May 9, 1933. C. B. KLEFEKER 1,908,257

CONTAINER FOR FRAGILE ARTICLES

Filed Oct. 21, 1931 2 Sheets-Sheet 1

Fig. 1

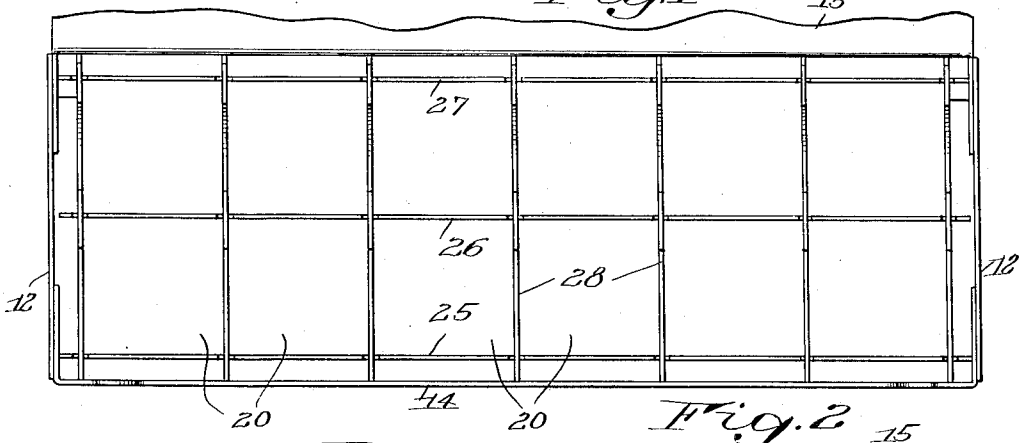

Fig. 2

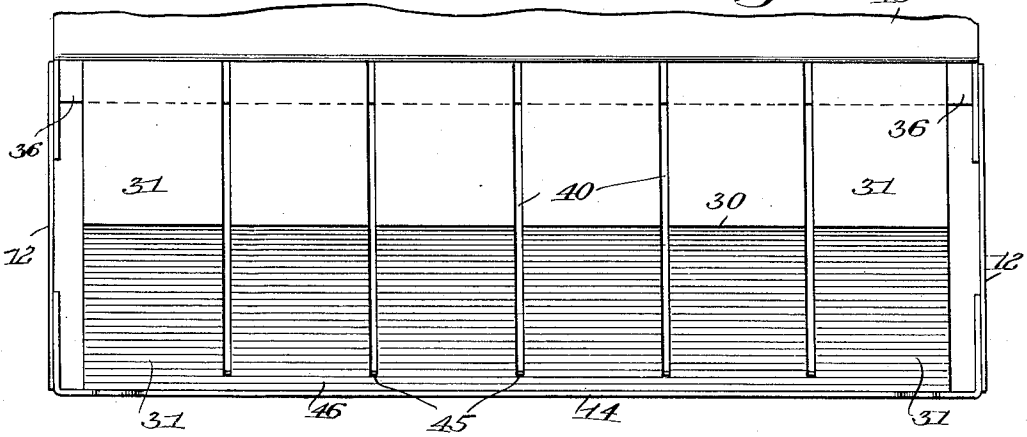

Fig. 3

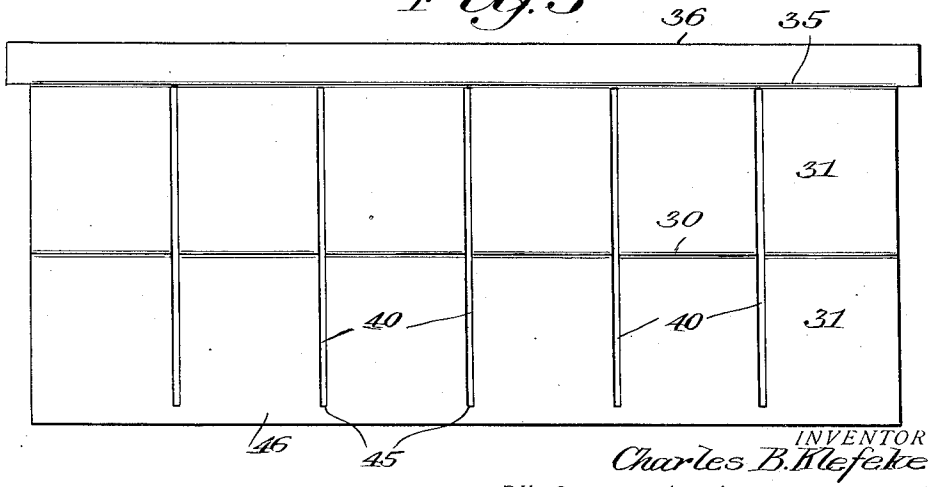

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Fig. 4

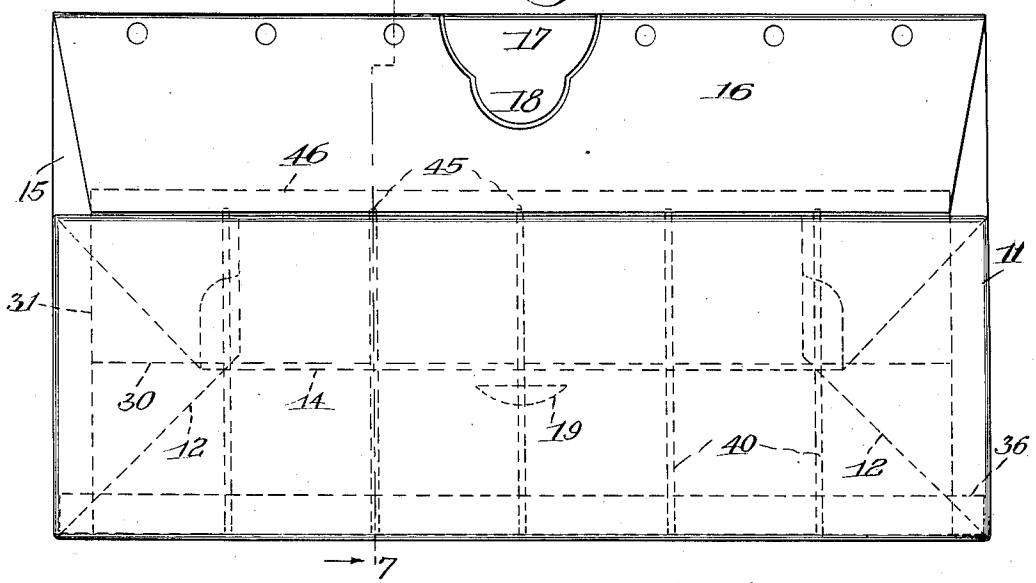


Fig. 5

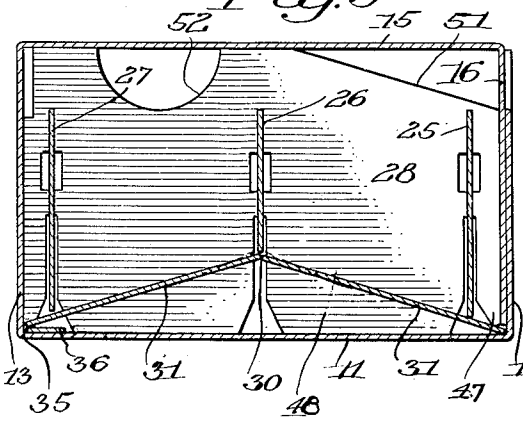


Fig. 6

