United States Patent

[11] 3,563,448

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[54] **CONTAINER END STRUCTURE**
4 Claims, 7 Drawing Figs.

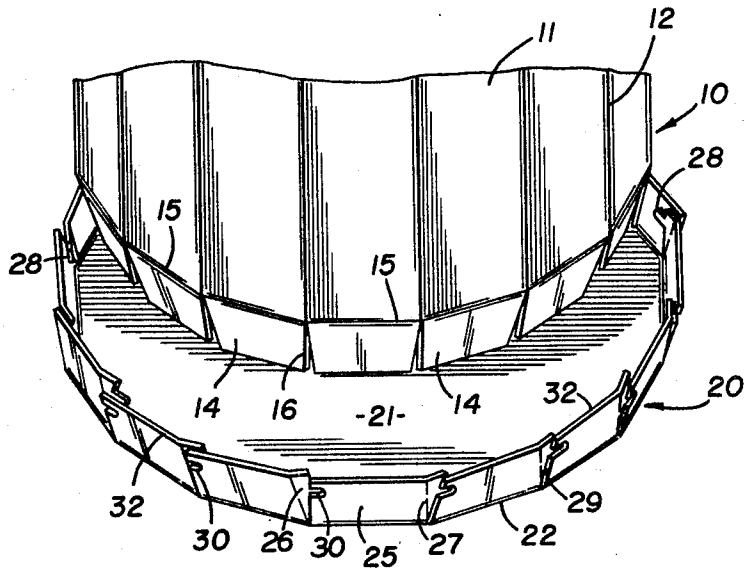
[52] **U.S. Cl.** **229/23,** 229/57, 229/21
[51] **Int. Cl.** **B65d 3/04,** B65d 13/00
[50] **Field of Search** 229/23, 21, 43, 7, 5.5, 5.6, 5.7

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Primary Examiner—David M. Bockenek
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ABSTRACT: An end structure, either top or bottom, for a container body which is of tubular form and of multisided polygonal transverse cross section. The end closure comprises a flat substantially disclike end with attaching flanges hinged thereto and extending inwardly from the plane thereof, being in number and lateral extent equal to the sides of the body and extending axially inwardly into overlapping relationship thereto. Each flange carries at one of its lateral edges a tab hinged thereto and adapted to overlap the adjacent lateral edge of the next flange for purposes of sealing and strengthening the joints between adjacent flanges. The flanges are suitably secured in overlapping relationship to the cooperating sides of the tubular body.



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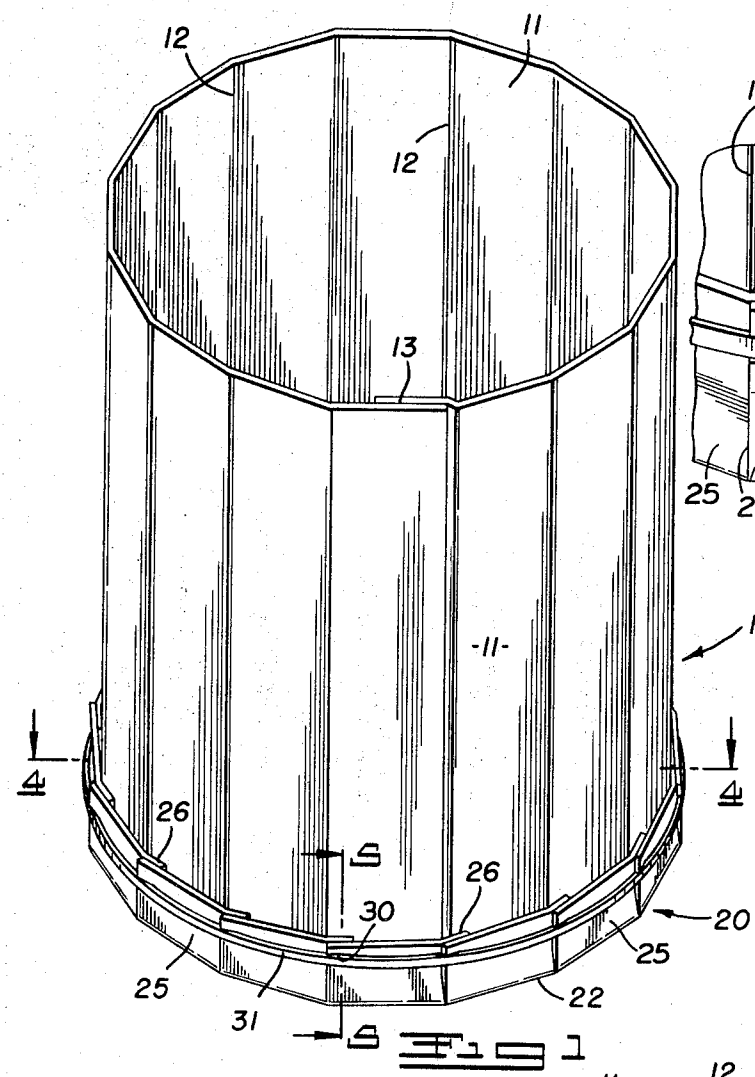


