Aug. 20, 1968 W. B. WILKINS 3,397,829

COLLAPSIBLE CONTAINER

Filed Dec. 9, 1966 2 Sheets-Sheet 1

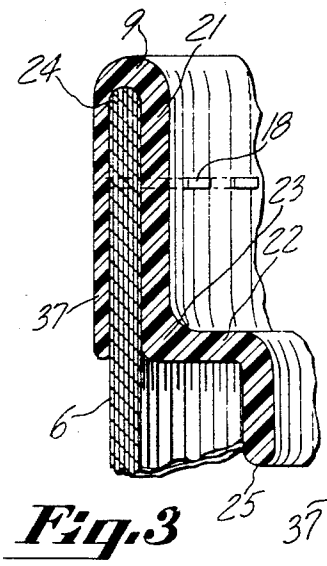


Fig. 3

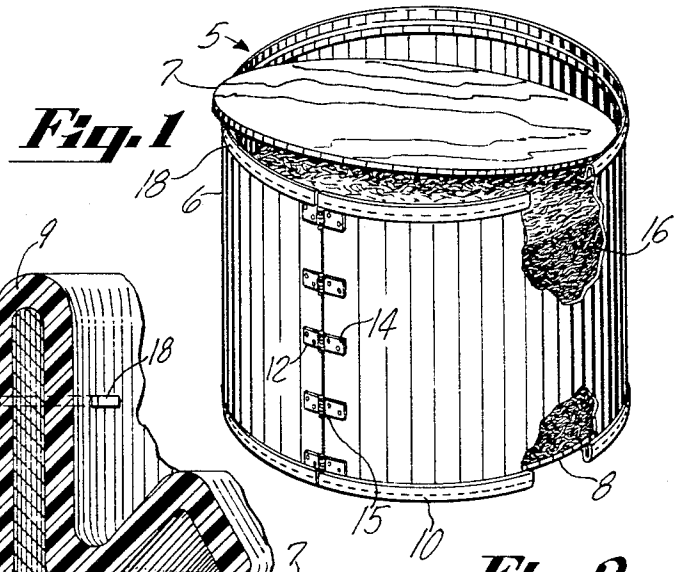


Fig. 1

Fig. 4

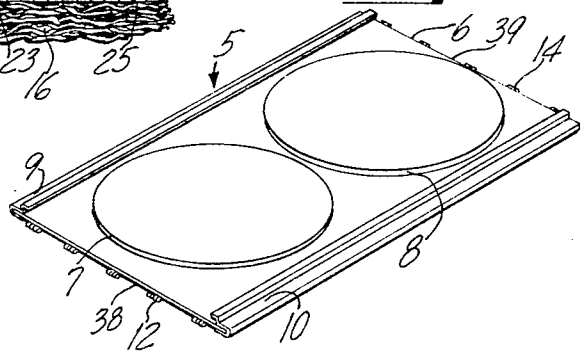


Fig. 2

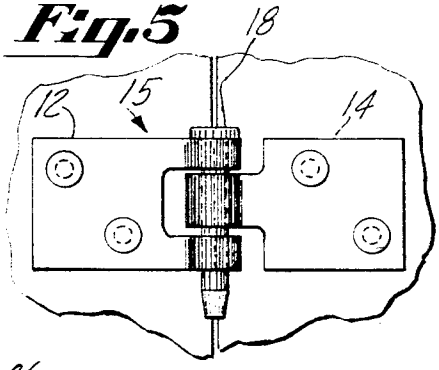


Fig. 5

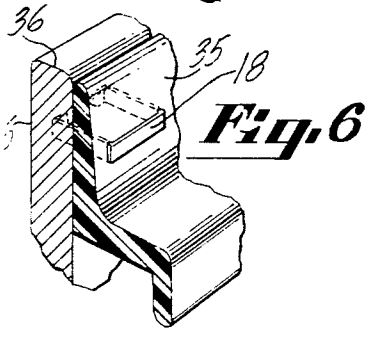


Fig. 6

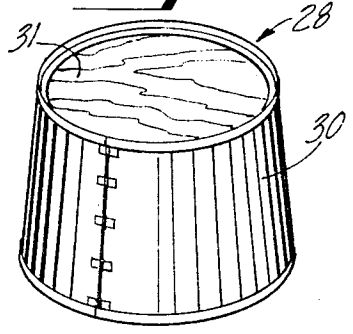


Fig. 7

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COLLAPSIBLE CONTAINER

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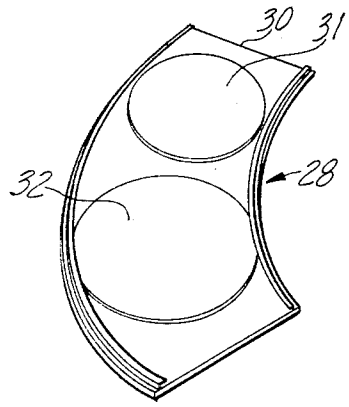


