Aug. 11, 1959 W. J. GEIST 2,899,118

UPPER END STRUCTURE FOR FIBER DRUMS

Filed Jan. 19, 1956 2 Sheets-Sheet 1

FIG. 1

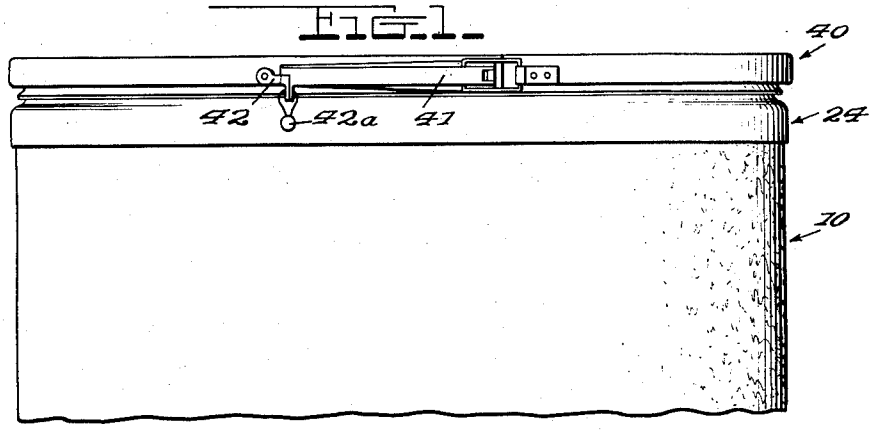
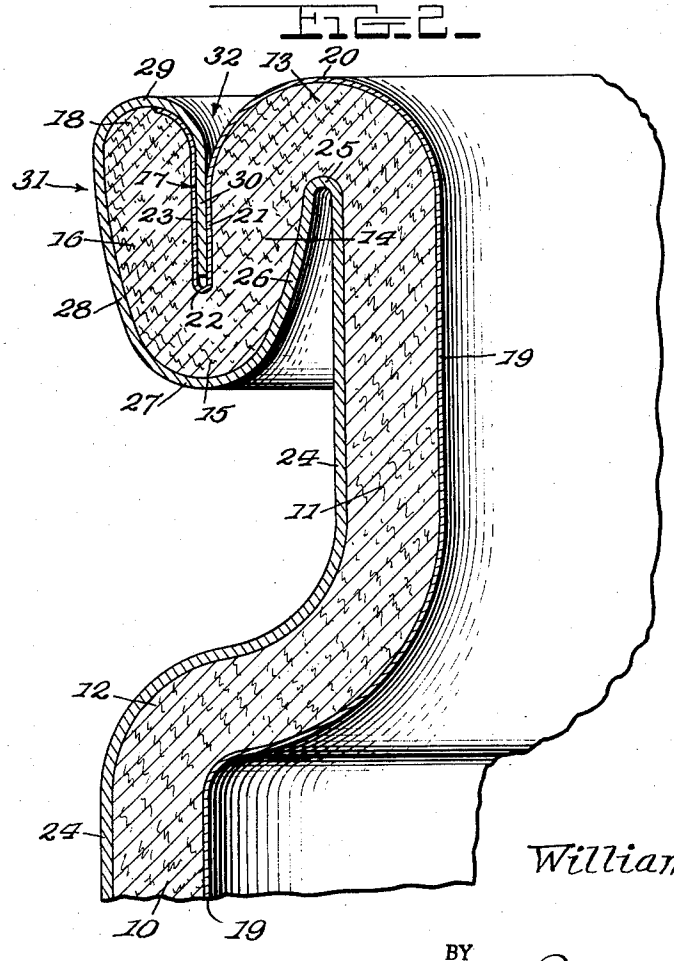


FIG. 2



INVENTOR
William J. Geist.