Fig 1

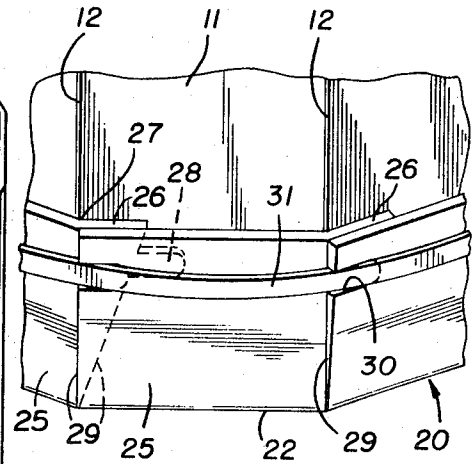


Fig 3

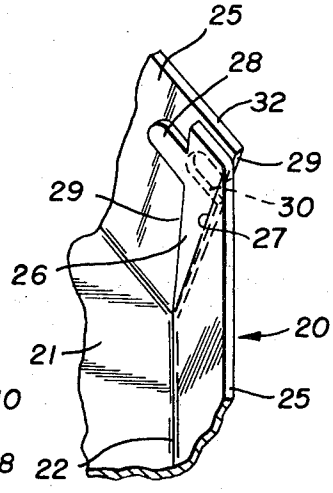


Fig 3a

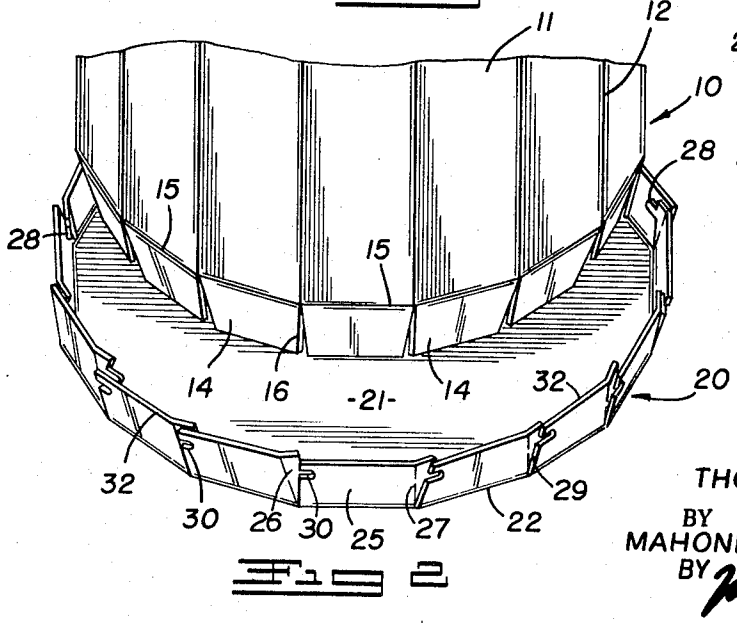


Fig 2

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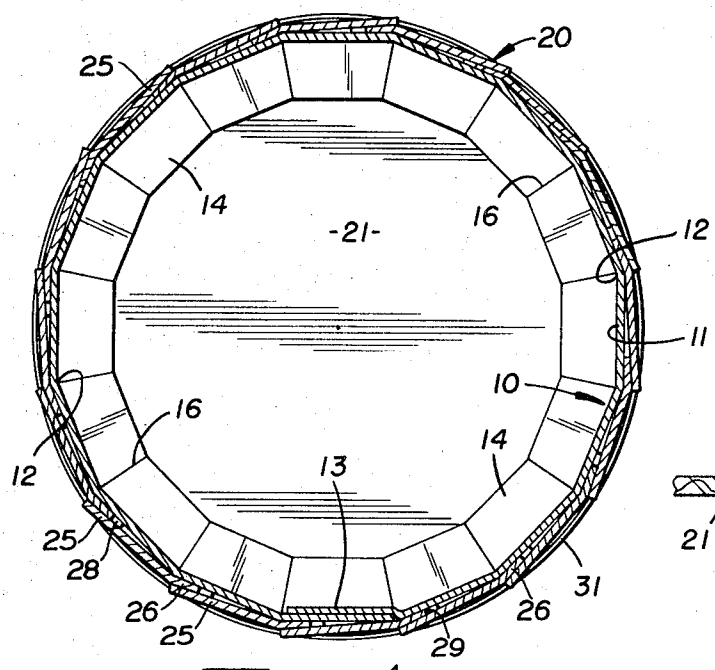


