Aug. 25, 1959 J. HENCHERT 2,901,161

CONTAINER CLOSURE AND METHOD OF FORMING SAME

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FIG. 1

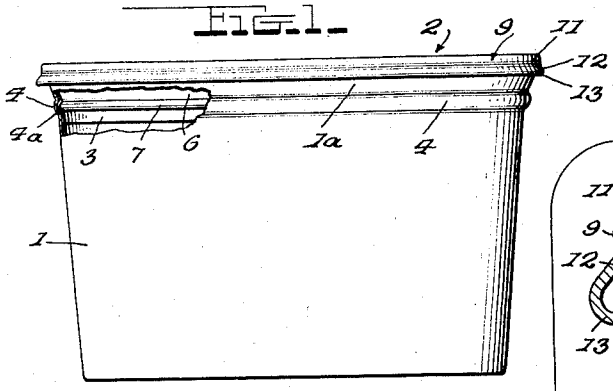


FIG. 3

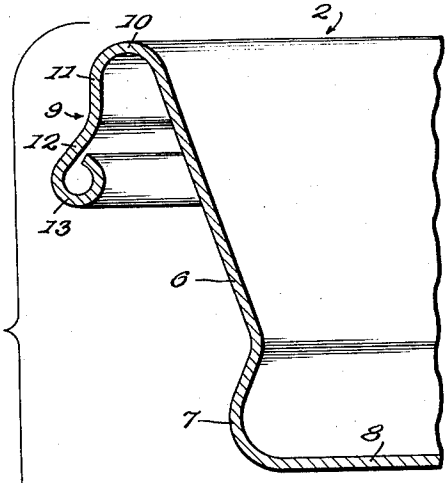
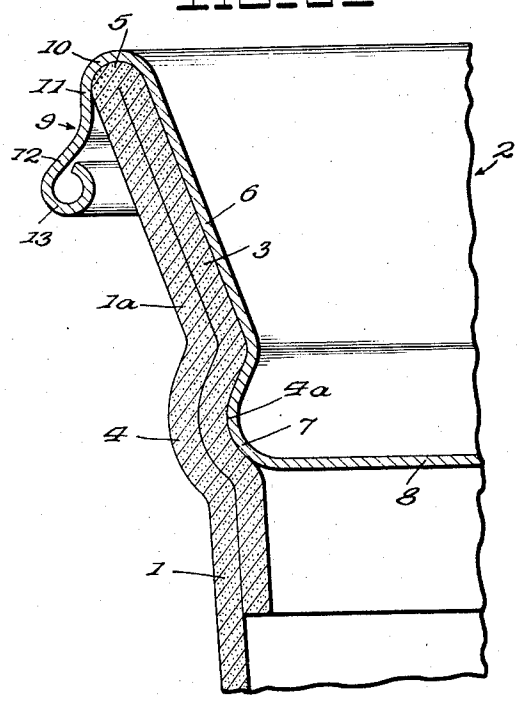
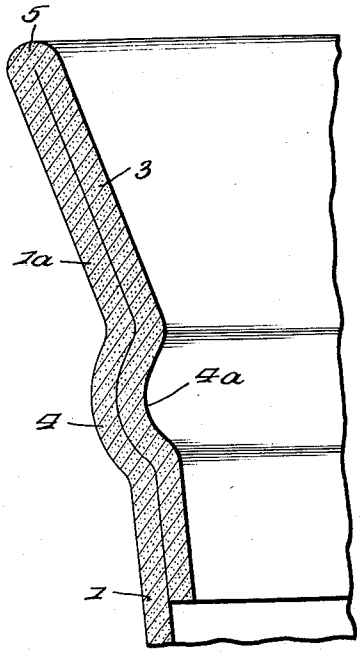


