United States Patent [19]

Kivett

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[54] **CONTAINER**

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[21] Appl. No.: **290,012**

[52] **U.S. Cl.** ..... **220/8;** 206/515; 220/4 B; 220/72

[51] **Int. Cl.** **B65d 1/44;** B65d 21/04

[58] **Field of Search** ..... 220/97 F, 4 B, 4 E, 8, 220/72, 515, 519, 520; 206/65 B; 229/21

[56] **References Cited**

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[57] **ABSTRACT**

A shipping container having the ability to nest when not in use includes a pair of substantially identical or generally similar sleeve members closed at one end, open at the other end and having side walls of semi-rigid material formed into extensive corrugations. The open end of one member is sleeved over the open end of the other member causing the side walls to engage each other in respective inner and outer telescoped arrangements. A band surrounding the outer side walls helps draw mating wall corrugations into extensive close, reinforcing engagement.

8 Claims, 8 Drawing Figures

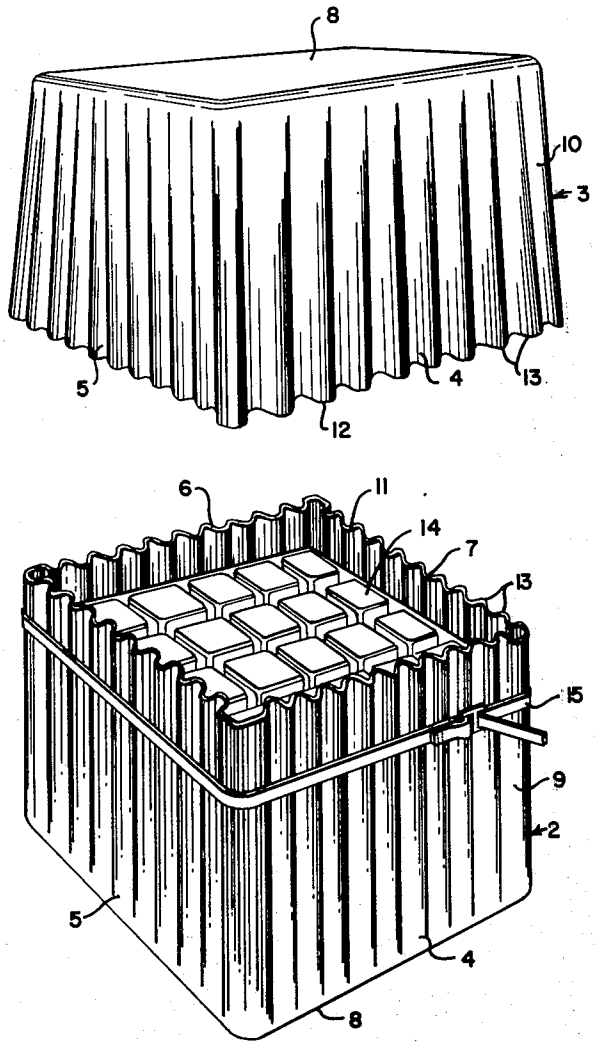


Fig. 1.