BY
Mason, Porter, Diller & Stewart
ATTORNEYS

Aug. 11, 1959 W. J. GEIST 2,899,118

UPPER END STRUCTURE FOR FIBER DRUMS

Filed Jan. 19, 1956 2 Sheets-Sheet 2

FIG. 3

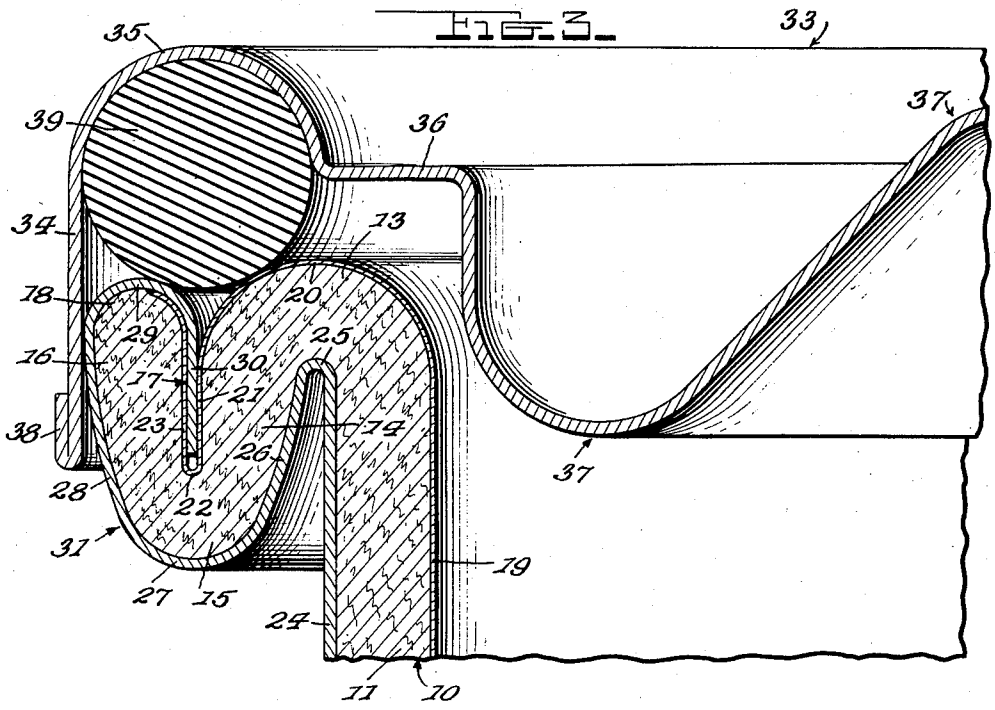


FIG. 4

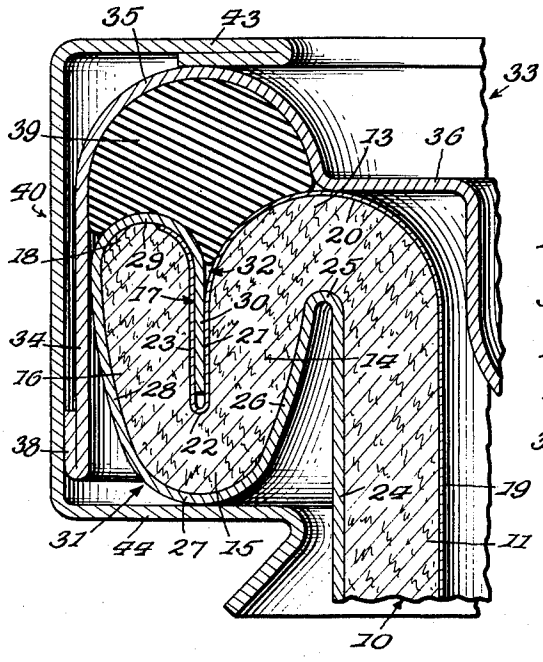
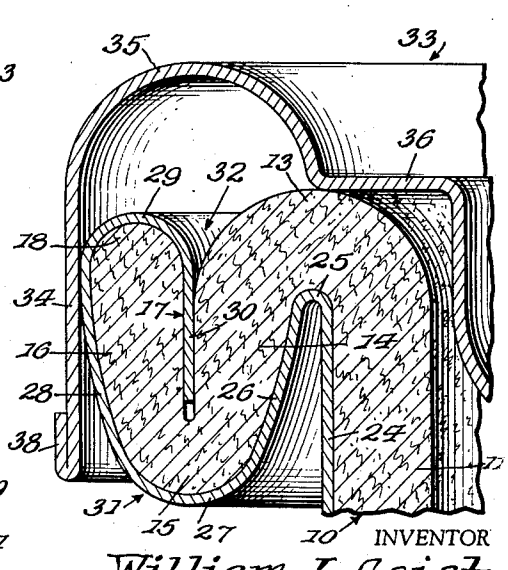


FIG. 5



INVENTOR
William J. Geist.

BY
Mann, Porter, Diller & Stewart
ATTORNEYS

United States Patent Office 2,899,118
Patented Aug. 11, 1959

2,899,118

UPPER END STRUCTURE FOR FIBER DRUMS

William J. Geist, Van Wert, Ohio, assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Application January 19, 1956, Serial No. 560,136

10 Claims. (Cl. 229—5.7)

This invention relates to drums and the like constructed largely from fiber board. In such drums, it is customary to reinforce the chime portion of the drum side wall with metal to resist injury and provide an accurate seat for a sheet metal cover but the present day chime structure has nevertheless proven to be insufficiently strong to withstand the rough handling to which the drums are often subjected. The present invention aims to overcome this deficiency in a simple, inexpensive and practical manner.

In carrying out the above end, one object is to provide the fiber drum side wall with an integral chime portion which is unusually thick radially of the drum, and to provide a metal reinforcing band snugly surrounding the drum wall and having portions which coact with said thick chime portion in maintaining the shape of the latter.

Another object is to embody an upwardly open channel formation in the thickened chime structure, the shape of said channel formation being maintained by portions of the aforesaid metal reinforcing band, whereby an elastic gasket may be employed between the drum cover and the chime and may be compressed tightly into the upper part of said channel formation for tight sealing of the drum and for completely isolating the metal band from contact with packaged materials which may be of a corrosive nature.

A further object is to terminate the upper edge of the metal reinforcing band within the aforesaid channel formation, making it unnecessary to smoothly finish said edge or to crimp it into the fiber.

A still further object is to provide a novel metal cover for the drum, said cover having an arched bead for disposition over the aforesaid channel formation and adapted to receive the aforesaid gasket.

Another object is to provide a novel construction in which upper and lower flanges on a contractible locking band coact with the aforesaid arched bead and a portion of the metal reinforcing band, respectively, in securing the cover in place.

Yet another object is to provide a novel construction in which the locking band, a skirt on the cover, and the chime reinforcing portions of the aforesaid reinforcing band, provide an unusually great number of metal thicknesses which effectively protect the chime against injury.

A still further object is to associate a liner of polyethylene or other suitable material with the drum side wall and its reinforced chime structure. This liner as well as the aforesaid gasket are both employed when the drum is constructed for shipment of liquids or when the drum contents must be protected from moisture, but for dry packs or for any materials which will not be harmed by moisture, the drum may be constructed without the liner, and the gasket may be omitted also if desired.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 of the accompanying drawings is an elevation of the upper portion of a sealed drum constructed in accordance with the invention.

Figure 2 is an enlarged radial section through the upper end of the drum wall and its reinforced chime structure.

Figure 3 is a view similar to Figure 2 but showing the cover initially placed on the drum in readiness for gasket compression and locking band application.

Figure 4 is a view similar to Figure 3 but showing the locking band applied, the cover depressed to final position and the gasket compressed.

Figure 5 is a view similar to Figure 3 showing a construction in which the gasket and the liner are omitted.

Preferences have been illustrated in the drawings and will be rather specifically described but attention is invited to the possibility of making variations within the scope of the invention.

A fiber board drum side wall **10** is shown, the upper end portion **11** of which is of reduced diameter, providing the wall with a breast portion **12**. The upper end portion of the wall is turned outwardly and forms an upwardly presented transversely arched continuous bead **13**, then extends downwardly and forms a continuous inner channel wall **14**, is then turned outwardly and forms a continuous transversely concave channel bottom **15**, and finally extends upwardly and provides a continuous outer channel wall **16**. This outer wall **16** is in close relation with the inner wall **14** and coacts with the latter and the bottom **15** in forming an upwardly open channel **17** which is extremely narrow and relatively deep. The upper edge **18** of the outer wall **16** is transversely arched and coacts with the adjacent portion of the bead **13** in imparting an upward flare to the upper portion of the channel **17**.

In Figures 2, 3 and 4, the drum side wall **10** includes a liner **19** impervious to moisture. This liner turns outwardly at **20** over the bead **13**, extends downwardly at **21** against the inner channel wall **14**, turns outwardly at **22** upon the channel bottom **15**, and extends upwardly at **23** against the outer channel wall **16**. This liner **19** is preferably formed from polyethylene.

A metal reinforcing band **24** tightly surrounds the breast portion **12** of the fiber wall **10** and the portions of this wall contiguous to said breast portion. This band **24** extends upwardly to the lower side of the bead **13** and is here downwardly folded substantially upon itself at **25**, then extending downwardly and forming a second inner channel wall **26** contacting with the wall **14**. The metal then turns outwardly and forms a second concave channel bottom **27** underlying the channel bottom **15**, and then extends upwardly and provides a second outer channel wall **28** contacting with the wall **16**. The metal then turns inwardly at **29** over the upper edge **18** of the wall **16** and finally extends downwardly at **30** and is snugly seated in the channel **17**, the lower edge of the portion **30** being disposed in close proximity to the channel bottom.

