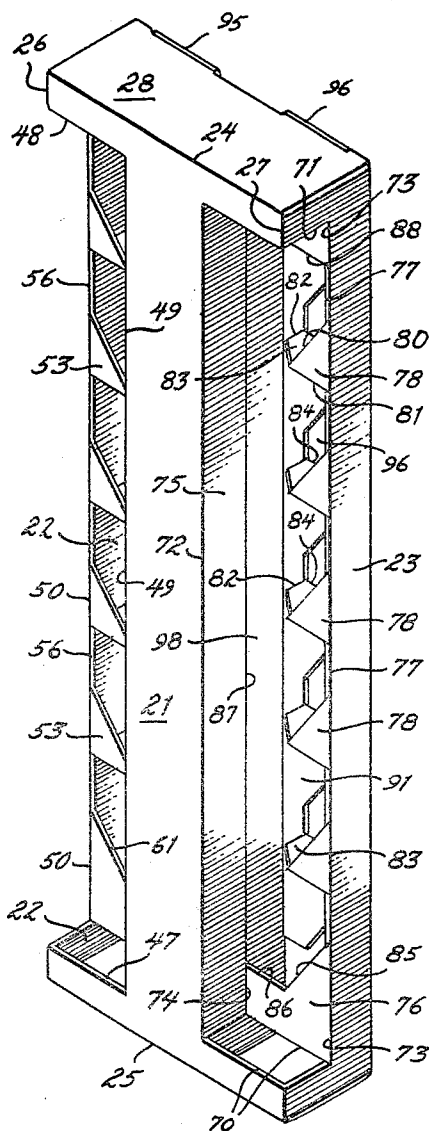


Fig. 2.

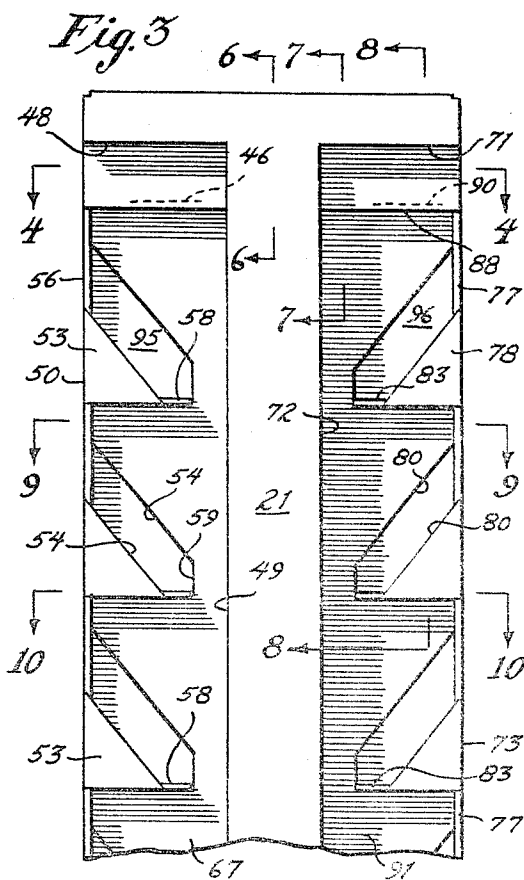
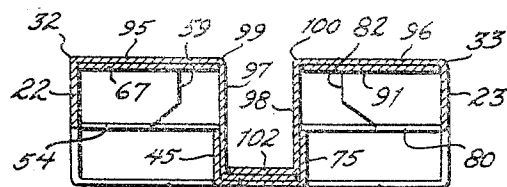


Fig. 3.



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3,175,751

CARDBOARD BOX CONSTRUCTION AND BLANK THEREFOR

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Filed Dec. 18, 1963, Ser. No. 331,443

9 Claims. (Cl. 229—28)

This invention relates generally to containers or boxes, and is especially concerned with a unique construction of collapsible or folding box of the general type disclosed in my prior patent No. 2,759,652 and now called gang-lift boxes.

It is an object of the present invention to provide a gang-lift folding-box construction affording a plurality of partitioned article-receiving regions wherein the articles are effectively protected in stacking, handling and the like, while attractively exposed to view through more than one side of the box.

It is another object of the present invention to provide a collapsible box or container having intermediate regions of adjacent walls open and formed interiorly thereof with a structure protectively receiving contained articles and attractively exposing the same through the open walls.