FIG. 2





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FIG. 4

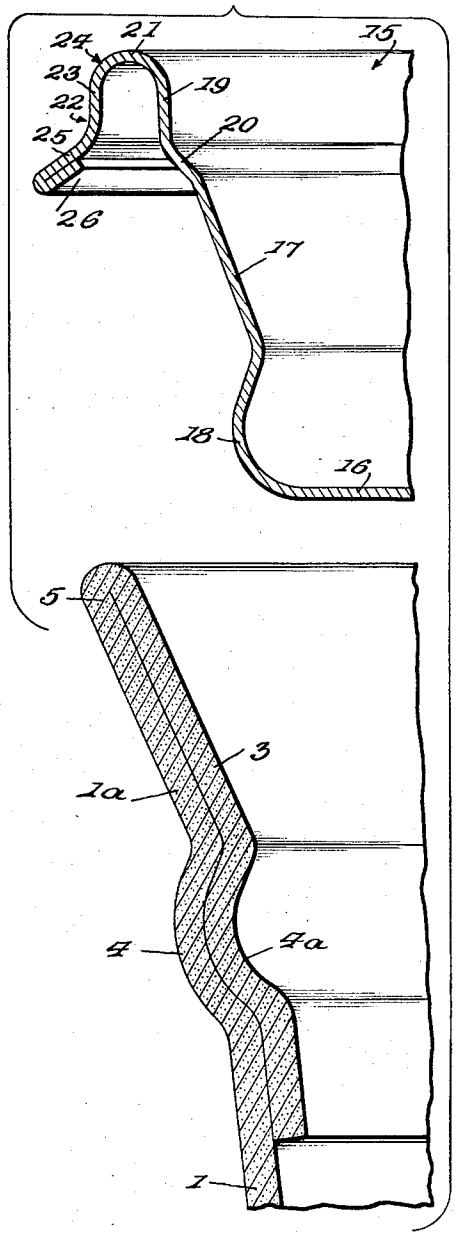


FIG. 5

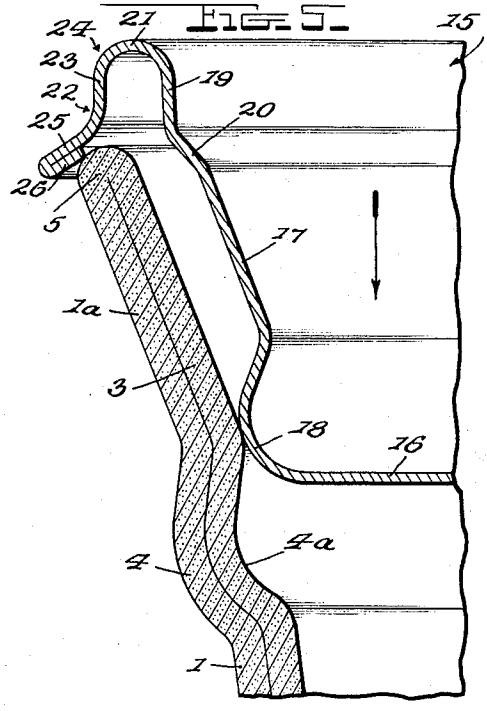
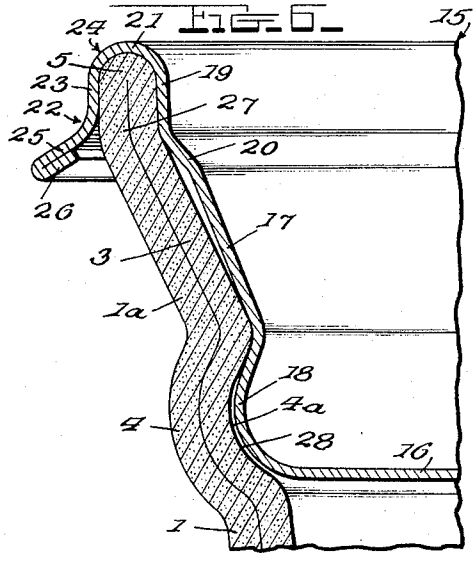


FIG. 6



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FIG. 7

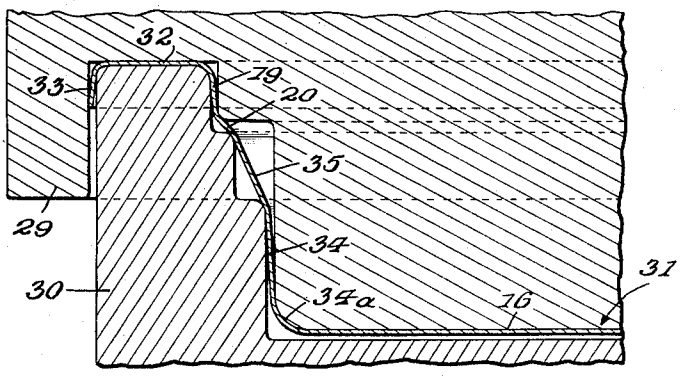


FIG. 8

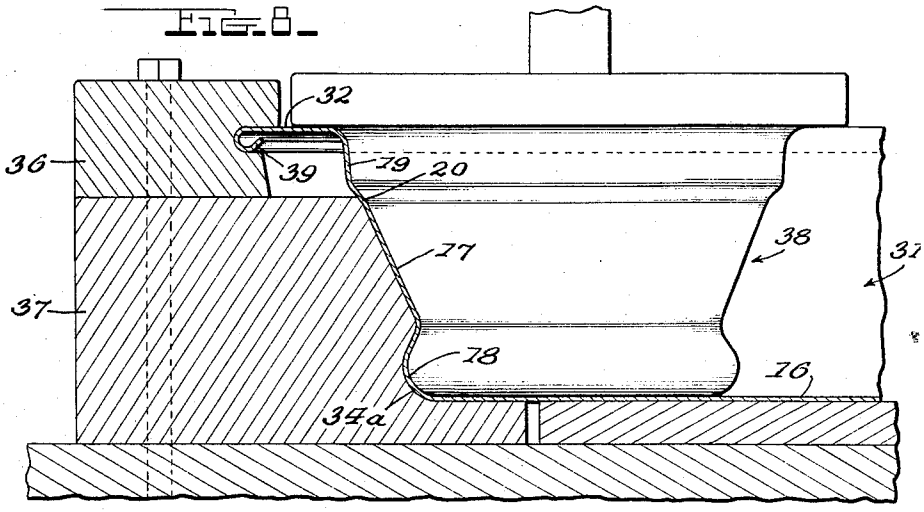
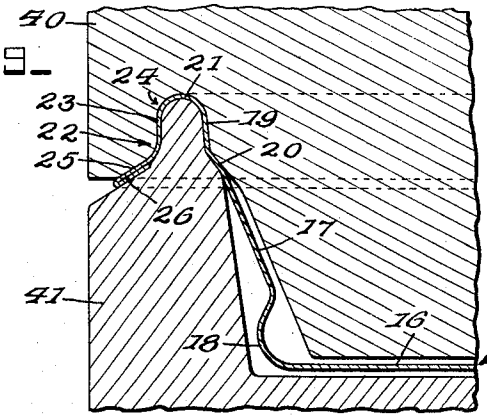


FIG. 9



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United States Patent Office 2,901,161
Patented Aug. 25, 1959

2,901,161

CONTAINER CLOSURE AND METHOD OF FORMING SAME

John Henchert, River Forest, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Application December 27, 1955, Serial No. 555,371

4 Claims. (Cl. 229—43)

This application is a continuation-in-part of my U.S. application, Serial Number 334,039, filed January 29, 1953, allowed August 11, 1955, now abandoned.

The invention relates to new and useful improvements in a container wherein a metal cover is held on a fiber container body by the interlocking of a bead on the cover with a groove in the body wall.

One object of the invention is to provide the body wall with an upwardly flared upper end portion the upper end or lip of which is tightly held in a channel of the cover by means of the above mentioned interlocking bead and groove, the outer wall of said channel being formed by a depending skirt the lower end of which is widely flared to guide said upper wall end or lip into said channel during cover application, even if said upper wall end or lip should be out-of-round as is frequently the case.

In connection with one form of the invention, another object is to provide a container having a fiber body and a metal cover wherein the body and cover are constructed so that the cover will be held on the body by a beaded portion on the cover snapping into a beaded portion on the body wall with a tightly sealed holding grip and wherein the end portion of the body wall is squeezed into a channel in the metal cover to provide a second tightly sealed contact between the cover and the body wall.

With respect to a second form of the invention, a further object is to provide a novel construction in which the cover channel has substantially cylindrical side walls for relatively extensive contact with the channel-received upper end portion of the body wall, and in which the dimensioning of elements is such that said upper end portion of the body wall will be inwardly deformed into position to enter said channel, by means of a wide flare at the lower end of the cover skirt, during cover application, thereby insuring a very tight seating of the upper end of the container wall in the channel and providing a tight seal between cover and container even if the aforesaid bead and groove be not tightly engaged.

A still further object is to provide a novel method for manufacturing the cover, said method being such as to expedite mass production by machine operations.

By way of illustration, two forms of the invention are shown in the accompanying drawings.

Figure 1 is a side view of a container body closed by the improved metal cover, the body wall being broken away to show the beaded connection between the cover and the beaded wall.

Figure 2 is a very much enlarged vertical section through a portion of the cover and container body, the cover being in tightly sealed engagement with the body wall.

Figure 3 is a view showing a vertical section through a portion of the cover and a vertical section through a portion of the body wall with the cover and body in assembling position, but with the cover separated from the container body.

Figure 4 is an enlarged fragmentary vertical sectional

view showing a second form of construction, the cover and container being shown in juxtaposition.

Figure 5 is a similar view but showing the cover pressed partially into position on the container body.

Figure 6 is a similar view but showing the cover fully connected with the container body.

Figures 7 to 9 are vertical sectional views illustrating the method of shaping the cover.

Referring to Figures 1 to 3, the container includes a body portion having a tapered body wall **1**, which is made of fiber material. Attached to the bottom portion of the body is the usual bottom end. The body wall at the upper portion thereof is upwardly flared or tapered at **1***a* and is turned inwardly or back upon itself as shown at **3** and makes intimate contact with the inner face of the body wall to provide a two-ply formation. Said inturned portion **3** and the body wall are beaded outwardly as shown at **4** to provide an inwardly facing groove **4***a* therein which is located near the lower end of the inwardly turned portion **3** of the body wall. The upper end of the body wall has a smooth rounded edge or lip as indicated at **5**.

The cover **2** for closing the container includes a central depressed portion surrounded by an outwardly tapering (upwardly flared) wall **6**. At the lower end of this tapered or flared wall the cover is beaded outwardly as shown at **7** and is shaped and dimensioned so that when the cover is placed on the container body and a slight pressure applied this outwardly beaded portion **7** will snap into the groove **4***a* in the body wall and make a tight sealed holding contact with the body wall. The bottom wall **8** of the depressed portion of the cover is so disposed relative to the bead **7** that the bead merges into the bottom-wall and this will greatly strengthen the beaded portion **7** and thereby aid in retaining the shape and position of said bead in the tapered wall of the cover.

The cover being of metal will provide a rigid bead which when held to shape and position by the bottom wall of the cover will snap into the groove **4***a* formed by the beading of the body wall so as to provide a very firm and a tightly sealed contact between the cover and the body wall. The cover **2** has a depending skirt **9** which is spaced away from the tapered wall **6** so as to provide a channel portion **10** adapted to receive the rounded upper end of the body wall, and said skirt at the upper portion **11** thereof is substantially vertical. At the lower portion **12**, the skirt flares outwardly and is rolled into a hollow bead **13**, to guide the lip **5** into the channel portion **10** even if said lip be out-of-round as frequently occurs.

The flared portion of the body wall above the bead **4** initially is at an angle slightly greater than the flare of the cover wall **6** and when the cover is placed on the container body and pressure is applied for seating the cover bead **7** in the groove **4***a* formed in the body wall by the beading of the same outwardly at **4**, there is first a tendency of the upper part of the body wall to spread, but when the lip **5** contacts the vertical wall **11** of the skirt of the cover, said body wall will be forced inwardly into contact with the tapered wall **6** of the cover. The channel in the cover is so dimensioned that this forcing of the body wall into the channel will squeeze the upper end of the body wall and thus make a very tightly sealed engagement between the end of the body wall and the cover.

The cover, when assembled on the container body will not only have a primary tightly sealed engagement between the bead in the cover and the beaded portion of the body wall but it will have a secondary tightly sealed engagement by the squeezing of the body wall into the channel of the cover. The container above described, while capable of other uses, is particularly adapted for

creamed cottage cheese. After the container is filled the lid is laid on the container body after which the container and lid are inverted and pressure applied to the bottom of the container which causes the bead on the body wall to snap into sealing engagement with the bead on the cover and the end of the body wall to squeeze into the channel of the cover. This provides a connection which will not allow moisture or odors, dust, etc. to enter the container and, of course, does not permit the escape of the contents should the package remain in up-ended position for a period of time. The lid, being of metal, is quite rigid and, therefore, when applied to the body wall, it will draw the body wall into a truly round shape and hold it in such shape at all times.

Referring to Figures 4 to 6, a sheet metal cover **15** is shown of somewhat different construction than the above described cover **2**. The cooperating container body wall, however, is the same as above described and the same reference numerals have therefore been employed on this wall and its structural characteristics.

The cover **15** has a bottom **16** and an upwardly flared side wall **17**, said flared side wall having an external bead **18** at its lower end and a substantially cylindrical portion **19** at its upper end. The wall **17** is also preferably provided with an outward offset or shoulder **20** joining the substantially cylindrical portion **19** to the major portion of said wall.

At the upper end of the substantially cylindrical wall portion **19**, the cover metal is turned outwardly at **21** and then turned downwardly to provide a skirt **22**. The upper portion **23** of this skirt is substantially cylindrical and coacts with the substantially cylindrical wall portion **19** and the outwardly turned portion **21** in providing a downwardly open channel formation **24** which is dimensioned to tightly receive the lip portion **5** of the body wall **1**. The outer diameter of this lip portion **5** is normally greater than the internal diameter of the substantially cylindrical skirt portion **23**, as seen in Figure 5, and the lower portion **25** of the skirt is widely flared downwardly and hemmed at **26** to inwardly deform said lip portion at **27** (Figure 6) and guide it into the channel formation **24**.

During application of the cover to the container, the bead **18** first causes outward yielding of the flared body wall portion **1***a*, **3** preparatory to snapping into the groove **4***a*, as seen in Figure 5. The lip **5** then contacts with the widely flared lower end portion **25** of the skirt **22** as also seen in Figure 5. Upon final downward forcing of the cover, the groove-forming portions of the body wall contract, the cover bead **18** is received in the groove **4***a*, and the flared lower end portion **25** of the skirt **22** cams the lip portion **5** of the body wall into cylindrical form **27** and guides it into the channel formation **24** even if said lip portion be out-of-round. The dimensioning of elements is such that this lip portion **5** is tightly squeezed between the side walls **19** and **23** of the channel formation **24**, resulting in a tight seal, even if the body wall does not fully contract into tight contact with the cover bead **18** after being expanded by said cover bead as shown in Figure 6. To emphasize this, clearance has been shown at **28** in Figure 6 between the bead **18** and the wall of the groove **4***a*. As the bead **18** need not tightly fit the groove **4***a* and the wall portion **17** need not contact accurately with the body wall, greater tolerances are permitted in manufacture.

In both forms of the invention, mere disengagement of the cover bead and channel from the body groove and lip, respectively, instantly frees the cover from the body, due to the upwardly flared upper end of the body wall, whereas if the upper end of said body wall were cylindrical, further upward movement of the cover would be required and during such movement the cover bead would frictionally drag on the body wall.

Figures 7, 8 and 9 illustrate a preferred machine method of manufacturing the cover **15**. A sheet metal blank, of circular outline, is shaped by dies **29** and **30** of a press (see Figure 7) into the form of a flared cup **31** provided with a radially projecting lip flange **32**, said flange having a downwardly turned outer edge **33**. The dies provide the cup side wall with a substantially cylindrical lower portion **34**, with a portion **35** flaring upwardly from said portion **34**, and with other portions which constitute the cover wall portions **19** and **20** above described and have therefore been identified by these numerals. The lower end of the vertical portion **34** curves inwardly at **34***a* to the cup bottom and later forms the lower portion of the bead **18**.

The cup **31**, shaped as above described, is transferred to a curling and beading machine (Figure 8) having an arcuate curling rail **36**, an arcuate beading rail **37**, and a roll **38**, the rails **36** and **37** being at the exterior of the cup and the roll **38** within the same. This roll **38** rolls the cup against the rails **36**, **37**, rail **36** inwardly curls the downturned edge of flange **32** as seen at **39**, and the rail **37** and roller **38** cooperate in inwardly deforming the wall portion **34** of Figure 7 into alignment with the flared portion **35** (Figure 7) thereby forming the flared cover wall portion **17** above described and also forming the bead **18**. Finally, dies **40** and **41** of a press (Figure 9) are utilized to downwardly turn the flange **32** of Figure 8, shape the skirt **22** and flatten the curl **39** (Figure 8) to form the hem **26**.

The same method may be used in manufacturing the cover **2** by omitting the steps which form the cover portions **19** and **20**, and the step which flattens the skirt curl into a hem.

From the foregoing, it will be seen that novel and advantageous provision has been made for attaining the desired ends. Attention is invited, however, to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. A container for food products comprising a tapered fiber body having an open outwardly flared end portion thereof turned back into intimate contact with the inner face of said flared end portion, said body wall and said turned back portion adjacent the lower end thereof being beaded outwardly, and a metal cover for said fiber body having a central substantially flat bottom surrounded by a flared wall, said flared wall of the cover at the lower portion thereof being beaded outwardly and shaped to smoothly join with the bottom and to conform to the bead in the body wall and dimensioned so as to snap into said body wall bead when assembled thereon and make a tight seal between the body wall and cover, said metal cover having an offset depending skirt, the upper portion of which is substantially vertical and forms with said flared portion of the cover a channel adapted to receive the upper end of the body wall, the lower portion of the skirt being flared outwardly and then rolled inwardly to provide a hollow bead, said flared portion of the body wall above the bead being initially at an angle slightly greater than the flare of the cover wall and adapted when the cover is placed on the body wall to contact with the vertical wall on the skirt of the cover whereby the body wall is forced inwardly into contact with the flared wall of the cover and squeezed into the channel so as to make a tight seal therewith.

2. A container for food products comprising a fiber body having a side wall provided with an upwardly flared upper end portion, said flared portion being outwardly beaded near its lower end to provide it with an inwardly facing groove, and a metal cover having a bottom and an upwardly flared side wall, said cover side wall having an external bead at its lower end and a substantially cylindrical portion at its upper end, said bead being smoothly joined with the bottom and dimensioned to snap into the aforesaid groove during cover application, the metal being turned outwardly from the upper end of said substan-

tially cylindrical wall portion and then turned downwardly to provide a skirt, the upper portion of said skirt being substantially cylindrical and coacting with said substantially cylindrical wall portion and said outwardly turned portion in providing a downwardly open channel formation which is dimensioned to tightly receive the upper end of the flared body wall portion upon cover application, the outer diameter of said upper end of said flared body wall portion being greater than the inner diameter of said substantially cylindrical upper portion of said skirt so that said upper end of said body wall is deformed inwardly as it is received in said cover channel, said skirt having a widely flared lower end portion to inwardly squeeze said upper end of said flared body wall portion into said channel formation as the cover is pressed into final position.

3. A structure as specified in claim 2, in which the cover side wall flare merges into the side wall cylindrical portion through an outward offset providing in the closed container a spacing between the cover and body wall flares just beneath said offset.

4. A structure as specified in claim 2, in which the upper end portion of the fiber body wall is folded back upon itself to provide a two-ply formation for said upwardly flared body wall portion, both plies of said two-ply formation being outwardly beaded to form said inwardly facing groove, and in which the cover side wall flare merges into the side wall cylindrical portion through an outward offset providing in the closed container a spacing between the cover and body wall flares just beneath said offset.

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