United States Patent

Nederveld

[15] **3,696,988**

[45] **Oct. 10, 1972**

[54] **CONTAINER CONSTRUCTION**

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[73] Assignee: **Packaging Corporation of America,** Evanston, Ill.

[22] Filed: **July 6, 1971**

[21] Appl. No.: **159,822**

[52] **U.S. Cl.** .....**229/23 R,** 108/56

[51] **Int. Cl.** **B65d 19/06,** B65d 13/06

[58] **Field of Search** .....108/51, 55, 56; 229/23 R, 23 BT, 229/37 A, 37 F, DIG. 2

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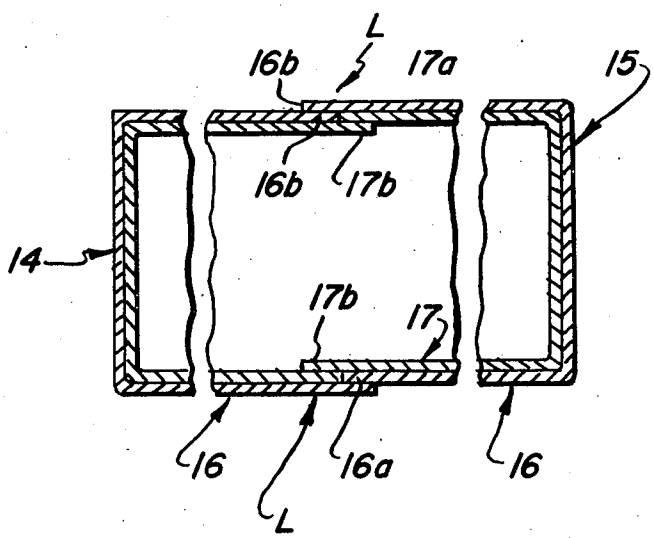
Primary Examiner—Davis T. Moorhead

Attorney—Albert H. Pendleton et al.

[57] **ABSTRACT**

A heavy duty container is provided which is adapted for use in the bulk packaging of siftable material or the like. The container is formed from a pair of complemental sections which cooperate to form end walls and elongated side walls. Each side wall is provided with a lap joint disposed intermediate the end walls. The lap joints are of multi-ply construction and reinforce the side walls against bulging or distortion when the container is loaded or arranged in stacked relation with other loaded containers.