Fig. 8

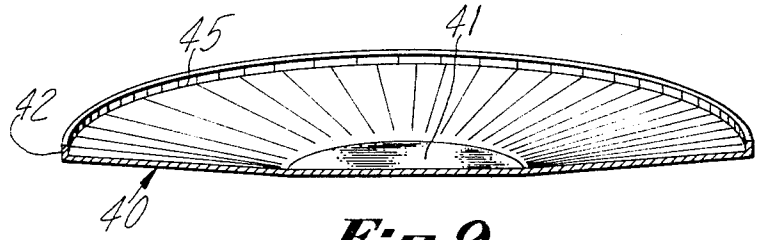


Fig. 9

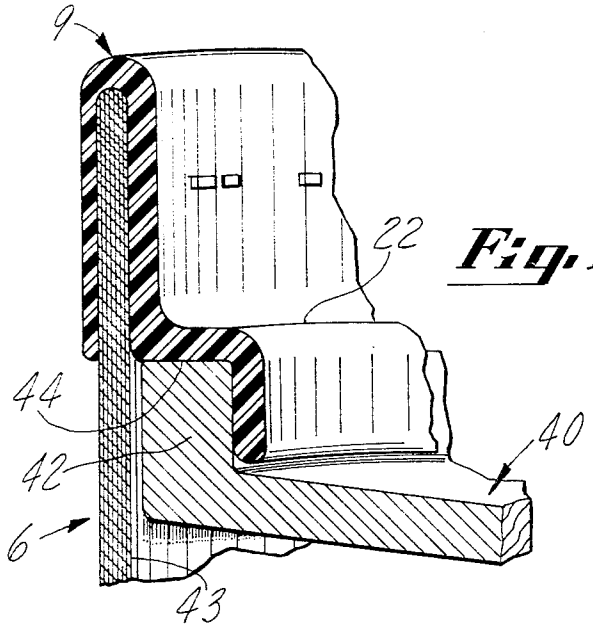


Fig. 10

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COLLAPSIBLE CONTAINER

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Filed Dec. 9, 1966, Ser. No. 600,444
5 Claims. (Cl. 229—4.5)

ABSTRACT OF THE DISCLOSURE

A collapsible container having a circular lateral wall of which joined edges may be disconnected for flattening the wall into planate condition and end walls which, during use, lock into place behind welts fixed to the ends of the lateral wall permitting the collapsibility of the container into a flat package for storage or transfer to a point of use.

DESCRIPTION

Containers in accordance with this invention are particularly useful in shipping leaf tobacco in packages which may weigh up to 500 pounds or more. Although having many uses, containers of the type herein disclosed are especially useful because of their adaptability to a current mode of packaging leaf tobacco in which tobacco is placed in a strong, open-top wooden box or hogshead and compacted by a press platen entering the top of the container after which the lid of the box or hogshead is fastened into place. The cost of containers, whether of the one-way disposable type or of a more expensive, returnable type, is a substantial item in the manufacture of tobacco products.

Hence, the principal object of the present invention is to provide a container or hogshead of strength comparable to that of the wooden containers now used for shipping commodities, such as leaf tobacco, but of substantially less weight, and capable of being collapsed into a package of sufficiently small volume so as to render a shipment to points of re-use economically desirable.

Briefly, the invention is achieved in a shipping container comprising a circuitous lateral wall of flexible material, such as a laminate of kraft paper and thermosetting resin; separate, detachable end walls of a like material; and a welt material secured along the inner peripheries of the top and bottom, i.e., the end edges of the lateral wall; the material providing flanges on respective welts that are supported in raised spaced relation with the wall's inner surface. The purpose of the flanges is to provide resilient seats for either end wall after such end wall has been inserted through an open end of the lateral wall. Such insertion is accomplished while the end of the lateral wall is deformed in a diametral direction to provide for passage of the end wall past the welt.

In a predetermined embodiment, the lateral wall is butt-joined from one edge to the other and unbends into a flat panel on which the end walls are placed to attain collapsed arrangement for storage or the return leg of a shipping trip utilizing the container.

In the drawings with respect to which the invention is described:

FIG. 1 is a perspective view of a container in accordance with this invention illustrating the container in a condition of deformation for receiving its closure or top wall;

FIG. 2 is a perspective view of the container of FIG. 1 in collapsed condition;

FIG. 3 is an enlarged fragmentary view in cross section of the lateral wall of the container and a welt for retaining an end wall attached thereto;

FIG. 4 illustrates in fragmentary cross section the components shown in FIG. 3 with an end wall cooperating therewith, and lading contents of the container;

FIG. 5 is an elevation view of a hinge for holding the lateral wall of the container in FIGS. 1–4 in a circuitous configuration;

FIG. 6 is a fragmentary cross sectional view showing the lateral container wall and a modified welt affixed thereto;

FIG. 7 is a perspective view of a modified container;

FIG. 8 is a perspective view of the container of FIG. 7 in collapsed condition;

FIG. 9 is a perspective view in diametral cross section of a circular concavo-convex end wall having an upturned peripheral edge; and

FIG. 10 is a fragmentary cross sectional view showing portions of the end wall of FIG. 9 and a cylindrical side wall in cooperating relationship.