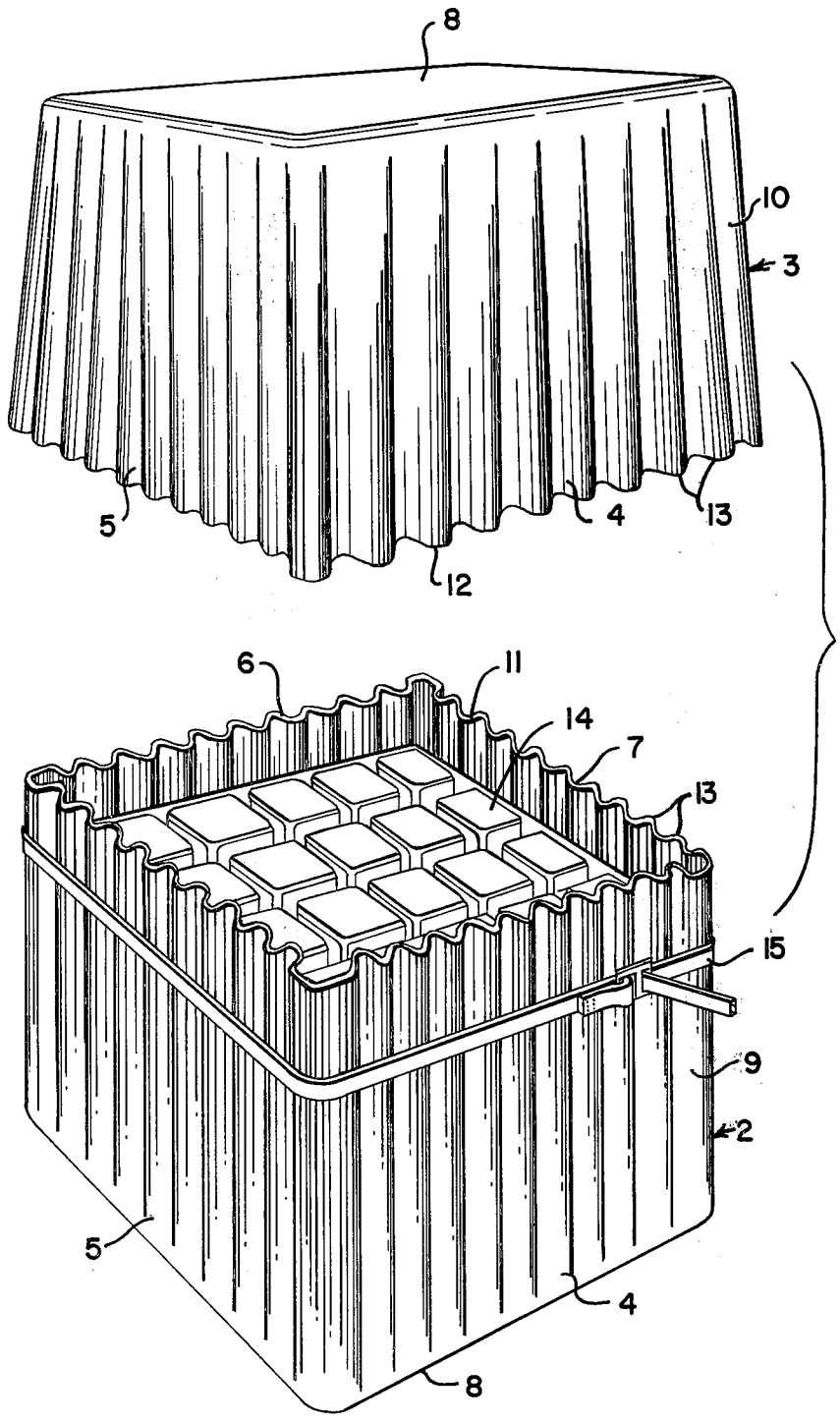


Fig. 2.

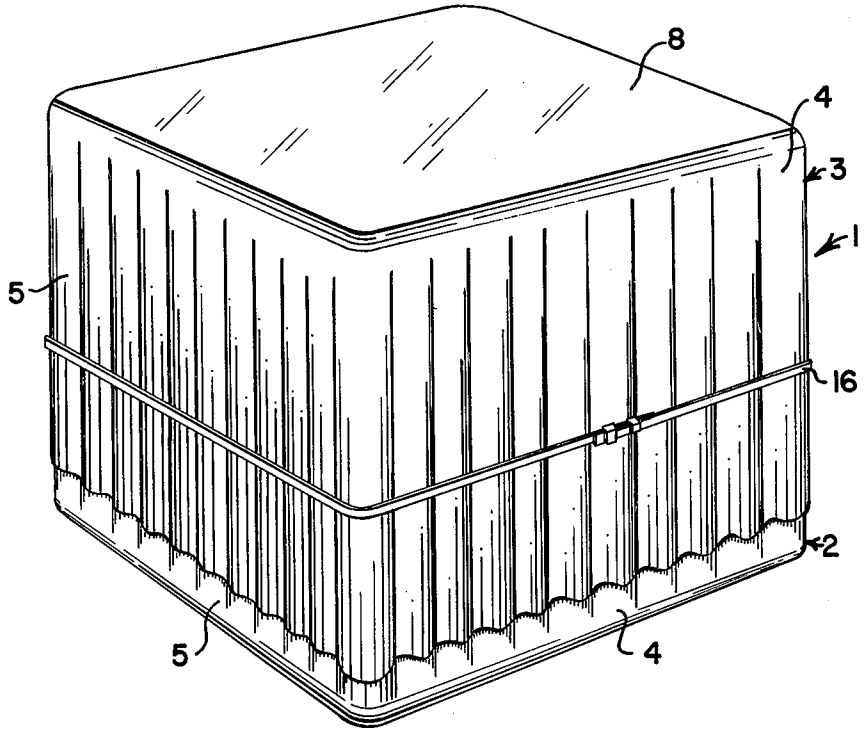


Fig. 3.