The above described formation of the metal reinforcing band **24** is the same whether the drum wall and its beaded end channeled upper portion be lined (Figures 2, 3 and 4) or unlined (Figure 5). In either case, the specifically shaped upper portion of the wall **10** and the

similarly shaped upper portion of the reinforcing band 24 coact in forming an outwardly thickened, effectively reinforced chime 31 which embodies a plurality of concentric thicknesses of metal and fiber and will well resist any normal impacts to which it may be subjected. Moreover, the chime 31 includes an upwardly flared continuous channel 32 providing a V-shaped seat into which a sealing gasket may be tightly seated, as described below.

A metal cover 33 is provided, said cover having a peripheral skirt 34 joined by a transversely arched reinforcing bead 35 to the major portion of said cover. This major portion includes an annular shoulder 36 at the inner extremity of the arched bead 35, and concentric reinforcing corrugations 37 (Figure 3) surrounded by said shoulder 36. The lower edge of the skirt 34 is hemmed at 38 for reinforcement and smooth finish.

The arched bead 35 is of such width as to extend over the upwardly open channel 32 of the chime 31 and the shoulder 36 is so positioned as to rest on the bead 13 when the cover 33 is in fully applied position (Figures 4 and 5).

An elastic gasket 39 is snugly receivable in the bead 35 when its use is required, said gasket being formed from rubber or neoprene, for example. This gasket 39 may be in the form of a conventional O-ring and its diameter is such that it will project downwardly from the arched bead 35 (Figure 3) prior to complete cover application (Figure 4). Upon depression of the cover 33 to final position, the gasket 39 becomes tightly compressed into the upwardly flared channel 32 and conforms in shape to the chime portions with which it contacts, thereby providing an extremely tight seal.

A locking band 40 (Figures 1 and 4) is employed to secure the cover 33 in place. This band is shown of a type having a lever 41 for contacting it to operative position, a suitable latch 42 and seal 42*a* being shown for said lever, in Figure 1.

The band 40 has an upper flange 43 to lie upon the cover bead 35, and a lower flange 44 to underlie the metal channel bottom 27. When applying the cover 33, if the gasket 39 is employed, said cover is sufficiently depressed by hand to allow initial engagement of the flanges 43 and 44 with the bead 35 and channel bottom 27, respectively. Then, as the lever 41 is operated to contract the band 40, the flanges 43 and 44 "cam" against the bead 35 and channel bottom 27, thus forcibly depressing the cover to the limit allowed by the cover shoulder 36 and firmly compressing the gasket 39, as seen in Figure 4. The band 40 then contacts with the hem 38, and this band and the cover skirt 34 then provide additional metal thicknesses which still further reinforce the chime 31.

From the foregoing, it will be seen that a novel and practicable construction has been provided for attaining the desired ends. However, attention is again invited to the possibility of making variations within the scope of the invention.

I claim:

1. A fiber drum side wall having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band snugly surrounding the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall, said final downwardly extended portion of the band metal being snugly seated between and in contact with the first mentioned channel walls.

2. A fiber drum side having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band snugly surrounding the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall, said bead and the metal extending over said upper edge of the first mentioned outer channel wall being of transversely arched form, and said channel bottoms being of transversely concave form, the final downwardly extended portion of the band metal being snugly seated between and in contact with the first mentioned channel walls.

3. A fiber drum side wall having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band snugly surrounding the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall, said drum side wall including a liner, the upper end portion of said liner being turned outwardly over said bead, being then turned downwardly against the first mentioned inner channel wall, and being then turned outwardly and upwardly against the first mentioned outer channel wall, the final downwardly extended portion of the band metal being snugly seated between said first mentioned inner and outer channel walls and in contact with the portions of the liner which lie against these walls.

4. A fiber drum side wall having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band snugly surrounding

the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall to form with the upwardly presented bead an upwardly opening metal reinforced V-shaped seat for engagement by a sealing gasket, and there also being included a cover having a transversely arched peripheral bead to overlie the band metal which extends over the upper edge of the first mentioned outer channel wall, said arched cover bead being of a width to also extend over a portion of the first mentioned bead, a resilient gasket seated in said transversely arched cover bead and normally projecting downwardly therefrom in position for engaging in said V-shaped seat, and a contractible locking band having an upper inwardly projecting flange to lie upon said transversely arched cover bead, said locking band also having a lower inwardly projecting flange to underlie and contact with said second channel bottom, the spacing of said flanges being such as to cause compression and tight seating of said gasket in said V-shaped seat and over the band metal turned inwardly over said first mentioned outer channel wall when said locking band is applied.

5. A fiber drum side wall having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band surrounding the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall to form with the upwardly presented bead an upwardly opening metal reinforced V-shaped seat for engagement by a sealing gasket, said bead and the band metal extending over the upper edge of the first mentioned outer channel wall being of transversely arched form, and there also being included a cover having a transversely arched peripheral bead to extend over said arched portion of the band metal and over a portion of the first mentioned arched bead and said V-shaped seat disposed between them, a resilient gasket seated in said transversely arched cover bead and normally projecting downwardly therefrom in position for engaging in said V-shaped seat, and a contractible locking band having an upper inwardly projecting flange to lie upon said transversely arched cover bead, said locking band also having a lower inwardly projecting flange to underlie and contact with said second channel bottom, the spacing of said flanges being such as to cause compression and tight sealing of said gasket in said V-shaped seat and over portions of said arched portion of the band metal and said first mentioned arched bead when said locking band is applied.

6. A fiber drum side wall having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band snugly surrounding the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall to form with the upwardly presented bead an upwardly opening metal reinforced V-shaped seat for engagement by a sealing gasket, and there also being included a cover having a depending skirt and a transversely arched bead joining said skirt to the major portion of the cover, said arched bead being adapted to overlie the band metal which extends over the upper edge of the first mentioned outer channel wall, said arched cover bead being of a width to also extend over a portion of the first mentioned bead and said V-shaped seat disposed between them, a resilient gasket seated in said transversely arched cover bead and normally projecting downwardly therefrom in position for engaging in said V-shaped seat, and a contractible locking band having an upper inwardly projecting flange to lie upon said transversely arched cover bead, said locking band also having a lower inwardly projecting flange to underlie and contact with said second channel bottom, the spacing of said flanges being such as to cause compression and tight seating of said gasket in said V-shaped seat and over portions of said arched portion of the band metal and said first mentioned arched bead when said locking band is applied, said cover having a portion to seat on said first mentioned bead when said locking band is fully applied.

7. A fiber drum side wall having its upper end portion turned outwardly to form an upwardly presented bead, then extended downwardly from said bead to provide an inner channel wall, then turned outwardly from said inner channel wall to form a narrow channel bottom, and finally turned upwardly from said channel bottom to form an outer channel wall; and a metal band snugly surrounding the drum wall and extending upwardly between this wall and said inner channel wall, said band being folded substantially upon itself under said bead and then extending downwardly to provide a second inner channel wall which contacts with the first mentioned inner channel wall, the metal being turned outwardly from said second inner channel wall to provide a second channel bottom which contacts with the first mentioned channel bottom, the metal being extended upwardly from said second channel bottom to provide a second outer channel wall which contacts with the first mentioned outer channel wall, the metal being turned inwardly over the upper edge of said first mentioned outer channel wall and being finally extended downwardly against the inner side of said first mentioned outer channel wall to form with the upwardly presented bead an upwardly opening metal reinforced V-shaped seat for engagement by a sealing gasket.

8. A fiber drum structure as set forth in claim 7, including a cover having a peripheral skirt surrounding said second outer channel wall, said cover having a transversely arched bead joining said skirt to the major portion of the

cover, the portion of the latter adjacent said arched bead being disposed on the first mentioned bead, and a contractible locking band having an upper flange resting on said arched bead, said locking band also having a lower flange underlying and contacting with said second channel bottom.

9. A fiber drum structure as set forth in claim 7, wherein said bead and the metal extending over said upper edge of the first mentioned outer channel wall being of transversely arched form, and said channel bottoms being of transversely concave form.

10. A fiber drum structure as set forth in claim 7,

wherein said drum side wall includes a liner, the upper end portion of said liner being turned outwardly over said bead and extended downwardly into the channel between said first mentioned inner and outer channel to form a part of said V-shaped seat.

References Cited in the file of this patent

UNITED STATES PATENTS

2,326,209	Eggerss	Aug. 10, 1943
2,511,481	Schneider	June 13, 1950
2,661,137	Reid et al.	Dec. 1, 1953
2,709,524	Russell et al.	May 31, 1955