10 Claims, 8 Drawing Figures



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SHEET 1 OF 2

FIG. 1

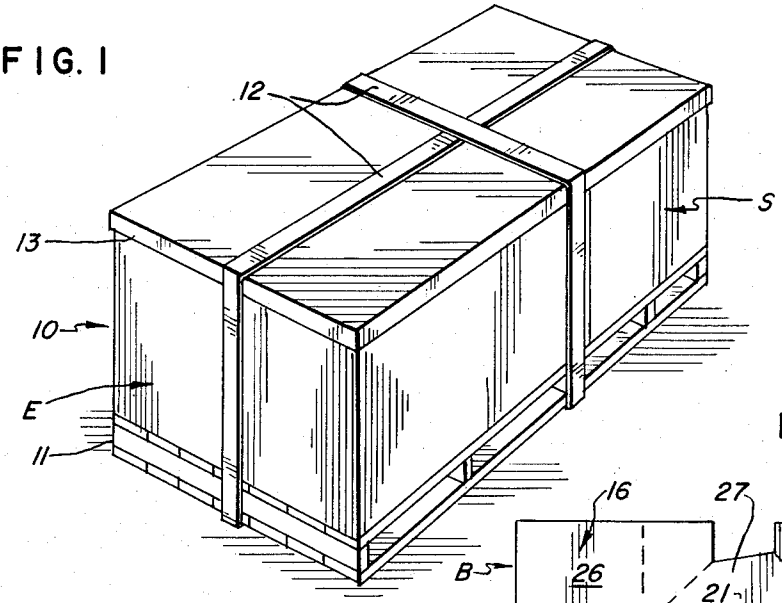


FIG. 2

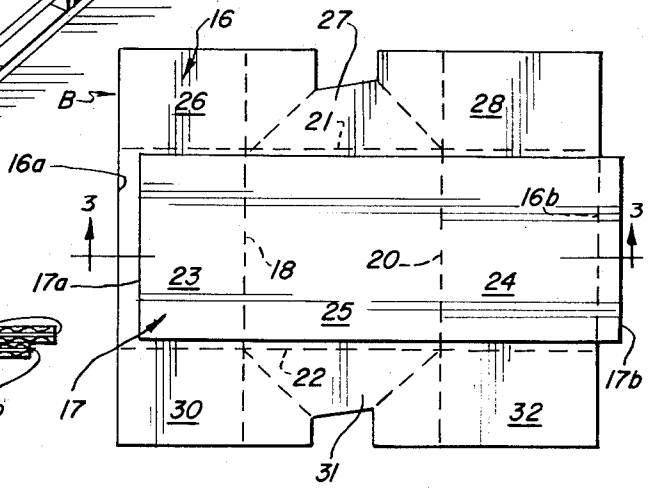


FIG. 3

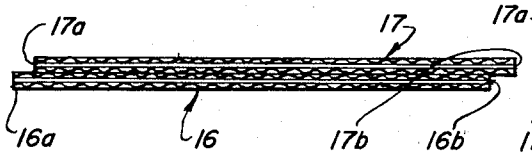


FIG. 7

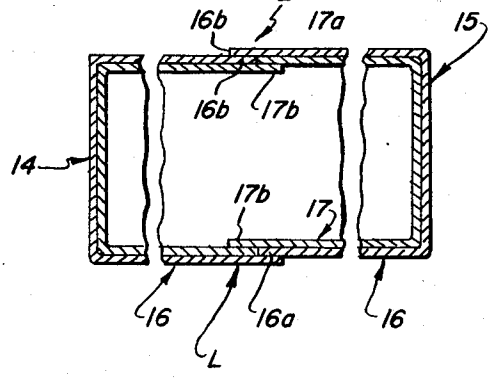
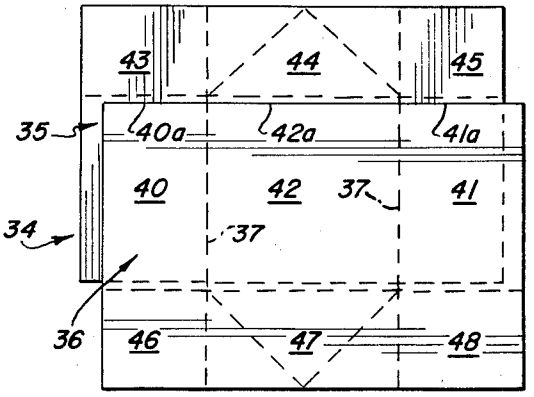