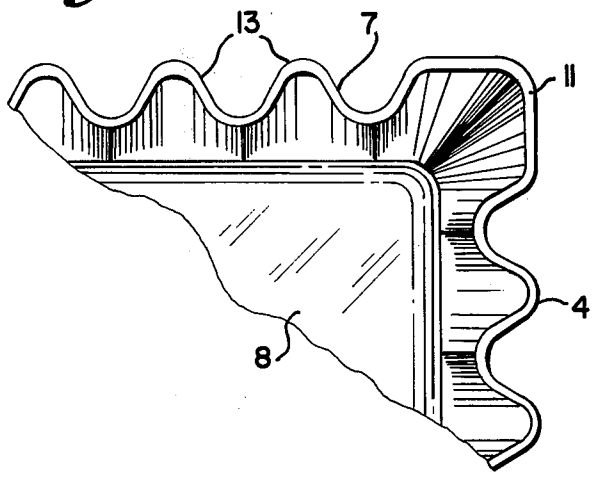
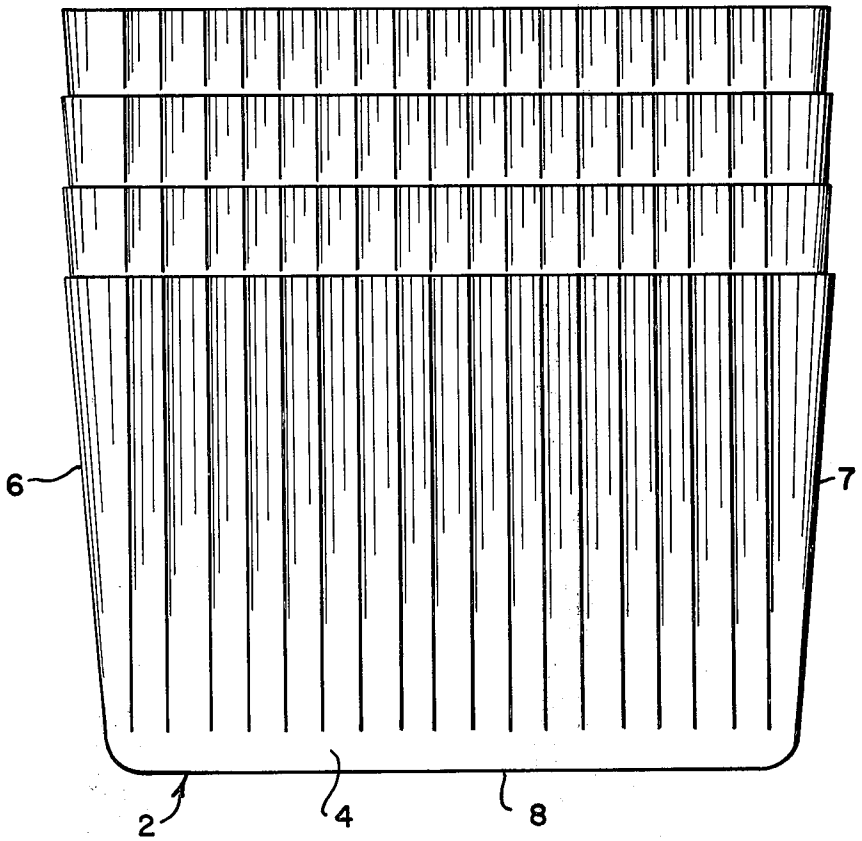


Fig. 5.



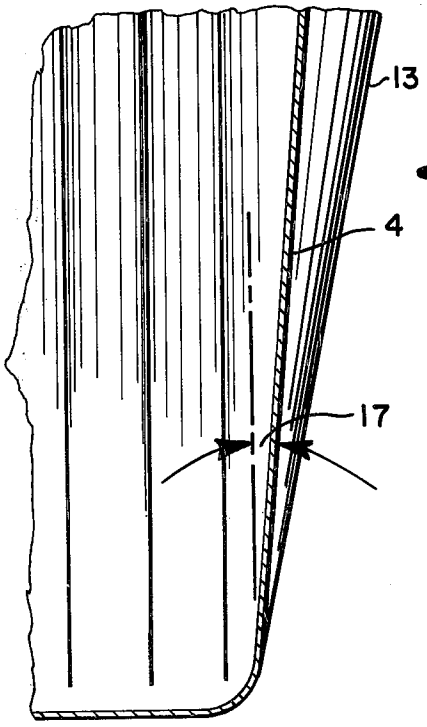


Fig. 4.

Fig. 6.

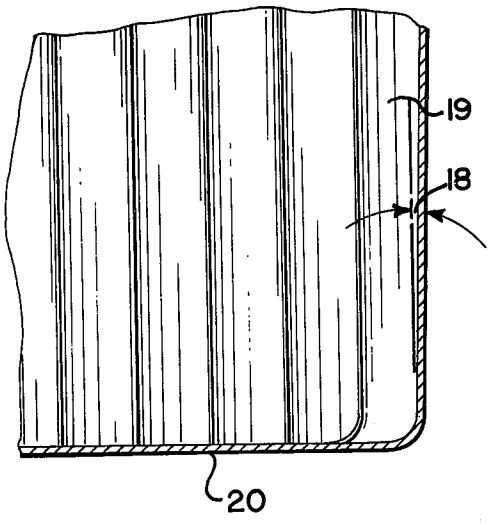


Fig. 7.

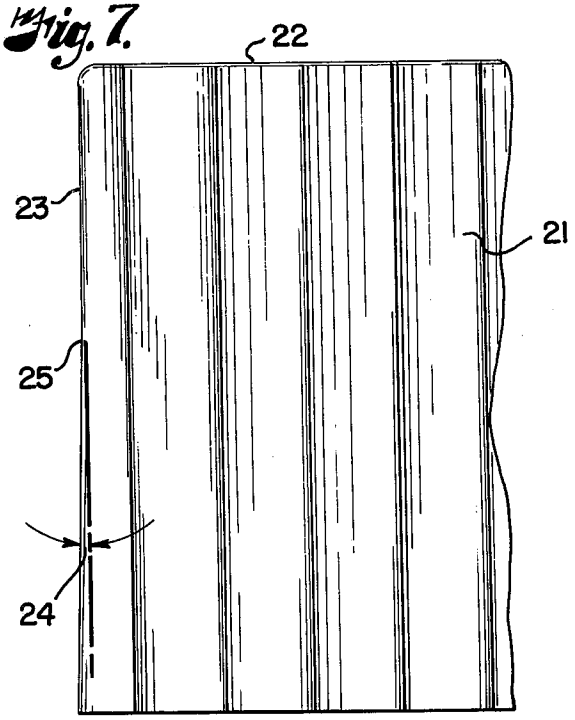
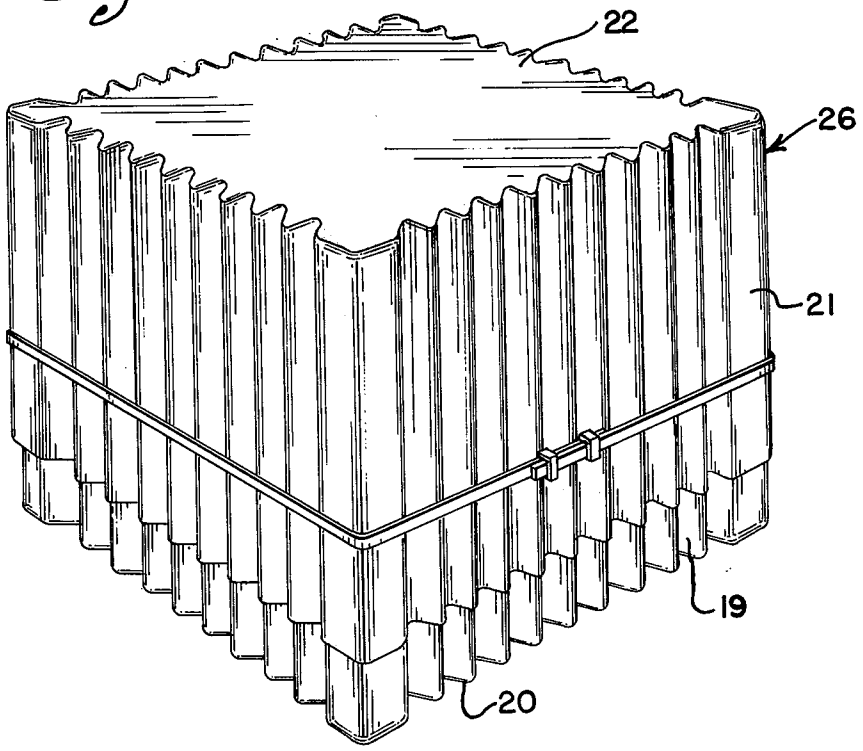


Fig. 8.



CONTAINER

This invention relates to shipping containers and more particularly to containers which are closed during use but may be nested into each other for storage and handling advantages during other times.

Reusable, closable, rigid shipping containers of the simple lid-and-box type normally include an integral, comparatively deep, open-top rectangular box and an integral, shallow, overlapping lid. Some simple, rigid containers, particularly the smaller variety designed to be carried by hand, have an integral lid with side walls coextensive in height with the box. Regardless of the type, unless the walls are tapered, the unassembled lids and boxes of simple containers cannot be nested, creating storage and shipping problems. However, tapering the side walls interferes with proper fit and sharply reduces wall strength of the assembled box. These difficulties result in a substantial increase in cost over that which would exist if the top and bottom portions of simple containers could be nested when unassembled but the overlapping walls maintained in close, reinforcing contact when assembled. Further savings obviously could be realized if the lids and boxes were substantially identical in configuration.

The principal objects of the present invention are: to provide a reusable, simple shipping container comprised of a pair of substantially identical or generally similar top and bottom members; to provide simple container top and bottom members which easily nest respectively within each other during non-use; to provide such a container arrangement which is versatile, exhibits high wall strength and a marked resistance against damage due to rough handling; to provide such a container which is easily filled, closed, loaded, shipped and unpacked; to provide such container members which may be rapidly and inexpensively manufactured by high volume production facilities; and to provide such container members which are extremely well suited for their intended purpose.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein are set forth by way of illustration and examples certain embodiments of this invention.

FIG. 1 is an exploded perspective view showing a pair of separated sleeve members, embodying this invention, arranged to produce a closed shipping container upon engagement.

FIG. 2 is a perspective view of a typical, closed, container.

FIG. 3 is a fragmentary plan view showing one corner of a sleeve member from an open end, and particularly the side wall corrugations.

FIG. 4 is a fragmentary cross-sectional side elevation showing a corner of a sleeve member.

FIG. 5 is a side elevation illustrating several sleeve members in nested condition.

FIG. 6 is a fragmentary cross-sectional side elevation of a modified form of container bottom member wherein the corrugations extend substantially to the bottom surface.

FIG. 7 is a fragmentary side elevation of a modified form of container lid, or top member, having the upper side wall portions lacking draft and the corrugations extending substantially to the top surface.

FIG. 8 is a perspective view of a typical, closed container formed from the modified members of FIGS. 6 and 7.

Referring to the drawings in more detail:

The reference numeral 1, FIG. 2, generally indicates a closed shipping container embodying this invention. The container 1 is comprised of a pair of sleeve members 2 and 3, FIG. 1, of substantially identical size and configuration and constructed of a semi-rigid material, such as linear polyethylene, of a suitable gage in accordance with the strength and flexibility desired.

The sleeve members 2 and 3, in this example, respectively have four side walls 4, 5, 6 and 7 and an end wall 8 joined together forming receptacles 9 and 10 each with an open end 11 and 12 opposed to the end wall 8.

The side walls 4, 5, 6 and 7 consist of a plurality of adjacent corrugations 13, of gradually decreasing depth, projecting from the respective open ends 11 and 12 substantially to the end walls 8 of the sleeve member. As best shown by the upper sleeve member in FIG. 1, the side walls 4, 5, 6 and 7 normally taper or incline outwardly away from each other toward the open end whereby the respective sleeve members are adapted to nest into each other when the end walls 8 are arranged to project in the same direction, nested members being shown in FIG. 5.