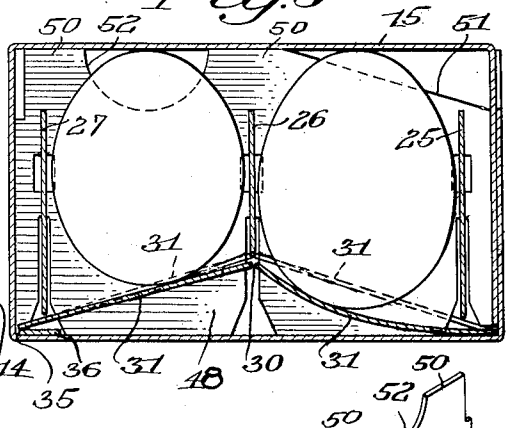


Fig. 8

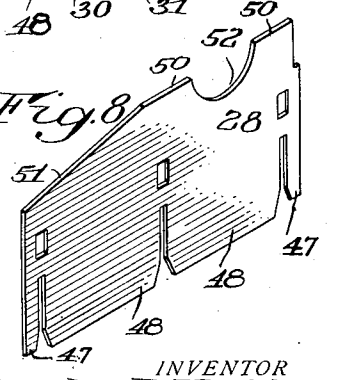


Fig. 7

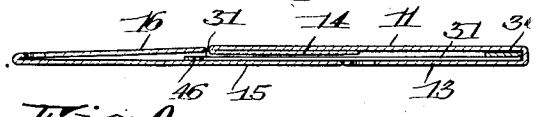
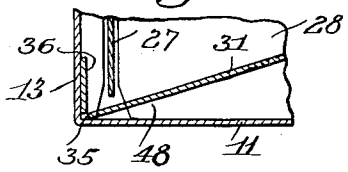


Fig. 9



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Patented May 9, 1933 1,908,257

UNITED STATES PATENT OFFICE

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CONTAINER FOR FRAGILE ARTICLES

Application filed October 21, 1931. Serial No. 570,112.