Fig 4

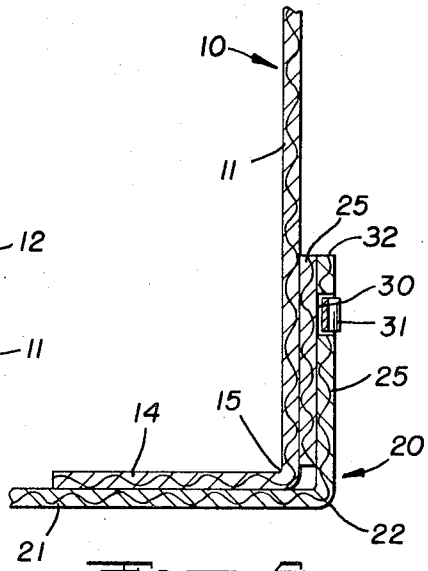


Fig 5

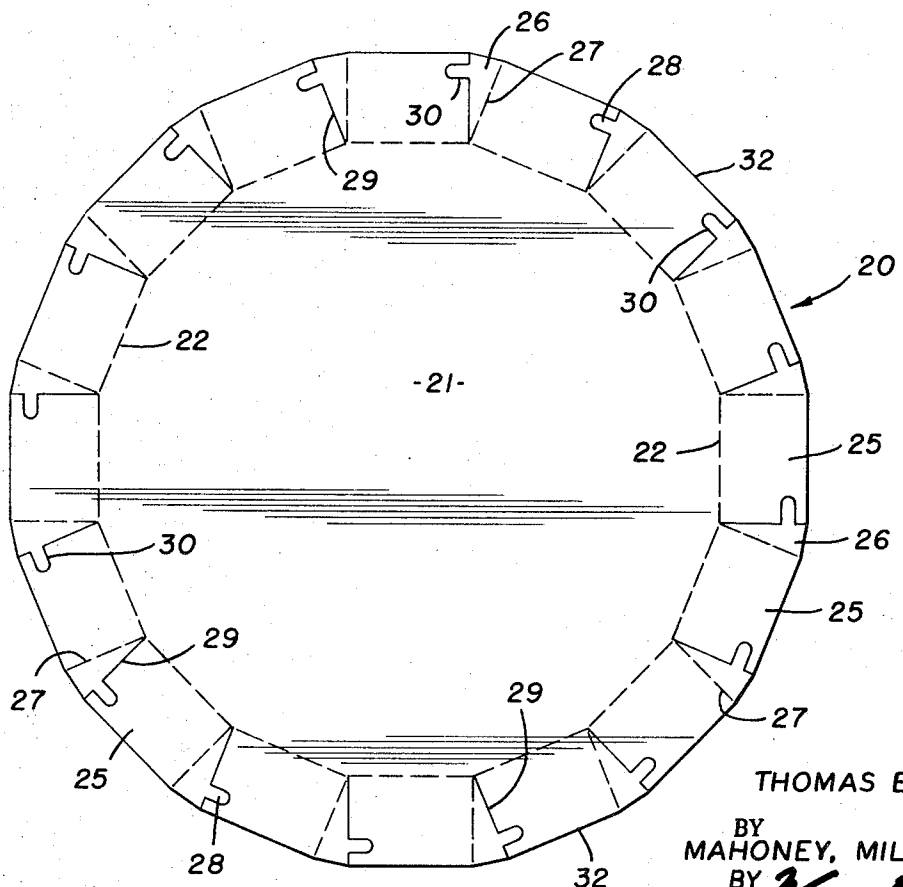


Fig 6

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CONTAINER END STRUCTURE

The present invention deals with an end closure structure for either end of a tubular body of polygonal cross section, which can have any number of side panels joined along scored hinge lines. Both the body and the end structure or structures preferably are formed of fiberboard or similar material suitably scored and slit. Each end structure is in the form of a closure unit which preferably telescopes over the associated end of the tubular body. It is composed of a central disclike body which is provided with a series of flanges extending inwardly from the plane of the disclike body and being of the same number and width as the corresponding sides of the tubular body which they overlap. Each flange is hinged to the disclike body along a joint extending transversely of the end of each associated side panel of the tubular body, just outside the plane thereof. For providing a substantially siftproof and strong joint between adjacent flanges, each flange is provided at one of its lateral edge with a triangular tab which is hinged thereto and overlaps the adjacent lateral edge of the next flange. Also, the opposite or exposed lateral edge of each tab is provided with a notch which will be exposed so as to receive a retaining band that surrounds the inwardly extending flanges and clamps them against the cooperating sides of the tubular body. The closure unit, shaped as indicated above, with the extending flanges and associated tabs, can be readily formed from a circular disc of fiberboard or similar material without appreciable waste by simple scoring and slitting operations.

A preferred form of this invention is illustrated in the accompanying drawings in which:

FIG. 1 is a perspective view of a container with a bottom end structure embodying this invention.

