April 15, 1969 J. J. ROHDE 3,438,488

PACKAGE FOR FRANGIBLE ARTICLES

Filed April 3, 1968 Sheet 1 of 7

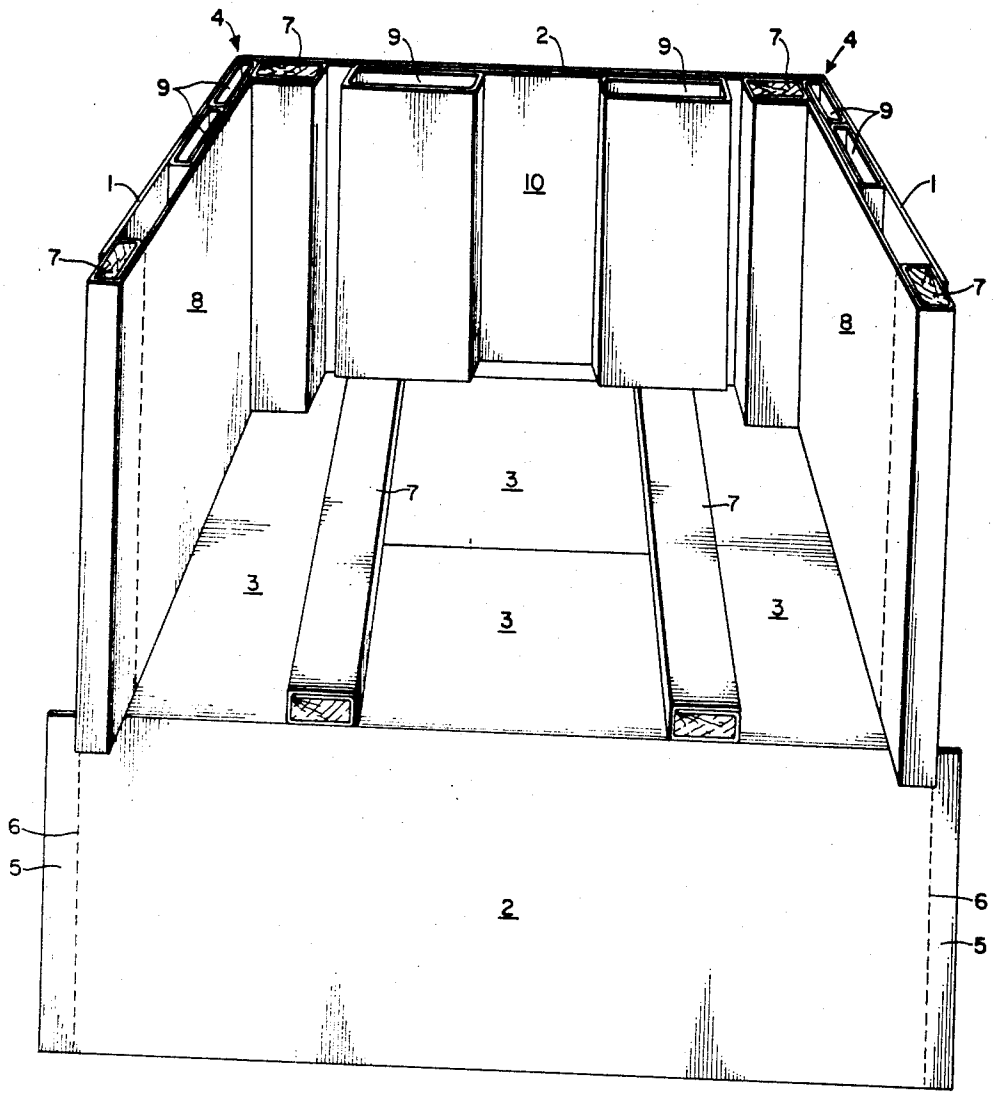


FIG. 1.