This invention relates to containers, and more particularly to a cushioning member for supporting articles within the container.

An object of the invention is the provision of a container having an improved, simple, and satisfactory cushioning member which will protect the articles against breakage.

Another object is the provision of such a container in which the cushioning member is secured to and collapsed with the body of the container.

A further object is the provision of a container in which the cushioning member is held in proper erected position by the body of the container.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a plan view of a container constructed in accordance with the preferred embodiment of the invention, showing the cover in open position and partly broken away;

Fig. 2 is a plan view of the container illustrated in Fig. 1, with the partition structure removed to show more clearly the relation of the cushioning member to the body;

Fig. 3 is a plan view of the preferred form of cushioning member in flat position before being applied to the body;

Fig. 4 is a plan view of the body and its associated cushioning member in completely collapsed condition;

Fig. 5 is a vertical sectional view taken transversely of the container illustrated in Fig. 1, with the cover in closed position;

Fig. 6 is a vertical sectional view taken transversely of a filled container with the cover in closed position;

Fig. 7 is a vertical sectional view taken substantially on the line 7—7 of Fig. 4, showing the relation of the cushioning member to the body when in the collapsed position illustrated in Fig. 4;

Fig. 8 is a perspective view of the preferred form of transverse partition member, and

Fig. 9 is a fragmentary sectional view of the container illustrated in Fig. 5, showing a modification in which the cushioning member is secured to the back of the body.

Similar reference numerals throughout the several views indicate the same parts.

The present invention is embodied in a new and improved container for fragile articles, such for example, as eggs. The container comprises, in general, a box or body in which is disposed a suitable partition structure or filler, and to which is secured a cushioning member for resiliently supporting articles held within the partition structure. The cushioning member forms a unit with the body and is movable therewith in a manner hereafter more fully described.

Referring to the drawings, there is shown a suitable box or body in which is disposed the new and improved cushioning member. The body may be made of cardboard, or other suitable material, formed to provide a bottom 11, ends 12, back 13, front 14, and a cover 15 having an integral flap 16. The flap 16 preferably has cut therefrom a tab 17 provided with a tongue 18 which projects through a slot 19 in the front 14, when the body is in closed position, as shown in Figs. 5 and 6.

The space within the body is divided into a plurality of article receiving compartments or cells 20 by a suitable partition structure or filler. This filler comprises longitudinal partition members 25, 26, and 27, and a plurality of transverse partition members 28. The longitudinal and transverse members are spaced so that each of the compartments 20 is of sufficient size to receive a single article, such as an egg. These members are provided with the usual inter-engaging slots which act like hinged joints to permit the filler to be collapsed, in the manner well known in the art.

Disposed within the body adjacent the bottom 11 thereof is a cushioning member, preferably in the form of a sheet of flexible material which extends substantially the full length of the filler. This cushioning member provides resilient or flexible bottoms upon which eggs may rest when in the compartments 20, which bottoms effectively protect the eggs against breakage during packing or

shipping, and eliminate the use of the protecting pads usually heretofore placed beneath the box. This cushioning member preferably comprises a piece of cardboard maintained in elevated position at one side of each compartment as at 30, and sloping thence downwardly as at 31 to rest on the bottom 11 beyond the outer longitudinal members 25 and 27, as clearly illustrated in Figs. 5 and 6.

The members 31 may be separate, but they are preferably formed from a single sheet of cardboard, or the like, having a width greater than that of the bottom 11, so that when the sheet is placed within the box, it is deflected out of a plane to form a bowed member, the central portion of which is deflected upwardly out of the plane of the edges. In the preferred embodiment of the invention the cushioning member comprises a substantially inverted V-shaped member formed by scoring the sheet along the line 30 and deflecting it so that the scored line is elevated above the bottom 11, as shown in Figs. 5 and 6.

The sheet is preferably retained in the deflected or V-shaped position by means which prevent lateral spreading of the edges of the deflected sheet, so that it acts somewhat like a simple truss and is thus maintained with its central portion elevated, even though the central portion has no direct support. This means for preventing lateral spreading may comprise, for example, abutment means such as the front wall 14 of the box, with which the front edge of the sheet 31 contacts and which resists the thrust of the sheet to prevent outward movement of the edges thereof.

Abutment means may also be provided for the rear edge of the sheet 31. For example, the rear edge may contact with and thrust against the rear wall 13 of the box body. Ordinarily, however, it is desirable to attach the cushioning member to the body, so that it will be in effect an integral unit therewith. To this end, the sheet may be scored along the line 35 near its rear edge, and the narrow strip or tab 36 between the score line and the edge may be turned under as shown in Figs. 5 and 6, and affixed to the box body in any suitable manner, as by cement or adhesive. While the tab 36 has been shown as being affixed to the bottom 11, this is by way of illustration only, as it is contemplated that the tab may be bent upwardly on the line 35 and secured to the back 13, as illustrated in Fig. 9.

With this arrangement the outward thrust of the cushioning member is transmitted through the score line or hinge joint 35 to the strip 36, and is resisted wholly or partially thereby, so that this strip may be considered broadly as abutment means for preventing outward movement of the edge of the cushioning member. In some instances, as for example when the strip 36 is placed very close to or mounted on the rear wall 13 of the box, the edge of the hinge joint 35 may press more or less against the rear wall 13, which will thus assist in resisting the thrust of the cushioning member and which accordingly may also be considered as abutment means. While the rear wall 13, front wall 14, and tab 36 constitute abutments which prevent outward movement of the edges of the cushioning member, the bottom 11 of the body provides a suitable tie member for retaining the abutment means and the truss-like member in proper relative position.

It is desirable in containers of this class to have the tops of all the eggs at substantially a uniform elevation. This desirable result is accomplished by providing a cushioning member which automatically adjusts itself to different sizes of eggs, and enables the tops of all the eggs to extend to substantially the same height. To this end, the cushioning member is preferably provided with a plurality of transverse slots 40 which extend substantially the full width thereof, and which are substantially in the planes of the transverse members 28. Thus the cushioning bottoms between any two adjacent transverse partitions 28 may be deflected in a manner hereafter described, substantially independently of the bottoms between any other two adjacent transverse partitions. This unitary deflection of the bottoms is clearly illustrated in Fig. 6. The slots 40 are preferably terminated short of the edge of the cushioning member, as shown at 45, Fig. 3, so that the separate cushioning bottoms between the various transverse partitions are not entirely free from each other, but are connected to each other at their front ends by an unsevered portion or strip 46. By reason of this connection, all of the cushioning bottoms may be moved together as a unit, for oscillation about the hinge joint 35, or for other purposes, by grasping the cushioning member at or near its front edge.

The two associated cushioning members 31 between any two adjacent transverse partitions 28, being connected to each other by the hinge joint 30, are somewhat dependent upon each other so that deflection of one by means of a pressure applied thereto may cause some slight deflection of the other. But in general each member 31 is deflectable substantially independently of the other, in proportion to the size of the eggs or other articles placed upon them. Fig. 6 illustrates the differences in deflection of the members 31 caused by a small egg, shown at the left, and that caused by a large egg, shown at the right.

When large eggs are placed in a container of the usual type in which they rest upon an

unyielding bottom, such large eggs are rigidly supported and frequently extend above the normal plane of the top of the container, or so close thereto that pressure applied to the cover is borne by the eggs and is apt to break them.

Referring now to Fig. 6, it is evident that when the cover 15 of the present container is moved to closed position or when a pressure is applied thereto, the large eggs, due to the resilient or flexible character of the inclined members 31, are free to move downwardly, deflecting the members 31 until the tops of the eggs are substantially in the plane of the top of the container. When the large eggs are moved to this position, any pressure or weight which is applied to the cover is supported primarily by the partition structure, as hereinafter described, rather than by the eggs themselves, so that danger of breakage of large eggs is entirely avoided or substantially reduced. The depth of the cells 20 is preferably such that a small egg, such for example as shown at the left in Fig. 6, will cause little or no deflection of the member 31 when the cover is moved to closed position or when pressure is applied thereto. This type of cushioning member thus not only protects the eggs against breakage, but also tends to give the eggs a more uniform appearance when the container is opened for display.