FIG. 8



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FIG. 4

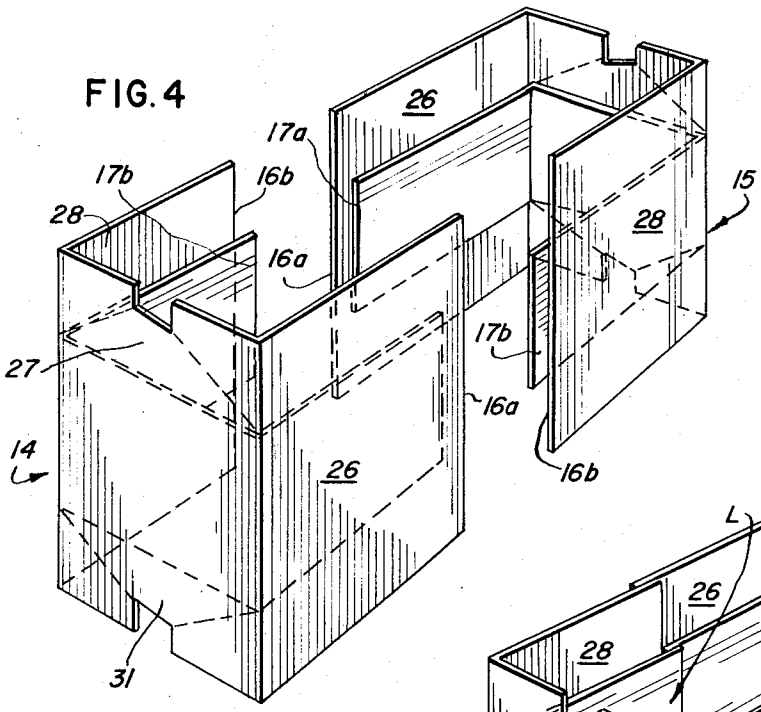


FIG. 5

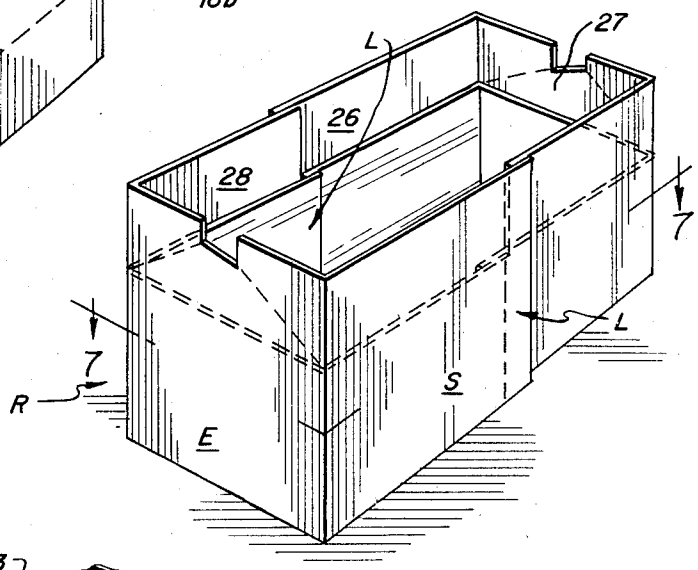
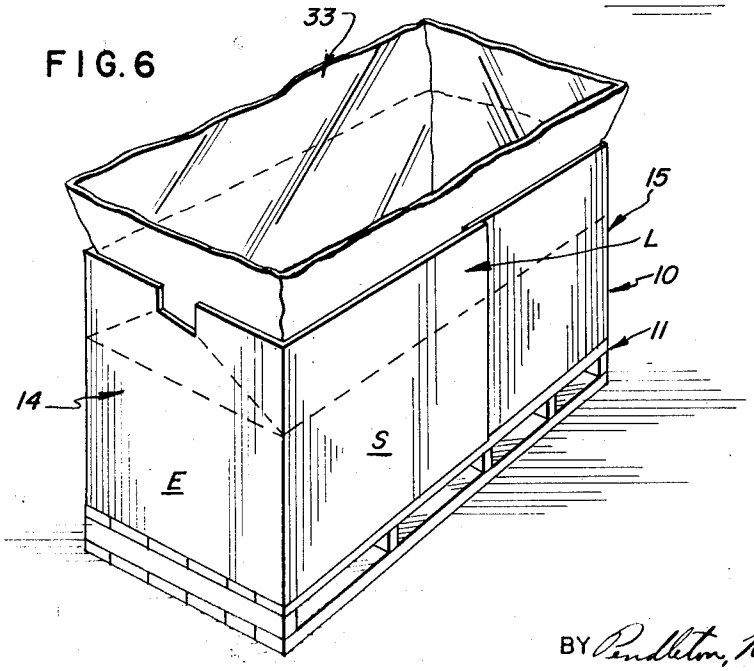


FIG. 6



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CONTAINER CONSTRUCTION

BACKGROUND OF THE INVENTION

Various heavy duty containers have heretofore been proposed; however, because of certain design characteristics, they are possessed of one or more of the following shortcomings: (a) the corners of the container are not of equal strength and thus, said container is susceptible of tilting or partially collapsing when supporting a plurality of loaded containers stacked thereabove; (b) where the side walls are of substantial length, there is a tendency of said side walls to bulge outwardly when the container is loaded; and (c) where the container was formed from a single blank, large, costly blank-forming equipment was required.

SUMMARY OF THE INVENTION

Thus, it is an object of this invention to provide a heavy duty container which avoids the aforenoted shortcomings.

It is a further object of this invention to provide a container, the size of which may be readily varied to accommodate products varying in size, volume, and weight.

It is a still further object of this invention to provide a container which is formed from a pair of complemental sections of simple configuration, which may be formed on blank-forming equipment of conventional size.

It is a still further object of this invention to provide a heavy duty container wherein reinforcement of the side walls thereof may be varied as desired.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment of this invention, a heavy duty container is provided having a pair of complemental sections which cooperate to form end walls and side walls, the latter having lap joints formed therein intermediate said end walls. Each complemental section is formed from a blank having a first laminated segment and a second laminated segment offset and secured to one surface of said first segment. The blank includes an end wall-forming panel of double segment thickness and a pair of side wall-forming portions of double segment thickness extending transversely from opposite sides of the end wall-forming panel. The end limit of one side wall-forming portion has the first segment thereof projecting beyond the second segment and the end limit of the second wide wall-forming portion has the second segment thereof projecting beyond the first segment.

DESCRIPTION

For a more complete understanding of the invention reference should be made to the drawings wherein:

FIG. 1 is a perspective top view of one form of the improved heavy duty container, loaded, palletized, and ready for shipment or storage.

FIG. 2 is a plan view of a blank for one form of a complemental section.

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2.

FIG. 4 is a perspective view of a pair of complemental sections in an exploded, partially folded relation.

FIG. 5 is a perspective top view of the complemental sections in assembled relation and with the top of the container in open condition for loading.