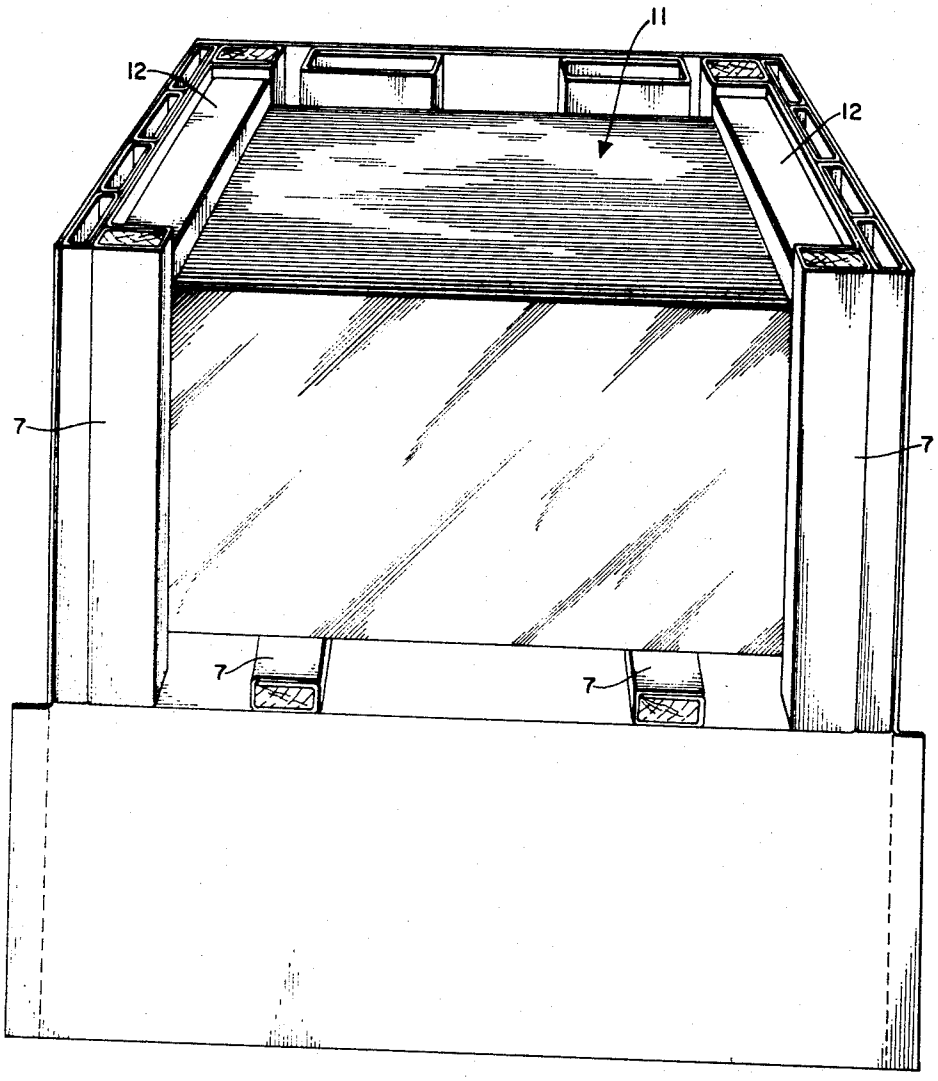


FIG. 2.