The transverse partition members have front and rear leg-like portions 47, the rear portions extending through the slots 40 and resting on the strip 36, while the front portions rest on and are supported by the connecting strip 46. These members are also provided with intermediate portions 48 which extend through the slots 40 and are preferably provided with straight lower edges which engage the bottom 11 for substantially the full width thereof, and cooperate with the legs 47 to provide a substantial bearing support for the transverse members.

The longitudinal partition members 25, 26, and 27 are supported by their inter-locking engagement with the partitions 28, and have their bottom edges just above or resting loosely upon the upper surfaces of the cushioning member, but exerting no substantial pressure thereon. The top edges of these longitudinal partition members are preferably substantially below the top of the box, as shown in Figs. 5 and 6, so that articles in the compartments are exposed to view to a greater extent and may be more readily inspected.

When filled containers of the class above described are stored or shipped they are ordinarily piled in tiers, each tier extending in a direction transverse to the direction of the tiers immediately above and below. When so piled the containers are subjected to a crushing effect caused by the weight of the tiers above. In order to prevent such crushing effect from breaking the eggs, it is desirable that means be provided for effectively supporting this weight or pressure. The present invention provides such a support, preferably by extending portions 50 of the transverse members 28 to the top of the box. These portions 50 thus provide an effective support for the cover and protect the eggs against breakage.

The front portion of the upper edge of each of the transverse members 28 is preferably beveled downwardly as shown at 51, the front edge thereof terminating substantially in the horizontal plane of the tops of the longitudinal members and cooperating therewith to permit easy inspection of the articles within the compartments. The rear portion of the upper edge may be straight, but it is preferably provided with a semi-circular recess 52, centrally of the space between the longitudinal members 26 and 27, to assist further the easy inspection of the contents of the compartments.

The box, as well as the filler, is preferably collapsible for storing or shipping. The boxes and fillers are usually shipped in a knocked down or collapsed condition. In order to collapse the container above described the filler is first removed, and is then collapsed substantially into a plane, in the manner well known in the art. After the filler has been removed the cushioning member is then lifted upwardly, being oscillated about the score line or hinge joint 35, so as to lie against the back 13, the inclined members 31 being flattened into a plane, as clearly shown in Fig. 7. When the cushioning member has thus been moved relative to the box so as to assume the position shown in Figs. 4 and 7, the box with its associated cushioning member may then be flattened into a plane, as also shown in Figs. 4 and 7.

When, however, the container is to be filled, the body is first erected in the usual manner, and the sheet forming the cushioning member is then moved downwardly, by reason of the hinge-like score line 35, from the position shown in Fig. 4, and is deflected along the score line 30 to form an inverted V-shaped member, in which shape it is inserted within the body so that the front edge of the sheet will abut against the front 14 of the body, as clearly illustrated in Figs. 5 and 6. After the body and cushioning member have been erected in the above manner, the filler is opened and placed in the body in position to rest on the cushioning member, as mentioned above.

While the above container has been described with particular reference to eggs, it is obvious that the same construction may be used for fruit, glassware, or other fragile or delicate articles. The number of compart-

ments may also be varied to suit the material being packed. The present embodiment shows twelve such compartments suitable for holding one dozen eggs.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications thereof falling within the spirit of the invention or the scope of the appended claims.

I claim:

1. A container for fragile articles comprising a body having a substantially flat bottom and a wall, a cushioning member of sheet material secured adjacent one edge to said bottom at a point spaced from said wall and extending thence upwardly to a high point intermediate said first mentioned point and said wall and downwardly into substantial contact with said bottom adjacent said wall, said cushioning member having an edge thrusting against said wall to maintain said member in said upwardly and downwardly extending position, and partition means for subdividing the space in said body above said cushioning member into a plurality of compartments.

2. A container for fragile articles comprising a cushioning member of sheet material having its central portion deflected upwardly out of the plane of its edges, a tie member for holding the edges of said cushioning member against outward movement to maintain said cushioning member under compression to hold it in said deflected position, and partition means above said cushioning member to provide a plurality of compartments in which articles may be placed to rest upon said cushioning member.

3. A container for fragile articles comprising a body having a substantially flat bottom, a cushioning member of inverted V-shape superimposed on said flat bottom, and a partition structure placeable in and removable from said body independently of said cushioning member for subdividing said body into a plurality of compartments.

4. A container for fragile articles comprising a body having a substantially flat bottom and an abutment, a cushioning member of inverted V-shape superimposed on said flat bottom and thrusting against said abutment to maintain said member in said inverted V-shape, and a partition structure placeable in and removable from said body independently of said cushioning member for subdividing said body into a plurality of compartments.

5. A container for fragile articles comprising a body having a substantially flat bottom and a wall, a truss-like cushioning member of substantially plane sheet material secured to said body at a point spaced from said wall, the portion of said cushioning member between said point and said wall being deflected upwardly above said bottom, an edge of said cushioning member engaging said wall as an abutment to maintain said member in said deflected position, and partition means placeable in and removable from said body independently of movement of said cushioning member, to subdivide said body into a plurality of compartments in which articles may be placed to rest on a slightly inclined substantially plane surface of said cushioning member.

6. An egg carton comprising, in combination, a body having a bottom and an abutment, a partition structure within said body for dividing the space therein into a plurality of article receiving compartments, said structure comprising a longitudinal partition member, and cushioning means within said body to provide flexible bottoms for said compartments, said means comprising a sheet of flexible material extending under all of said compartments, and having a plurality of slots intermediate said compartments to make the bottoms of certain compartments substantially independent of the bottoms of certain other compartments, each of said bottoms having inclined portions on opposite sides of the plane of said longitudinal member and being deflectable as a unit independently of the other bottoms.

7. An egg carton comprising, in combination, a body having a bottom and an abutment, a partition structure within said body for dividing the space therein into a plurality of article receiving compartments, and a cushioning member comprising a sheet of flexible material extending under said partition structure and formed to provide inclined substantially plane supports elevated above the bottom of the body by engagement of an edge of said sheet with said abutment, a part of said sheet being attached to said body to secure said member rigidly thereto.

8. An egg carton comprising, in combination, a body portion having an abutment, a partition structure within said body portion and dividing the space therein into a plurality of cells, and a cushioning member formed from a sheet of flexible material of a width greater than that of said body portion, and bent out of a plane to provide flexible inclined bottoms for said cells, said sheet being retained in said inclined position by engagement of a portion thereof with said abutment, said sheet being provided with a plurality of slots disposed intermediate said compartments to provide substantially independent resilient bottoms for the various cells.

9. A container for fragile articles comprising in combination, a body portion, a partition structure within said body portion

for dividing the space therein into a plurality of article receiving compartments, a cushioning member beneath said partition structure, said member comprising a sheet of flexible material having a portion elevated above the edges thereof to provide flexible supports for articles in said compartments, said member being provided with slots intermediate said compartments to divide said member into separate bottoms, said slots being terminated short of an edge of said sheet to provide a connecting member joining said bottoms to permit the front edges thereof to be moved as a unit, and means contacting with said connecting member for maintaining said portion in elevated position.

10. A container for fragile articles comprising in combination, a body portion having a bottom, a partition structure within said body for dividing the space therein into a plurality of article receiving compartments, said partition structure comprising a plurality of parallel longitudinal members and a plurality of parallel transverse members, a cushioning member beneath said partition structure, said member comprising a sheet of flexible material having a portion elevated above the edges thereof to provide flexible supports for articles in said compartments, said member being provided with slots intermediate said compartments to divide said member into separate bottoms, said slots being terminated short of an edge of said sheet to provide a connecting member joining said bottoms to permit the front edges thereof to be moved as a unit, said transverse members having leg-like sections at their ends which rest on said cushioning member, and portions intermediate said legs extending through said slots and engaging said bottom, said sections and said portions providing a means for supporting said partition structure, and means contacting with said connecting member for maintaining said portion in elevated position.

11. A container for fragile articles comprising a body having a bottom and sides, a cushioning member formed of a substantially flat sheet deflected upwardly adjacent its center and having its edges resting on the bottom of said body adjacent said sides and confined against outward movement so that said member is held in position by thrust action, said cushioning member providing slightly inclined substantially plane surfaces for resiliently supporting fragile articles, and partition means for subdividing the space in said body above said cushioning member into a plurality of compartments.

12. A container for fragile articles comprising a body having a bottom and side walls rising at an angle to said bottom to form corners therewith, partition means placeable in said body to subdivide it into a plurality of compartments and removable from said body, said body being capable of being collapsed into substantially flat condition when said partition means is removed, and cushioning means formed of a piece of sheet material secured to said body adjacent one of said corners and extending thence obliquely upwardly to an elevated position adjacent the center of said body and thence obliquely downwardly to an edge resting on said bottom substantially in another of said corners, said edge being removable from said other corner to shift said cushioning means to a different position to permit said body to be collapsed into said substantially flat condition while said cushioning means is still secured thereto.

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