FIG. 6 is similar to FIG. 5, but with complemental sections in assembled relation with a pallet and with a moisture-proof bag disposed within the container and ready for loading.

FIG. 7 is a sectional view taken along line 7—7 of FIG. 5.

FIG. 8 is similar to FIG. 2, but showing a blank for a modified form of complemental section.

Referring now to the drawings and more particularly to FIG. 1, one form of the improved heavy duty container 10 is shown assembled on a pallet 11, the latter being of conventional design. The container, in the illustrated embodiment, is secured to the pallet by suitable straps or wires 12 which overlie a cover 13 and subtend the pallet. If desired, however, the improved container 10 may be utilized without the pallet, straps, or cover.

One form of the container includes a pair of complemental sections 14 and 15, see FIG. 4, which are preferably of like configuration. Each section, as seen in FIGS. 2 and 3, is formed from a blank B having a first laminated segment 16 and a second laminated segment 17. Both segments may be of a double-walled corrugated fiberboard; however, other material may be utilized, if desired; the type of material to be utilized will depend upon the product to be accommodated within the container. Preferably segment 17 is adhesively secured to the interior surface of segment 16 and in slightly offset relation so that the left hand vertical edge 17*a* of segment 17 is recessed from the corresponding left hand vertical edge 16*a* of segment 16, see FIG. 2. Likewise, the right hand edge 17*b* of segment 17 projects a like amount beyond the right hand edge 16*b* of segment 16. The purpose of having the segments offset with respect to one another will be discussed more fully hereinafter.

Both segments are provided with a pair of spaced substantially parallel foldlines 18 and 20. The corresponding foldlines of the segments are arranged in superposed relation. Segment 16 is also provided with a second pair of spaced, substantially parallel foldlines 21 and 22, which are transversely disposed with respect to foldlines 18 and 20. Foldlines 21 and 22 define the height of the side S and end E walls of the container. The height (width) of segment 17 does not exceed the spacing between foldlines 21 and 22, thereby enabling the top of the container to assume a substantially horizontal position.

Foldlines 18 and 20 define the blank B into a pair of side wall portions 23 and 24 which are separated by an end wall 25. Foldlines 21 and 22 cooperate with foldlines 18 and 20 so as to form top closure flaps 26, 27, and 28 and bottom closure flaps 30, 31, and 32. The closure flaps at the top and bottom may be foldably interconnected, if desired. The shape and size of the closure flaps may, however, vary from that shown without departing from the scope of the invention.

When forming the improved container 10, the sections 14 and 15 are initially folded about their respective foldlines 18 and 20 so as to form channel-like members arranged so that the open sides thereof are

facing one another and the projecting edge **16***a* of one section is aligned with and adjacent to the edge **16***b* of the other section. The projecting edges **17***b* of the segments are then adhesively or otherwise secured to the interior surfaces of the adjacent edges **16***a* so as to form a tubular member. The tubular member may assume a collapsed condition for storage. As noted in FIG. **7**, the adhesively secured edges form lap joints L, one being disposed in each side wall of the container. Each lap joint L is of multi-ply construction thus, providing substantial reinforcement of the container side wall. In the illustrated embodiment, each lap joint is disposed at approximately mid-length of the container side wall. If desired, however, the location of the lap joint along the side wall may be closer to one end wall of the container by merely changing the spacing of one of the foldlines **18** or **20** from the end edge of the blank.

Where, for example, the segments **16** and **17** of the complemental sections **14** and **15** are formed of double-wall corrugated fiberboard, the end and side walls of the container would have a thickness of 10 plys, whereas each lap joint L would have a thickness of 15 plys. The vertical corners of the container are of uniform thickness and thus, each corner is capable of supporting a uniform load.

Once the tubular member has been squared up subsequent to the section edges being bonded together, the bottom closure flaps **30**, **31** and **32** are folded inwardly in a conventional manner into end closing relation thereby forming an open top receptacle R, see FIG. **5**. If desired, the receptacle R may then be placed upon and secured to a pallet **11** of conventional design.

Where the product to be accommodated is of a siftable character, a pliable imperforate bag **33** may be positioned within the receptacle R, see FIG. **6**, prior to the product being deposited within the container **10**. Once the product has been deposited within the bag **33**, the open end thereof is sealed closed and folded into the container interior. The top closure flaps **26**, **27** and **28** are then folded in a conventional manner, into overlapping closing relation.

Where it is desired to reinforce the top of the container, a separate telescoping cover **13** of conventional design may be placed over the overlapping top closure flaps. Wire or straps **12** of conventional design are then drawn snugly around the assembled container, cover, and pallet so as to make a sturdy unitary package suitable for shipping or for stacking while in storage.

FIG. **8** discloses one of a pair of modified complemental sections **32**. Each section **32** is formed of a pair of segments **35** and **36** laminated to one another in offset relation. The segments **35** and **36**, in the illustrated embodiment, are of like configuration and may be formed of double-wall corrugated fiberboard. Each segment is provided with a pair of spaced, substantially parallel foldlines **37**. Corresponding foldlines of the segments are disposed in substantially superposed relation and define a pair of side wall portions **40** and **41** separated by an end wall **42**.

The left hand edge **35***a* of segment **35**, projects beyond the corresponding left hand edge **36***a* of segment **36** and, in a similar manner, the right hand edge **36***b* projects beyond the corresponding right hand edge **35***b* of segment **35**, see FIG. **8**. By reason of this edge projection, lap joints will be formed in the side walls of the container utilizing complemental sections **34**. The advantages attended with the lap joints L formed by sections **14** and **15** will also be present in the lap joints formed with complemental sections **34**.

As will be noted in FIG. **8**, top closure flaps **43**, **44**, and **45** are connected by foldline **46** to the upper edge of portion **40**, end wall **42**, and portion **41**, respectively, of segment **35**, and in a like manner bottom closure flaps **46**, **47**, and **48** are foldably connected, respectively, to the lower edge of portion **40**, end wall **42**, and portion **41** of segment **36**. The size and shape of the closure flaps may, if desired, be varied from that shown. The upper elongated edges **40**a, **42**a, and **41**a of portion **40**, panel **42**, and portion **41**, are disposed adjacent to but spaced from the foldline connections for the closure flaps **43**, **44**, and **45**. In a similar manner, the lower edges of the side wall portions and end wall of segment **35** are disposed adjacent to but spaced from the foldline connections for the closure flaps **46**, **47**, and **48** of segment **36**. Because the segments **35** and **36** comprising section **34** may be of like configuration, forming and assembling the segments are facilitated. In either embodiment, however, conventional size slotting and cutting equipment may be utilized in forming the complemental sections, notwithstanding that the setup container is of a size which would normally require oversize or special slotting and cutting equipment if formed from a single blank. In addition, either embodiment provides effective reinforcement of the side walls of the container in areas which would otherwise be susceptible to bulging or distortion.

As aforementioned, the size and shape of the complemental sections may vary from that shown and the location of the lap joints in the side walls may also be changed.

I claim:

1. A container comprising a pair of complemental sections cooperating with one another to define upstanding walls, and top and bottom surfaces; each section being formed from a blank having a first segment and a second segment secured in offset relation to said first segment, said blank forming an end wall of double segment thickness, and side wall portions of substantially double segment thickness extending transversely from opposite sides of said end wall, the end limit of one side wall portion cooperating with the end limit of a corresponding side wall portion of the other complemental section so as to form an entire side wall having a lap joint disposed intermediate said end walls, the thickness of said lap joint being substantially greater than the thickness of the remainder of said entire side wall, and closure flaps foldably connected to the side wall portions and the end wall of each complemental section.

2. The container of claim **1** wherein said closure flaps are of single segment thickness and form the top and bottom surfaces of said container.

3. The container of claim **1** wherein the first segment of each blank forms the exterior of said container walls, the end limit of one side wall portion of each complemental section having the first segment thereof projecting beyond the second segment, and the end limit of the other side wall portion of each complemental section having the second segment thereof projecting beyond the first segment.

4. The container of claim 2 wherein the top surface-forming flaps of each complemental section are foldably interconnected.

5. The container of claim 2 wherein the bottom surface-forming flaps of each complemental section are foldably interconnected.

6. The container of claim 4 wherein the bottom surface-forming flaps of each complemental section are foldably interconnected.

7. The container of claim 1 wherein the first segment of each section blank is provided with the top and bottom surface-forming closure flaps.

8. The container of claim 1 wherein the first segment of each section blanks forms the closure flaps for one surface and the second segment of each section blank forms the closure flaps for the other surface.

9. The container of claim 1 including a pallet subtending the complemental sections, and means for securing said complemental sections to said pallet.

10. The container of claim 9 including a moisture proof bag disposed within the area delimited by said complemental sections, and removable cover member overlying the top surface defined by said surface-forming flaps.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,696,988 Dated October 10, 1972

Inventor(s) TERRILL L. NEDERVELD

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 51 - "second wide" should be -- second side --.

Column 6, line 1 (claim 8, line 2) "blanks" should be -- blank --.

Signed and sealed this 6th day of March 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

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