In use, one of the sleeve members, in this example sleeve member 2, FIG. 1, is loaded with suitable goods (not shown) secured in trays 14. Prior to the loading of sleeve member 2, or subsequent to the loading depending upon the character of the load, a temporary band 15 is placed around the exterior of the sleeve member and tightened, causing a decrease in the normal size of the open end 11 through an elastic reduction in the horizontal width of the side walls. The reduction is a result of slight deformations in the corrugations 13, the deformation in respective corrugations varying from substantially zero near the end wall 8 to a maximum at the open end 11. The decrease in size of the open end 11 permits the undistorted open end 12 of the sleeve member 3 to be sleeved thereover whereupon the temporary band 15 is removed and the sleeve member 3 urged downwardly substantially to the position shown in FIG. 2. This causes the side walls of the sleeve member 2 to take both an inner position and decreased size while the side walls of the sleeve member 3 take an outer position telescoped thereover. A shipping band 16 is then tightened about the exterior of the sleeve member 3, drawing the inner and outer side wall corrugations into extensive reinforcing engagement and squared configuration. The band 16 is suitably locked in tightened condition, thus producing the sealed container as depicted in FIG. 2.

Upon reaching the intended destination, the band 16 is removed and the sleeve member 3 lifted to reveal the open end sleeve member 2, with its side walls again tapered or inclined outwardly to provide easy access for removing the contents. If the container parts are to be returned or stored in empty condition, the sleeve member 3 is merely inverted and placed into the open end of sleeve member 2, whereupon the nesting of FIG. 5 is achieved.

Referring particularly to FIG. 4, the degree of taper or incline 17 may vary, depending particularly upon the type of material, the depth of nesting, the size and degree of flexibility of the corrugations, and the tendency of nested members to wedge together. A typical sleeve

member will be deep drawn from linear polyethylene of 1/16 inch to 1/8 inch starting thickness, and have finished dimensions of 16 inches in depth, 20 inches from side wall to side wall and approximately 1/2 inch radii on the corrugations.

FIGS. **6, 7** and **8** relate to a modified form of this invention wherein the sleeve members are not substantially identical in that the lid member and box member are respectively distinctive in configuration and size, yet still generally similar.

FIG. **6** illustrates a box member as noted above having side wall draft **18,** however, the side wall corrugations **19** extend substantially to the bottom wall **20** with retention of a nearly uniform depth. Likewise, the lid member of FIG. **7** bears side wall corrugations **21** extending substantially to the top wall **22** with retention of a nearly uniform depth. Further, in this example, the lid member is slightly shorter in height than the box member and has side wall corrugations **21** which are without draft at upper side wall portions **23,** the desired draft **24** beginning at a point **25** located approximately two-fifths of the distance down from the top wall **22.** The modified box provides somewhat better mating when joined as illustrated at **26,** FIG. **8.**

It is to be understood that while certain forms of this invention have been illustrated and described, it is not to be limited thereto except insofar as such limitations are included in the following claims.

What is claimed and desired to secure by letters patent is:

1. A closed container comprising:

a. a pair of sleeve members each having a plurality of side walls joined by corners and an end wall together defining a receptacle with an open end opposed to said end wall,

b. said side walls being formed of a semi-rigid material and into a configuration comprising a plurality of adjacent corrugations extending between said corners, said corrugations extending longitudinally from said open end to a position near said end wall,

c. the open end of one of said sleeve members being sleeved over the open end of the other of said sleeve members causing said adjacent corrugations of the respective walls to take inner and outer corrugation-reinforcing telescoped positions over substantially the length of the sleeve and producing a closed container with substantial strength against crushing between said end walls, said sleeve members being respectively reversible and nestable due to radial flexibility at said open ends.

2. The container as set forth in claim **1** wherein:

a. said pair of sleeve members are of substantially identical size and configuration.

3. The container as set forth in claim **1** wherein:

a. said corrugations decrease in depth as they extend toward said end wall.

4. The container as set forth in claim **1** wherein:

a. said corrugations are of nearly uniform depth along the length thereof.

5. The container as set forth in claim **1** wherein:

a. said side walls normally taper away from each other toward said open end along at least a portion adjacent said open end.

6. The container as set forth in claim **1** wherein:

a. said pair of sleeve members are respectively distinctive in configuration and size.

7. The container as set forth in claim **5** wherein:

a. one of said sleeve members tapers only along a portion adjacent said open end.

8. The container as set forth in claim **1** including:

a. a band surrounding the side walls of the other of said sleeve members and drawing the side walls of the other of said sleeve members into reinforcing engagement with said one sleeve member side walls.

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