FIGS. 1 to 5 illustrate a container **5** in accordance with one embodiment of the invention. As shown, its components consist of a circular lateral wall **6**, a top disc-like wall or closure **7**, and a bottom disc-like wall **8**. The lateral wall **6** is provided as shown in FIG. 2, as a flat planate panel to which is attached an upper welt **9** and a lower welt **10**, and complementary elements **12** and **14** of hinges **15**. The panel or wall **6** is formed of a flexible material so that it may be formed into the generally circular configuration of FIG. 1 for the shipment of lading **16** by uniting opposing elements **12** and **14** of each hinge by a pin **18** or other pin means.

Referring now to FIGS. 3 and 4, the welt **9** is shown secured to the wall **6** by staples **18** extending completely through the welt in the wall at sufficiently small spacing all along the top edge of the wall **6** to withstand the forces exerted during use thereon by the top wall **7**. Adhesives may also be used with or without staples to attach the welts **9** and **10** to the panel or wall **6**. The welts **9** and **10** may, as shown, be of identical construction and provided as extrusions of well-known plastic compositions providing a high degree of flexibility and some elasticity, such as those compositions based on polyethylene, polyvinyl chloride, polyurethene, the so-called elastomers, and others.

From FIGS. 3 and 4 it may be observed that the welts **9** and **10** comprise a U-shape portion **21** which fits around the edge of the wall **6** and a portion **22** which is of angular configuration and joins with the portion **21** at a corner section **23** constituting that extremity of the inner wall at the U-shape portion **21** which is inward of the container from the end **24** of the wall **6**. As shown in FIG. 4, the disc-like wall **7** may contact the lower extremity **23** of the inner wall of the U-shape portion **21**. While the flange extremity **25** represents a primary seat to be engaged by the wall **7** reacting to pressure exerted thereon by expanding contents or lading **16**, under sufficient expansion of the lading, such as compacted tobacco leaves, the flange **22** of flexible material may yield to the extent shown in FIG. 4 to cause the end wall **7** to engage the welt section **23** which functions as a substantially non-yielding secondary seat for the end wall.

As shown by FIGS. 7 and 8, the invention is not restricted to a container of generally cylindrical shape as disclosed by FIGS. 1 to 6. The construction of the container shown in FIG. 7 has been modified to a generally frusto-conical shape which entails the provision of a planate, but non-rectangular, panel **30**. This panel forms the outer wall of the container **28**, and end walls **31** and **32** of an equal size. The container may be otherwise constructed, as disclosed with respect to the FIGURES 1 to 6.

FIG. 6 illustrates a welt **35** of simpler and less expensive construction than that shown in FIGS. 1 to 5. The essential difference between the welt **35** and welts **9** and **10** is that welt **35** does not have the equivalent of the outer wall **37** of welts **9** and **10**. This outer wall may be eliminated in service wherein positive protection against moisture and protection of the end portion **36** of the lateral container wall **6** are not essential.

In the use of containers according to this invention, and referring in particular to the container of FIGS. 1 to 5, the assembly shown in FIG. 2 is prepared for use by bending the planate wall **6** of FIG. 2 into the generally circular configuration, as shown in FIG. 1, and inserting cotter keys **18** through cooperating elements of each of the hinges **15**. Whereafter, the bottom wall **8** may be readily inserted into the wall **6** and seated against the lower welt **10**. Thereafter, the container with an open top defined by the welt **9** is filled with the material to be shipped. In the case of leaf tobacco, the contents of the container are compacted by a press to a level about 8 to 10 inches below the upper welt **9**. The press platen is withdrawn, and before the tobacco expands appreciably, the closure or top wall **7** is easily inserted into the space between the welt **9** and the contents by first inserting a part of the periphery of the wall **7** downwardly into the container against the inner surface of the annular wall **6** and against the contents of the container. Thereafter, the wall **6** is forced into a slightly elliptical conformation for passage of the full diameter of the wall **7** to a point below the welt **9**. After this stage of insertion is reached, the remainder of the periphery of the wall **7** is easily forced below the welt **9** and allowed to rest upon the upper surface of the contents **16**. In the next hour or so, the leaf tobacco gradually expands to carry the wall **7** upwardly against the welt **9** to establish the relationship shown in FIG. 4.

In the tobacco trade, the recipient or processor of leaf tobacco prefers to expose the contents of a package thereof without any disturbance of its physical condition. Containers of the type described above are ideally suited for this purpose in tobacco manufacturing. Tobacco shipped in containers such as containers **5** and **28** described above is readily unloaded therefrom by merely releasing the fastening means which holds the lateral edges, e.g., edges **38** and **39**, together. That is to say, withdrawal of the cotter keys **18** cause the wall **6** to disengage from the tobacco therein and to also release the end walls **7** and **8** from seating relationship with respective welts **9** and **10**. As a result, a well-shaped cylindrical mass of tobacco is left exposed and seated upon the end wall **8**.

In the case of cigar manufacturing, groups of the tobacco leaves may be removed from the exposed lading with minimum destruction of the individual leaves.

For the tobacco trade, the walls **6**, **7**, and **8** are preferably of laminated construction utilizing laminae of kraft paper bonded together by urea-formaldehyde resin. A wall thickness of ⅛ inch is satisfactory as the thickness of the wall **6** for many shipping purposes. The end walls **7** and **8** may have a somewhat greater thickness than the lateral wall. As shown in FIG. 9, the end walls may be formed with a crimp along peripheries to further strengthen them and to facilitate more positive seating of the end walls under respective welts (see end wall **7***b*).

In accordance with an embodiment of the invention illustrated by FIGS. 9 and 10, a container comprising the side wall **6** with attached welts **9** and **10** includes also a circular end wall **40** of the type shown in FIG. 9. This end wall or lid, which may be used within either or both ends of the side wall **6**, is of slightly cupped or concavo-convex configuration with its concave side **41** normally exposed outwardly of the container. The circular out-turned edge or flange **42** of the lid is nearly cylindrical in order that it may extend into the annular recess **44** formed by the inner surface **43** of the side wall **6** and the flange **22** of the welt **9**. The flange **41** is preferably of a thickness and depth which causes it to substantially fill the recess **42**. Disposition of the flange within the welt flange **22** establishes an effective interlock of the end wall **40** with the side wall **6**. Because the end wall **40** is cupped two to four inches from the plane **45** of the flange **42**, the end wall may have a thickness substantially less than that of a planate wall, such as the wall **7** or **8**. For example, the end wall **40**, molded of kraft paper to a thickness of five-sixteenths of an inch and cupped to a central depth of three inches, is approximately as effective in resisting outward pressure of lading as a plywood end wall having a thickness of three-fourths of an inch.

The terms and expressions which have been employed are used as terms of description and not of limitation and there is no intention of excluding such equivalents of the invention described or of the portions thereof as fall within the scope of the claims.

What is claimed is:

1. A collapsible container comprising:

a flexible wall of circular cross section having open ends of which each is defined by a circular edge;

a flexible welt comprising a unitary extrusion product of rubber-like material secured along substantially the full length of each of said edges, each welt comprising substantially continuous flange means projecting into raised spaced relation with the innersurface of said circular wall toward the opposite end thereof;

a pair of disc-like end walls adapted to close each of said open ends, each end wall having a smaller periphery than the respective end of the circular wall which it closes but a greater periphery than that of said flange means secured therealong;

said circular wall and said welts being deformable in a diametric direction to admit either end wall through an open end into a region within said circular wall between said welts with the general plane of the end wall biased with respect to a diametral plane of the open end so traversed to a position allowing the end wall to be turned within the circular wall to bring said planes into parallelism and either end wall into position against respective flange means; and

said circular wall having lateral edges and fastening means comprising elements thereof fixed in cooperating relationship on said lateral edges holding said circular wall in a ring-like configuration, opposing elements of said elements being releasable one from the other to enable said circular wall to assume a planate configuration.

2. The collapsible container of claim **1** wherein:

at least one of said end walls comprises an out-turned, nearly-cylindrical flange adapted to be received into an annular recess formed by said flange means and said circular walls.

3. The collapsible container of claim **1** wherein:

each welt has a U-shaped portion defining outer and inner webs between which the respective adjacent edge is received, and said flange means is a flange of angular cross section in radially inward relation with the U-shaped portion and joined integrally with said inner web of the U-shaped portion to form an annular recess between the flange means and the circular wall; and the container comprises means securing the U-shaped portion of each welt along

substantially the entire length of the edge received therein.

4. The collapsible container of claim 3 wherein: the flange joins integrally with said inner web at the axially inward extremity thereof.

5. The collapsible container of claim 1 wherein: said end wall is of cupped configuration.

References Cited

UNITED STATES PATENTS

2,726,803	12/1955	Ketler	229—23
3,064,870	11/1962	Dunlap et al.	229—4.5
3,157,340	11/1964	Gay et al.	229—5.7
3,248,035	4/1966	Gay et al.	229—5.7
3,291,362	12/1966	Sproull et al.	229—41

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