The instant invention further includes the provision of a novel one-piece blank for producing a box of the type described.

Still a further object of the present invention resides in the provision of a unique collapsible box construction, and one-piece blank therefor, which is extremely simple in structure, durable and reliable in use, quickly and easily manufactured and set up, neat and attractive in appearance, and which can be economically manufactured for sale at a reasonable price.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings:

FIGURE 1 is a plan view showing a box blank constructed in accordance with the teachings of the present invention;

FIGURE 2 is a perspective view showing the box of the present invention in its set-up condition;

FIGURE 3 is a partial top plan view of the box of FIGURE 2;

FIGURE 4 is a transverse sectional view taken generally along the line 4—4 of FIGURE 3;

FIGURE 5 is a horizontal sectional view taken generally along the line 5—5 of FIGURE 4;

FIGURE 6 is a partial longitudinal sectional elevational view taken generally along the line 6—6 of FIGURE 3;

FIGURE 7 is a partial longitudinal sectional elevational view taken generally along the line 7—7 of FIGURE 3;

FIGURE 8 is a partial longitudinal sectional view taken generally along the line 8—8 of FIGURE 3;

FIGURE 9 is a transverse sectional elevational view taken generally along the line 9—9 of FIGURE 3; and

FIGURE 10 is a transverse sectional elevational view taken generally along the line 10—10 of FIGURE 3.

Referring now more particularly to the drawings, and specifically to FIGURE 1 thereof, a one-piece blank is there generally designated 20, and may be fabricated of any suitably stiff, bendable sheet material, such as cardboard or the like. The blank 20 includes a plurality of longitudinally extending, side-by-side panels hingedly connected together by fold lines or scores. In particular,

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the blank 20 includes an elongate central panel 21, and a pair of elongate panels 22 and 23 on opposite sides of and adjacent to the central panel 21.

The central panel 21 is bounded at opposite ends by generally parallel fold lines or scores 24 and 25, and on opposite sides by longitudinally extending fold lines or scores 26 and 27. The side folds 26 and 27 may be considered as extending between adjacent ends of end folds or scores 24 and 25, and being medially interrupted as will appear presently. Generally rectangular end flaps 28 and 29 are respectively hingedly connected to opposite ends of the central panel 21 by folds 24 and 25, the end flaps being laterally coextensive with the central panel.

The panels 22 and 23 are hingedly connected to opposite sides of the central panel 21 by respective fold lines 26 and 27, and are bounded on their outer side edges by longitudinal fold lines or scores 32 and 33. Opposite ends of the side panel 22 are bounded by generally parallel, laterally extending fold lines or scores 34 and 35, each being in respective alignment with the central-panel end folds 24 and 25, and extending between the adjacent ends of folds 26 and 32. Similar end folds 36 and 37 define the ends of side panel 23, extending in respective alignment with end folds 24 and 25 and between adjacent ends of folds 27 and 33.

On opposite ends of side panel 22, hingedly connected thereto by respective folds 34 and 35, are generally rectangular end flaps 38 and 39, while similar generally rectangular end flaps 40 and 41 extend from opposite ends of side panel 23, being hingedly connected to the latter by respective end folds 36 and 37. Also, a pair of tuck flaps 42 are hingedly connected to and extend in spaced-apart relation outward from the outer edge of flap 28. A similar pair of tuck tabs or flaps 43 are hingedly connected to and extend in spaced-apart relation outward from the outer edge of end flap 29.

The central panel 21 and its adjacent, hingedly connected panel 22 are cut and scored to define thereof an inner side panel 45, and an intermediate panel 46, which panels 45 and 46 are longitudinally coextensive in side-by-side relation, hingedly connected to each other and respectively to panels 21 and 22. More particularly, the central and side panels 21 and 22 are formed with a pair of parallel spaced, laterally extending cuts 47 and 48, which cuts are laterally coextensive and extend across the fold 26. The cut 47 is disposed in inwardly spaced, adjacent parallelism with folds 25 and 35, while the cut 48 is similarly disposed in inwardly spaced adjacent parallelism with folds 24 and 34. Further, the coextensive cuts 47 and 48 terminate in the panel 22 medially between the folds 26 and 32, and terminate in the panel 21 medially between the folds 26 and 27, but closer to the fold 26. Thus, the cuts 47 and 48 terminate in the panel 21 short of the longitudinal center line thereof. Extending between the terminized cuts 47 and 48 in the central panel 21 is a longitudinal fold line 49, while a longitudinal fold line 50 extends between the ends of cuts 47 and 48 in the panel 22. An additional longitudinal fold line 51 is formed in the panel 21 extending between medial regions of the cuts 47 and 48 and in parallelism with the folds 49 and 50. The cuts 47 and 48 and the parallel folds 49, 50 and 51 thus combine to define the subpanels 45 and 46.

The inner side or subpanel 45 is located entirely in the central panel 21, while the intermediate subpanel 46 is located partially in the central panel and partially in the side panel 22. Formed of the intermediate panel 46, spaced between the end cuts 47 and 48 are a plurality of generally triangular support panels 53 arranged in longitudinally spaced relation along the fold 50 and extending laterally inward therefrom. Each support panel

53 is defined within the adjacent portion of fold 50, a diagonal cut 54, 54 extending obliquely inward from the fold 50, and a lateral fold line or score 55 extending laterally inward from the fold 50 to the cut 54. Further, a series of longitudinally aligned, spaced cuts 56 are formed along and coincident with the fold 50, such that each support panel 53 is located between an adjacent pair of cuts 56. Extending from the fold 55 of each support panel 53 is a partition panel 58. The partition panels 58 are thus each hingedly connected to a respective support panel 53 by a fold line 55, and is each bounded, in addition to the fold 55, by the adjacent cut 66 on one side, the adjacent cut 54 on the other side and an extension cut 59, as well as by a fold line or score 60, generally parallel to the fold line 55. Each extension cut 59 is disposed generally parallel to the fold line 50 at the inner end of a respective diagonal cut 54, so that the partition panels 58 are approximately rectangular.

In the illustrated embodiment, the series of aligned cuts 56 are spaced intermediate the end cuts 47 and 48, and the diagonal cuts 54 are arranged to extend laterally inward and away from the end cut 48. The diagonal cuts 54 may all be substantially parallel, and the extension cuts 59 may be in end-to-end, spaced longitudinal alignment. An additional diagonal cut 61 extends from the cut 56 closest to the cut 47 in substantial parallelism with the diagonal cuts 54, generally laterally inward and toward the cut 47, terminating short of the latter. A lateral cut 62 extends laterally inward from the inner end of diagonal cut 61 to the fold 51 in parallel, inwardly spaced relation with respect to the end cut 47; and, the fold 51 is cut or severed at 63 longitudinally therealong from the cut 62 to a point adjacent to and short of the end cut 48. Adjacent to and spaced inward of the end cut 48 is formed a fold line or score 64 extending between the adjacent ends of cut 63 and the proximate cut 56. An additional lateral fold line or score 65 extends in inwardly spaced parallelism with the fold 64 between the cut 63 and the cut 56 closest to the cut 48. There is thus defined a partition or panel 66 bounded within the cut 63, folds 64 and 65, and cut 56 adjacent to the cut 48. There thus remains a panel 67 defined within the area bounded by the cuts 61, 62 and 63, fold line 65, cuts 56 and exclusive of the support panels 53 and partition panels 58.

The side panel 23, conjointly with the adjacent portion of central panel 21 is similarly cut and scored. A pair of parallel spaced end cuts 70 and 71 are formed extending laterally across the fold line 27 respectively adjacent to and spaced inward from opposite ends of the panels 21 and 23. The cuts 70 and 71 terminate outwardly medially between the folds 27 and 33 of panel 23, and terminate inwardly in the panel 21 adjacent to and spaced inward from the fold 27. A longitudinal fold line or score 72 extends in the central panel 21 between the adjacent ends of cuts 70 and 71, while a longitudinal fold 73 is provided in the panel 23 extending between adjacent outer ends of the cuts 70 and 71. Extending longitudinally between medial regions of the cuts 70 and 71, formed in the panel 21 is a fold 74, located in spaced relation between and parallel to folds 72 and 73. Thus, defined between the cuts 70 and 71, and folds 72 and 74 is an inner-side subpanel 75, while an intermediate subpanel 76 is defined between the cuts 70 and 71 and the folds 73 and 74. Arranged along and coincident with the fold 73, spaced between the ends thereof, are a plurality of spaced, aligned cuts 77. Intermediate each adjacent pair of cuts 77 the subpanel 76 is formed with a support panel 78 extending laterally inward from the fold 73. The support panels 78 are thus spaced longitudinally along the fold 73 intermediate the end cuts 70 and 71. Each support panel 78 is bounded within the fold 73, a diagonal cut 80 extending laterally inward obliquely away from the end cut 71, and a lateral fold 81 extending laterally between the fold 73 and cut 80. The several diagonal folds 80 extend in parallelism, each one extending from

the lower end of respective cut 77 obliquely beyond the adjacent fold 81 and terminating in an extension cut 82 parallel to the fold 73. Extending from the fold 81 of each support panel 78 is a partition panel 83 of generally rectangular configuration and bounded between the fold 81, cuts 77, 80 and 82, and a fold line or score 84 extending laterally between each extension cut 82 and the adjacent cut 77. The fold lines 81 and 84 of each partition panel 83 are generally parallel, so that the partition panels are approximately rectangular.

An additional diagonal cut 85 extends from the adjacent end of the cut 77 closest to end cut 70, obliquely laterally inward and toward the adjacent end cut, terminating in a lateral extension cut 86 extending inward to the fold 74, in inwardly spaced parallel relation with respect to the end cut 70.

A longitudinal cut 87 extends along and coincident with the fold line 74, intermediate the ends thereof, from the cut 86 to a point adjacent to and spaced inward from the end cut 74. In adjacent inwardly spaced relation with respect to the end cut 71, there is formed a lateral fold line or score 88 extending between the adjacent ends of cut 78 and proximate cut 77, while an additional lateral fold line 89 extends in parallel, inwardly spaced relation with the fold line 88, between the cut 87 and adjacent cut 77. Between the folds 88 and 89, and the adjacent cuts 77 and 87 is defined an end partition or panel 90. The remainder of the intermediate panel 76 as defined within the cuts 85, 86 and 87, fold line 89 and cuts 77, exclusive of the support panels 78 and partition panel 83, defines an elongate panel or stay 91.

Extending laterally outward from the panel 22 and hingedly connected thereto by the fold line 32 is a generally rectangular panel 95, which is substantially longitudinally coextensive with the panel 22. A similar panel 96, of generally rectangular configuration, extends laterally outward from and is hingedly connected to the panel 23 by the fold line 33.

Additional generally rectangular panels 97 and 98 respectively extend laterally outward from the panels 95 and 96, being longitudinally coextensive therewith and connected thereto by fold lines 99 and 100. There may be provided on the laterally outer edges of panels 97 and 98 glue flaps 101 and 102, which may be substantially coextensive with their adjacent panels, as illustrated.

In manufacture, the gluing step is extremely simple, say by the straight-line application of glue to each of flaps 101 and 102 on the same side thereof. It is then only necessary to effect bending along the folds 32 and 33 to swing the glue flaps into overlying relation with the longitudinal medial region of panel 21, one flap being secured directly to the central panel and the other flap being secured to the first-secured flap. In this collapsed or folded condition the box may be economically stored, handled and shipped.

Setup of the box requires only bending along the folds 26, 32 and 99 to swing the panel 95 into parallel spaced relation with the panel 21, simultaneously swing the panel 99 into parallel spaced relation with the panel 22. Similarly, upon bending of the folds 27, 33 and 100, the panel 96 is swung into parallel spaced relation with the panel 21, and the panel 98 is swung into parallel spaced relation with the panel 23.

Simultaneously with the above the folds 50, 51 and 49 are bent to swing the subpanel 46 into parallelism with and in a plane between those of the panels 21 and 95, while the subpanel 45 is swung into a plane generally parallel to that of panel 22. Similarly, folds 72, 73 and 74 are bent to swing subpanel 76 into a plane parallel to and between the panels 96 and 21, while the subpanel 75 is swung into a plane parallel to that of panel 23.

The ends may be closed by appropriate folding of flaps 28, 29, 38, 39, 40 and 41, and tucking of tabs 42 and 43.

Completion of the setup requires only that the stay panels 67 and 91 be swung downward toward the

panels 95 and 96, respectively. Downward swinging of stay panel 67 is achieved by bending of folds 64, 65, 55 and 60, while downward swinging of panel 91 is achieved by bending of folds 88, 89, 81 and 84.

Referring now to FIGURES 2-10, the box of the present invention is illustrated in its set-up condition and the elements thereof referred to by corresponding numerals. Thus, the central or top panel 21 is formed with a pair of longitudinally extending folds or creases 49 and 72 extending in parallelism with each other on opposite sides of the longitudinal center line of the top panel and being coterminal at opposite ends adjacent to and spaced from respective end folds 24 and 25.

The panels 22 and 23 define side panels, being respectively hingedly connected to opposite side edges of the top panel 21 and depending from folds 26 and 27.

The panels 95 and 96 extend laterally inward from the lower edges of respective side walls 22 and 23, defining bottom walls and hingedly connected to the adjacent side walls by folds 32 and 33. Thus, the panels 95 and 96 define bottom walls and terminate at their inner edges in fold lines 99 and 100 adjacent to and spaced from each other. The panels 97 and 98 extend from the respective folds 99 and 100 to the top panel 21, defining inner side walls; and, the glue flaps 101 and 102 are suitably secured to the underside of the medial region of top panel 21.

The end flaps 38 and 40 extend inward from their respective side walls 22 and 23, and may be covered by end flap 28 having tabs 42 tucked in adjacent to the bottom walls 95 and 96. The end flaps 39, 41 and 29 are similarly closed.

The adjacent, hingedly connected subpanels 75 and 76 extend inwardly, the former depending from the top wall or panel at the fold line 72 toward and terminating short of the bottom wall or panel 96. In particular, the panel 75 depends closely adjacent to the inner side wall 93 and provides an inner side panel. The lower cut edge 87 of the inner side panel 75 between the cut 86 and fold 88 is free and may bow away from the adjacent inner side wall 93 by inherent resilience of the material.

The subpanel 76 extends laterally between the lower edge of inner side panel 75, being connected thereto by the fold 74, to the outer side wall 23, being connected to the latter by the fold 73. Further, the subpanel 76 lies essentially in a plane parallel to and spaced intermediate the planes of the top wall 21 and bottom wall 96.

From the plane of the intermediate subpanel 76, the stay panel 91 is swung downward to the bottom wall 96 and may rest thereon, swinging action being permitted by bending of the folds 81, 84, 83 and 89. Thus, the partitions 83 are swung downward to depend from their respective supports 78, and the partition 90 is swung downward to depend from the adjacent end region of intermediate panel 76.

In this manner a series of article receivers are defined between the outer side wall 23, the inner side wall 93, and each adjacent pair of partitions 83. Further, an article receiver is formed between the partition 90 and the next adjacent partition 83, see FIGURES 3 and 8, as well as between the cut edge 85, 86 and its next adjacent partition 83, see FIGURE 2. Articles engaged in these receiver regions may seat on the stay 91 and project upward beyond the fold 73 to a height equal to or less than the level of top wall 21. In this condition, the articles or contents are effectively protected in handling, stacking and the like, as by the height of the top wall 21 including its laterally extending end regions. Further, by the hereinbefore mentioned resilience of cut edge 87, the inner side panel 75 may yieldably engage against received contents to firmly maintain the same in position.

Of course, the set-up condition of the subpanels 45 and 46 is identical to that described above in connection

with subpanels 75 and 76, so that detailed repetition is unnecessary.

In its condition of use, the filled container of the present invention may be suitably overwrapped so as to attractively present to view the contents while effectively protecting the same against damage, deterioration, and the like.

From the foregoing, it will now be appreciated that the box construction and blank therefor of the present invention fully accomplish their intended objects and further provide a sturdy and reliable multicell box construction which is economical in manufacture, requiring a minimum of materials, and which can be quickly and easily set up for filling, either semiautomatically or by hand. It is also possible that existing machinery can be modified to effect completely automatic setup of the instant box construction.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. A cardboard box construction comprising top, bottom and side walls hingedly connected together for relative movement between collapsed and set-up condition; and end closures at opposite ends of said walls releasably retaining the latter in set-up condition; said top wall and one side wall being provided with a pair of spaced transverse cuts adjacent to and spaced inward from the wall ends, and a plurality of longitudinal scores extending between said cuts, said top and one side wall being folded along said scores to form a longitudinally extending inner side panel depending from said top wall and an intermediate panel extending laterally from said inner side panel to said one side wall in spaced relation between said top and bottom walls; said intermediate panel being cut and scored to define a plurality of longitudinally spaced supports extending laterally in from said other side wall, a plurality of partitions each depending from a respective support to said bottom wall, and a stay connected to the lower regions of said plurality of partitions and seated on said bottom wall; whereby articles received between said partitions and extending thereabove are exposed beyond said one side wall and protected in stacking by said other side wall and the end regions of said top wall.

2. A cardboard box construction according to claim 1, said supports, partitions and stay being formed from the material of said intermediate panel at a region located in spaced relation between the end regions of said intermediate panel, the end regions of said intermediate panel serving to retain received articles in position.

3. A collapsible cardboard box comprising top and bottom walls; and side walls extending between and hingedly connected to said top and bottom walls; said top wall and one side wall being cut and scored intermediate the ends thereof to form an inner side panel depending from the top wall to a location spaced above said bottom wall and an intermediate panel extending laterally at said location between said inner side panel and one side wall; said intermediate panel being cut and scored to define a plurality of longitudinally spaced supports extending laterally inward from said one side wall, a plurality of partitions each depending from a respective support to said bottom wall, and a stay connected to the lower regions of said plurality of partitions and seated on said bottom wall; whereby articles received between said partitions and extending thereabove are exposed beyond said one side wall and protected in stacking by said other side wall and the end regions of said top wall.

4. A collapsible cardboard box according to claim 3, said supports and partitions being located in spaced relation intermediate the ends of said intermediate panel,

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the end regions of said intermediate panel serving to retain received articles in position.

5. A collapsible cardboard box according to claim 4, said intermediate panel being cut along the lower edge of said inner side panel, to release said lower edge for inward bearing engagement with received articles to firmly retain the latter in position.

6. A collapsible cardboard box comprising a top wall; a pair of outer side walls hinged to and depending from opposite sides of said top wall, a pair of bottom walls respectively hinged to the lower edges of said outer side walls and extending inward therefrom; a pair of inner side walls respectively hinged to the inner edges of said bottom walls and extending upward therefrom for hinged securement to a medial region of said top wall; said inner and outer side walls being swingable upward and outward about their hinged connections to said top wall to a collapsed position; said top wall and each outer side wall being cut and scored intermediate the ends thereof on each side of said medial region to form an inner side panel depending from the upper region of each inner side wall to a location spaced above the adjacent bottom wall and an intermediate panel extending laterally outward from each inner side panel to the adjacent outer side wall; each of said intermediate panels being cut and scored to define a plurality of longitudinally spaced supports extending laterally inward from the adjacent outer side wall, a plurality of partitions each depending from a respective support to the adjacent bottom wall, and a stay connected to the lower regions of the partitions and seated on the respective bottom wall; whereby articles received between said partitions and extending thereabove are exposed beyond said outer side walls and protected in stacking by the ends and medial regions of said top wall.

7. A collapsible cardboard box according to claim 6,

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said supports and partitions being located in spaced relation intermediate the ends of said intermediate panels, and said intermediate panels each being cut along the lower edge of the adjacent inner side panel, the end regions of said intermediate panels and the lower edges of said inner side panels serving to retain received articles in position.

8. A blank for a collapsible box fabricated of an integral cardboard sheet and comprising a series of panels disposed in side-by-side relation and connected together by generally parallel fold lines; an adjacent pair of said panels being formed with a pair of spaced cuts each extending transversely of the connecting fold line; each panel of said adjacent pair being formed with a longitudinal score extending between respective ends of said pair of cuts; one panel of said adjacent pair being formed with an additional score extending between medial regions of said cuts; said pair of scores, cuts and additional score combining to define within said adjacent pair of panels a pair of hinged subpanels; and one of said subpanels being cut and scored to form thereof a plurality of support panels extending inward from the adjacent longitudinal score, a plurality of partition panels each hinged to and extending from a respective support panel along said adjacent longitudinal score, and a stay panel hingedly connected to the partition panels remote from the support panels.

9. A blank for a collapsible box according to claim 8, said support, partition and stay panels being located intermediate end regions of said one subpanel; said one subpanel being further cut and scored to form an additional partition panel hingedly connected to said stay panel and one of said end regions.

No references cited.

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