FIG. 2 is a perspective view of the end structure as it is being assembled.

FIG. 3 is an enlarged perspective view of a portion of the end structure showing the overlapping parts of adjacent flanges on the container bottom.

FIG. 3*a* is an enlarged perspective view showing the flanges being folded into cooperation with each other.

FIG. 4 is a horizontal or transverse sectional view taken along line 4–4 of FIG. 1.

FIG. 5 is a detail in vertical section taken along line 5–5 of FIG. 1.

FIG. 6 is a plan view of the scored and slit blank for the end closure.

With reference to the drawings, the container end structure is shown embodied in a container having a tubular body **10** of polygonal cross section, the body shown having sixteen sides. However, it is to be understood that this invention is applicable to polygonal tubular bodies having any number of sides. The tubular body, as formed, is open at both ends and comprises the sides **11** which are in the form of flat panels joined at the score lines **12** which extend the full length of the tubular body. The body can be formed from a single flat blank of fiberboard or similar material which is scored at the lines **12** and which has its longitudinal edges overlapped and secured together as indicated at **13**. Flanges **14** are hinged at transverse score lines **15** to the lower ends of the side panels **11** and are coextensive therewith. The flanges may have tapered lateral edges **16**. When the container is assembled, these flanges will extend radially inwardly in a plane disposed at a right angle to the axis of the tubular body **10** (FIG. 5). If a closure is provided at the top of the tubular body, these flanges may or may not be provided as desired.

The closure end unit of this invention is applied to either or both ends of the tubular body **10** but is shown as being at the bottom end. It is indicated generally by the numeral **20**.