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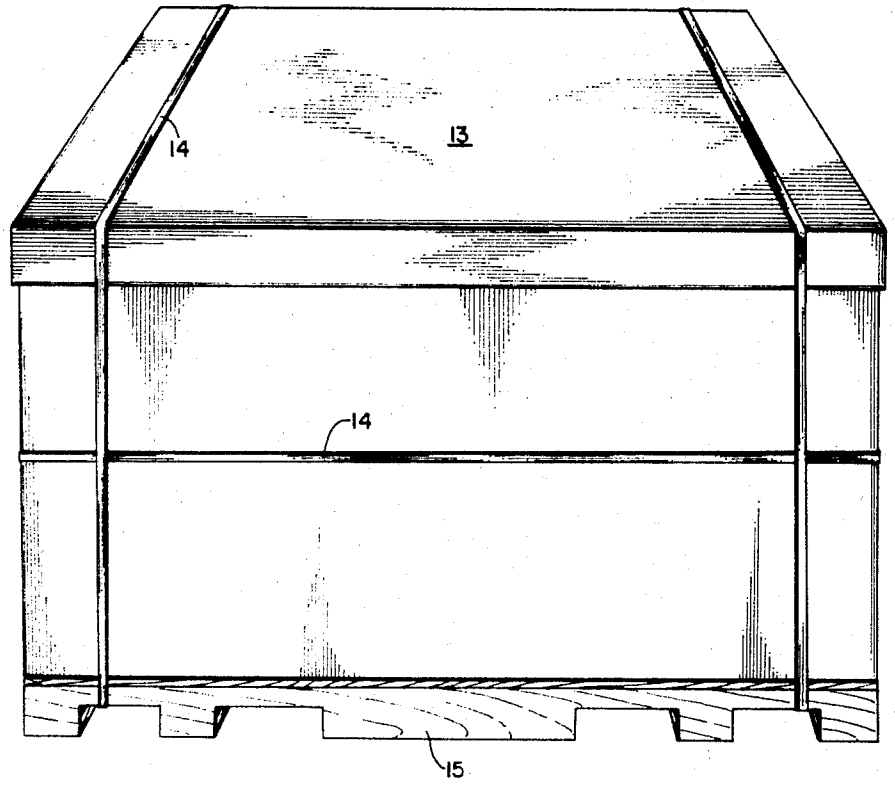


FIG. 3.

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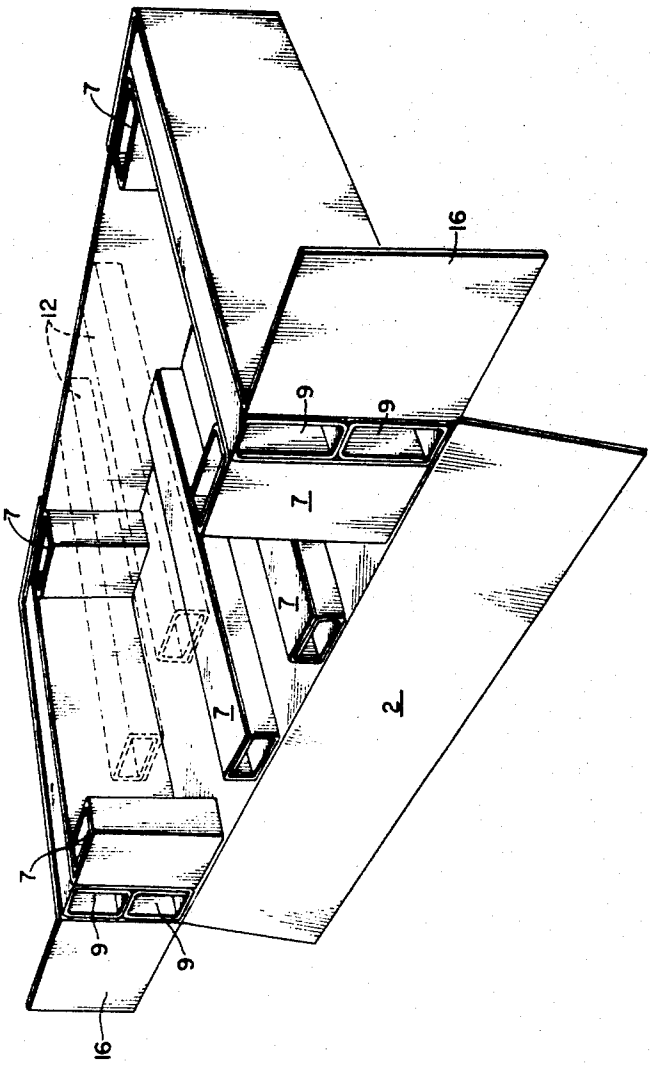


FIG. 4.

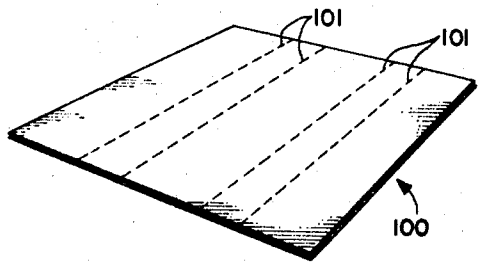


FIG. 5.

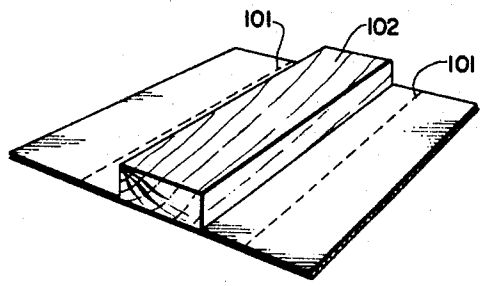


FIG. 6.

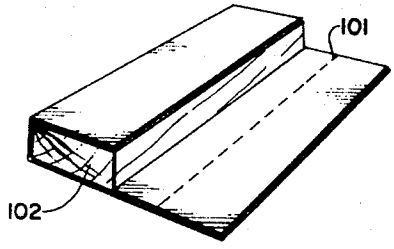


FIG. 7.

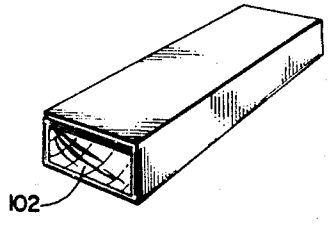


FIG. 8.

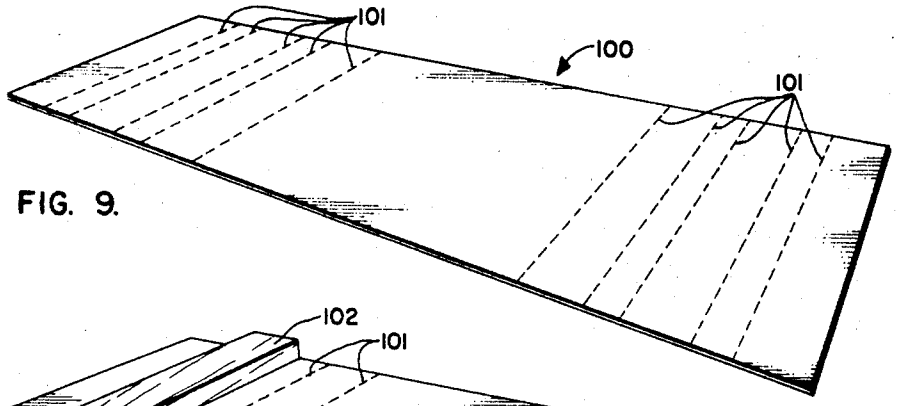


FIG. 9.

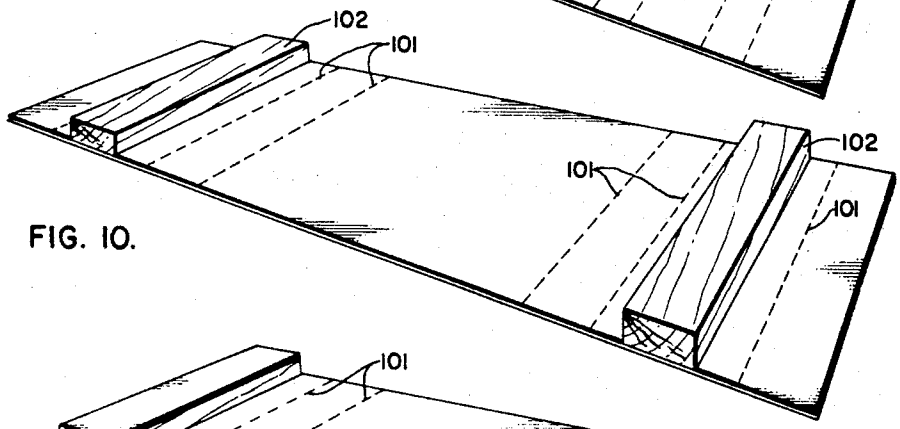


FIG. 10.

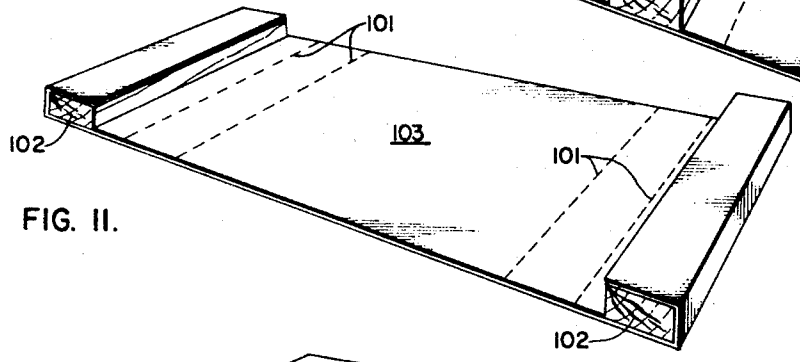


FIG. 11.

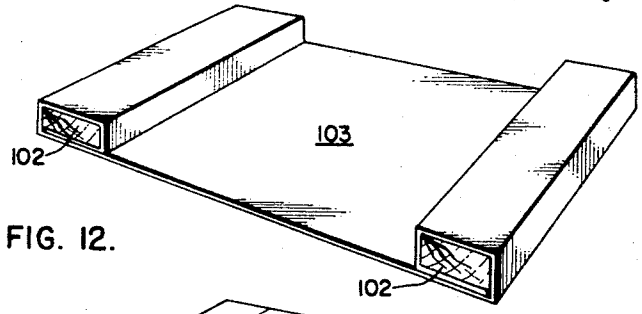


FIG. 12.

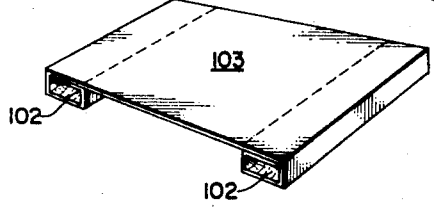


FIG. 13.

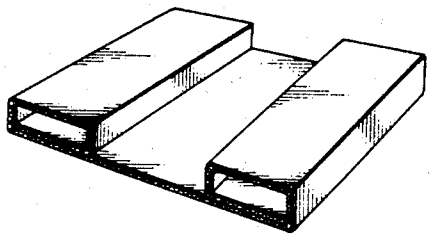


FIG. 14.

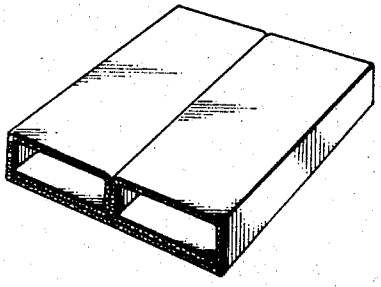


FIG. 16.

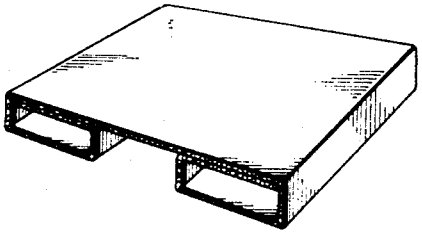


FIG. 15.

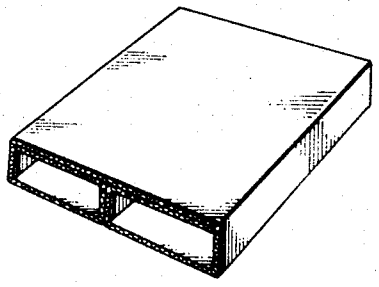


FIG. 17.

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3,438,488

PACKAGE FOR FRANGIBLE ARTICLES

John J. Rohde, Richmond, Va., assignor to Albemarle Paper Company, Richmond, Va., a corporation of Virginia

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Int. Cl. B65d 85/46, 85/48
U.S. Cl. 206—62 10 Claims

ABSTRACT OF THE DISCLOSURE

A package for frangible articles made of a corrugated carton containing reinforcement and cushioning members constituting pieces of corrugated board folded to form an air space and optionally containing wood or other reinforcements filling some of the air spaces.

Background of the invention

Prior to this invention, frangible articles such as glass sheets have generally been packed in wooden boxes at a glass factory for shipment to consumer outlets. Because of the wide variation in sizes of articles which are packaged for shipment, the boxes necessarily assume many sizes and shapes. Usually, a special box shop is operated in the frangible article manufacturing plant to assemble the boxes. The raw materials for producing such boxes are expensive, and a large amount of skilled, relatively expensive labor is required in their construction. Inasmuch as it is seldom feasible to return the empty boxes for reuse, their cost constitutes a significant factor in the cost of producing the frangible articles.

An improvement of the present invention over the prior art resides in the provision of a new and improved package for frangible articles which is sturdy yet relatively inexpensive.

Another improvement of the present invention lies in the provision of a package for frangible articles which can be mass produced in any size, and which can be filled with the articles and thereafter sealed by relatively unskilled labor.

Summary of the invention

The present invention provides a package for the bulk shipment of frangible articles of commerce comprising: a container formed by at least two opposing side walls, two opposing end walls and a bottom, and having at least four vertical corners; at least one piece of reinforcement adjacent each vertical corner and resting on said bottom; and at least one piece of corrugated board, folded to form an air space, adjacent each of at least two opposing walls.

Description of the drawings

FIG. 1 is a perspective view showing the interior of a reinforced carton in a first embodiment of the invention;

FIG. 2 is a perspective view showing the carton of FIG. 1 filled with glass sheets;

FIG. 3 is a perspective view showing the carton of FIGS. 2 and 3 when fully packed and closed for shipment;

FIG. 4 is a perspective view showing the interior of a reinforced carton in a second embodiment of the invention;

FIGS. 5–8 disclose the assembly of a piece of reinforcement wrapped in corrugated board;

FIGS. 9–13 disclose the assembly of two pieces of reinforcement wrapped in one piece of corrugated board;

FIGS. 14 and 15 disclose a piece of reinforcement consisting solely of folded corrugated board;

FIGS. 16 and 17 show a different form of the reinforcement of FIGS. 14 and 15.

Description of the preferred embodiments

In accordance with the invention, frangible articles such as glass sheets are packed in a container or carton of a material such as corrugated board, with cushioning and reinforcing pieces around its walls. Filled containers are closed by folding over and sealing the end flaps thereof and by putting a cover thereon. Packing and sealing can be accomplished by unskilled labor. Such a container provides full protection to its frangible articles during handling and shipping; also, it is light in weight and relatively inexpensive to produce and use as compared to packages similarly employed heretofore. Furthermore, the container can be opened and resealed easily and quickly without impairing its strength, which feature is of particular benefit to consumers who may wish to process the frangible articles and then forward them to other locations for further processing or use.

With reference now to the drawings, and in particular to FIGS. 1–3 which disclose a first embodiment of the invention, there is shown generally a container constructed according to the invention. The container has at least two opposing side walls **1**, two opposing end walls **2** and a bottom **3**. In addition, the container has at least four vertical corners **4**. One opposing end wall **2** is shown in open position with integral sealing tabs **5** connected by fold lines **6**. In a preferred construction the container is a rectangular prism or cube, with its actual dimensions being determined by the size of the articles to be packed therein. Width as well as height and length of the container vary for different dimensions of articles.

The container is filled with both cushioning and reinforcing pieces, the latter being especially suitable for stacking purposes. At least one piece of reinforcement **7** is adjacent each vertical corner **4** and resting on bottom **3**. Front corner reinforcements **7** are shown folded outward to permit side loading of the container, although top loading can be equally suitable. Where desirable, two reinforcement pieces **7** may be wrapped by a single piece of corrugated board and connected by wall **8**. In addition, at least one cushioning piece **9**, formed of corrugated board, folded to form an air space, is adjacent each of at least two opposing walls. Also where desirable, two cushioning pieces **9** may be formed of a single piece of corrugated board and connected by wall **10**. In the embodiment of FIGS. 1–3 cushioning pieces **9** are adjacent both opposing walls.

FIG. 2 discloses the container of the present invention filled with frangible articles such as sheets of glass **11**. Each of the sheets is lying on its edge against reinforcements **7** on the container bottom. Front corner reinforcements **7** are shown as finally positioned to firmly secure sheets **11**.

Top cushioning and reinforcing pieces **12**, which are similar to reinforcements **7**, rest on the upper edges of the glass sheets and further firmly secure them against

any shifting during shipment. These pieces may be flush with the top of the container or inset as shown.

The compeltely sealed package having top **13** and encompassed by steel bands **14** is shown in FIG. 3. Pallet **15** aids in transportation of the package and in fact becomes a part thereof where steel bands **14** also encompass the pallet as shown.

FIG. 4 discloses a second embodiment of the invention. In this embodiment reinforcing and cushioning members **7** and **12** (as shown in phantom) solely constitute corrugated boards, folded to form an air space. However, if desired, further reinforcement can be inserted into the air space, preferably for added strength for stacking. A further significant difference in this embodiment is that side cushioning members **9** are placed with the air space running horizontally rather than vertically as shown in the first embodiment. Also, end flaps **16** are provided in addition to end wall **2**. As contrastingly shown in this embodiment cartons can be of any depth or size desirable.

The assembly of bottom reinforcing members **7** of the first embodiment is shown in FIGS. 5–8. Corrugated board **100** is divided into several lateral sections by means of creases or fold lines **101**. Then, as shown in FIG. 6, a reinforcing piece such as wood block **102** is placed in the middle of the corrugated board **100**, and the sheet is folded about the block in a manner as shown in FIG. 7. The completed reinforcement constituting a solid block with corrugated board wrapped about it is shown in FIG. 8. Manifestly, other types of reinforcement than wood are suitable.

Assembly steps shown in FIGS. 9–13 are similar to ones shown in FIGS. 5–8. However, in the embodiment of these figures two pieces of reinforcement **102**, such as in corner reinforcement **7**, are wrapped by a single piece of corrugated board **100**. Crease or fold lines **101** facilitate wrapping the individual reinforcement pieces in a manner similar to that shown in the previous embodiment. Different sides of the finished article are shown in FIGS. 12 and 13. This type of reinforcement is most useful in the first embodiment and is best shown in FIG. 2. Such reinforcement also provides a wall **103** which serves to hold the cushioning member **9** securely positioned in the container prior to loading with frangible articles.

FIGS. 14–17 disclose the details of reinforcing and cushioning pieces such as members **7** and **9** of the second embodiment. Each of the pieces is formed in a fashion similar to that just shown by simple folding steps from corrugated board provided with appropriate fold or crease lines.

I claim:

1. A package for the bulk shipment of frangible articles of commerce comprising:

A. a container formed by at least two opposing side walls, two opposing end walls and a bottom and having at least four vertical corners;

B. at least one piece of reinforcement adjacent each vertical corner and resting on said bottom; and

C. at least one piece of corrugated board, folded to form an air space, adjacent each of at least two opposing walls.

2. The package of claim **1** wherein said at least one piece of corrugated board, folded to form an air space, is adjacent both end walls and both side walls.

3. The package of claim **2** wherein said at least one piece of corrugated board has a vertically extending air space.

4. The package of claim **1** wherein each piece of reinforcement is wrapped in corrugated board.

5. The package of claim **4** wherein at least two pieces of reinforcement in different vertical corners are wrapped in one piece of corrugated board which also forms a wall between said at least one piece of corrugated board, folded to form an air space, and the interior of said container.

6. The package of claim **5** wherein said container has a cover and, after said package is filled with said frangible articles, at least one piece of reinforcement, wrapped in corrugated board, rests between said cover and said frangible articles.

7. The package of claim **1** wherein each piece of reinforcement is corrugated board, folded to form an air space.

8. The package of claim **7** wherein only said each piece of reinforcement has a vertically extending air space.

9. The package of claim **7** wherein at least two pieces of reinforcement in different vertical corners are integral and connected by a piece of corrugated board which forms a wall between said at least one piece of corrugated wall, folded to form an air space, and the interior of said container.

10. The package of claim **9** wherein said container has a cover and, after said package is filled with said frangible articles, at least one piece of reinforcement rests between said cover and said frangible articles.

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JAMES B. MARBERT, *Primary Examiner.*