The closure unit **20** comprises a flat, substantially disclike body **21**, but which has an outer peripheral edge of polygonal outline where the score or hinge lines **22** connect to the attaching flanges **25**. The flanges **25** correspond in number to the panel sides **11** of the tubular body **10** and in the example illustrated, this is **16**. Each flange **25** at one of its lateral edges is

provided with a triangular tab **26** which is hinged to that edge along a scoreline **27** and which on its other free angularly disposed edge **29** is provided with a lateral extension ear **28**. The opposite lateral edge **29** of each flange is provided with a band-receiving notch **30** spaced outwardly from the score line.

The flanges **25** are folded successively inwardly or upwardly relative to the disclike body **21**, as indicated in FIGS. **2** and **3***a*, so that the triangular tab **26** of the one flange will be inwardly of the edge **29** of the next flange. This will expose the notches **30** on the edges **29** of successive flanges. These notches are spaced from the free outer edges **32** of the flanges **25**. Preferably, the tubular body **10** will first be positioned on the flat disc **21** with the flanges **14** thereof folded inwardly at right angles and resting flat on the disc **21**. The area of the disc body **21** will be slightly greater than the cross-sectional area of the tubular body **10** so that the flanges **25** will be disposed just outside the planes of the sides **11** and in flat contact with the exterior surfaces of those sides. As indicated in FIGS. **3** and **5**, a suitable retaining band **31**, which may be of metal, may be tightened around the upstanding flanges **25** to hold them in tight, frictional relationship with the sides **11** of the tubular body **10**.

The closure unit may be formed from a single substantially circular blank of fiberboard or the like, as indicated in FIG. **6**, except that the outer peripheral edge will be trimmed as indicated to provide a disc **21** having sixteen angular edges **32**. This blank is scored at **22** to provide the flange hinge lines and is slit at **29** to provide the separate flanges **25** along with the ears **28** and notches **30** at opposite lateral edges. Scorelines **27** are also provided to provide on the flanges **25** the triangular tabs **26** hinged to the one lateral edge of each of the respective flanges. The resulting structure can be formed into the closure element by the successive inward or upward folding of the flanges **25** as indicated previously.

It will be apparent from the above description that the flanges on the closure unit not only overlap the corresponding sides of the tubular container, but also overlap each other. The triangular tabs on one of the lateral edges of the flanges overlapping the other lateral edges of the flanges provide a siftproof joint as well as a structurally strong joint. The closure element can be easily made with minimum waste of material by simple scoring and slitting operations.

I claim:

1. A fiberboard container comprising in combination a tubular container body of polygonal cross section having a selected number of side panels angularly disposed relatively and connected at scored joints, an end structure comprising a closure unit adapted to telescope with said body at one end thereof, said closure unit comprising a substantially disclike body having an outer periphery of polygonal form with scored angularly disposed joints corresponding in number to the sides of said tubular container body and being substantially coextensive therewith, an attaching flange secured at each of said scored joints to the disclike body and being folded inwardly into overlapping contact with the adjacent surfaces of the respective side panels at the end of said body, each of said flanges having oppositely disposed lateral edges one of which carries a tab hinged thereto at a score line, the tab on each of said flanges overlapping the adjacent surfaces lateral edge of the next adjacent flange.

2. Structure according to claim **1** in which each of said tabs is of triangular form with an angular free edge opposite the scored hinge line thereof.

3. Structure according to claim **2** in which the opposite free edge of the tab has a band-receiving notch formed therein, said flanges being disposed outside the respective side panels, and a retaining band surrounding said flanges and being located in the respective notches formed therein.

4. Structure according to claim **3** in which said panels have coextensive flanges hinged at score lines thereto at the end of said body which are folded inwardly and are in flat contact with said disclike body.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,563,448 Dated February 16, 1971

Inventor(s) Thomas E. Croley

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

Column 2, line 59, in Claim 1, cancel the word "surfaces".

Signed and sealed this 18th day of May 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents