Oct. 31, 1933. A. L. KRONQUEST 1,933,480

METHOD OF MAKING CONTAINERS

Filed Feb. 18, 1932

FIG. 1.

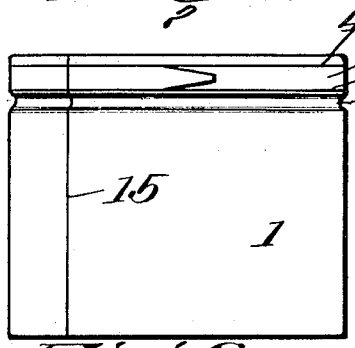


FIG. 2.

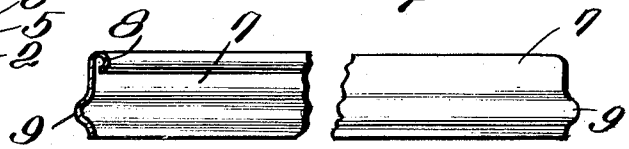


FIG. 3.

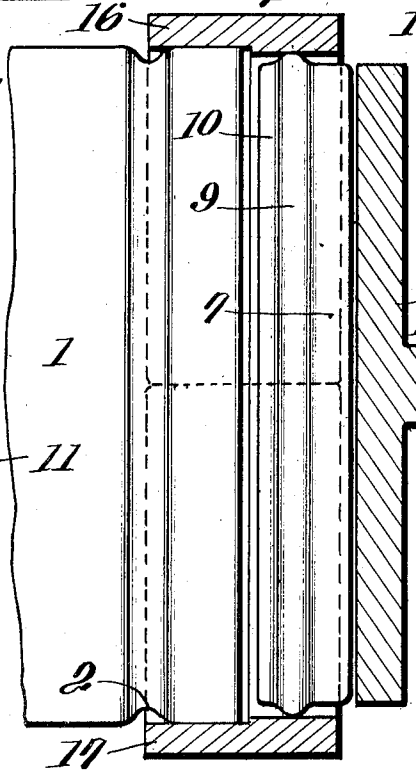


FIG. 4.

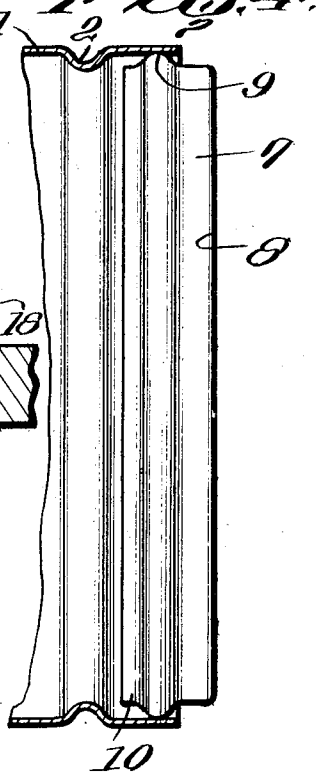


FIG. 6.

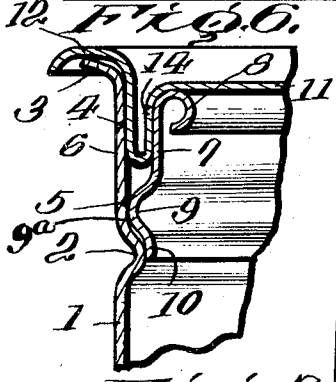


FIG. 7.

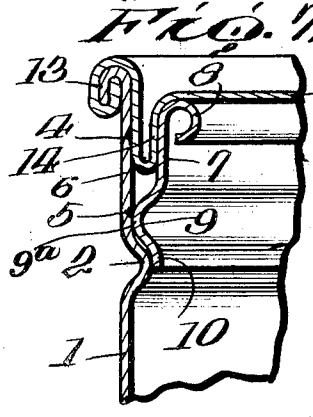
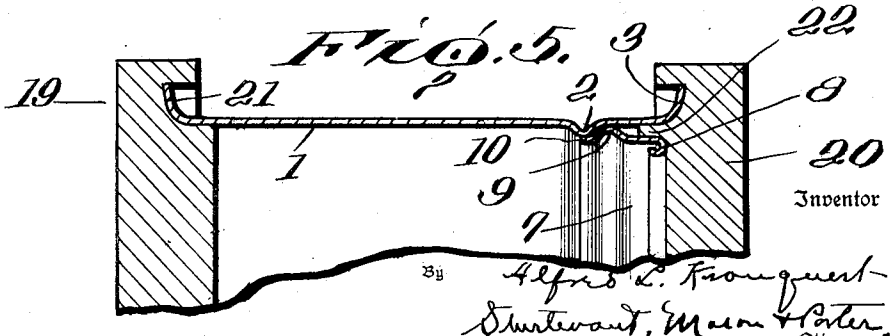


FIG. 5.



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UNITED STATES PATENT OFFICE

1,933,480

METHOD OF MAKING CONTAINERS

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Application February 18, 1932. Serial No. 593,916

10 Claims. (Cl. 113—15)

The invention relates to new and useful improvements in a method of making containers and more particularly a container which is provided with a tearing trip and an inserted collar in the region of the tearing strip.

An object of the invention is to provide a method of making a container body which permits the collar to be readily inserted in the container body, whether said body has been flanged or is without a flange at the time the collar is inserted, and at the same time cause said collar to have a gripping sealing contact with the container body.

A further object of the invention is to provide a method of making containers of the above type, wherein the collar is secured to the container body by spaced gripping sealing line contacts, all of which are beneath the tearing strip so as to maintain the collar as a permanent part of the container body when the sealing strip is removed.

A further object of the invention is to provide a method of making containers of the above type wherein the collar is forced into frictional gripping contact with the container body at the same time that the container body is flanged so as to place said collar in a predetermined position relative to the formed flange.

These and other objects will in part be obvious and will in part be more fully described.

In the drawing which shows diagrammatically the different steps in the carrying out of the method:

Fig. 1 is a sectional view through a container body which has not been flanged and which is ready to have a collar inserted therein.

Fig. 2 is a vertical sectional view through a portion of a collar which is to be inserted in the container body.

Fig. 3 is a view showing diagrammatically the rounding up of the container body, the centering of the collar for the preliminary attaching of the collar to the container body and the plunger for accomplishing the same.

Fig. 4 is a view showing the collar as inserted in the container body only a short distance so as to hold the container body and collar in assembled position.

Fig. 5 is a view showing more or less diagrammatically the flanging of the container body and the seating of the collar in the container body.

Fig. 6 is a vertical sectional view showing the end applied to the container body with the inserted collar preparatory to the seaming of the end to the container body.

Fig. 7 is a similar view showing the finished container with the end seamed thereto.

The invention relates to a method of making a container of the type which may be easily opened by removing a tearing strip formed by scoring the metal in the body of the container. The container produced by the improved method is shown in Figs. 6 and 7 and consists of a body portion 1, which is preferably of cylindrical form. The body of the container is provided with a bead 2 which projects inwardly and with a flange 3. The body wall is scored at 4 and at 5 thus forming between the score lines a tearing strip 6. Inserted within the container is a collar 7 which is of smaller diameter than the inner diameter of the container body. The collar is provided with a curled portion 8 at the upper edge thereof and with a bead 9 intermediate the edges of the collar. This leaves a portion 10 below the bead which is of the same diameter as the portion of the collar above the bead. The bead 9 is of slightly greater diameter at the crown thereof than the inner diameter of the container. The bead 2 is of slightly less diameter at the crown thereof than the outer diameter of the portion 10 of the collar.

When the collar is seated in the container body it makes a line gripping and sealing contact with the body wall just beneath the tearing strip and the body wall at the bead 2 also makes a line gripping and sealing contact at 9^a with the collar. This retains the collar as a permanent part of the container body when the tearing strip is removed and the collar is not only firmly held by the frictional grip of the beads on the body wall and collar wall respectively, but there is a double seal formed by these separate gripping line contacts which prevents any leakage of the material between the collar and the container body when emptying the contents of the container.

The closing end 11 for the container is provided with a projecting flange portion 12 which is rolled into a double seam 13 for attachment to the container body. The end closure is also provided with a depending collar 14 which seats between the collar 7 and the wall of the container. This collar on the closing end is for the purpose of providing an outside slip reclosure when the tearing strip is removed. The container described in detail is shown, described and claimed in my copending application Serial No. 593,915 filed of even date herewith.

The present invention has to do with the method of making the container which has been described in detail. The method consists in forming a cylindrical container body which is indicated at 1 in Fig. 1 of the drawing. The edges of the cylindrical body may be joined either by a lap seam or a lock and lap seam which is diagrammatically indicated at 15. The metal is scored while in the blank along the lines 4 and 5 to form the tearing strip. It is also provided with a bead 2 after it is made into cylindrical form and the edges joined. The collar to be inserted in the container body is shown in Fig. 2. The collar 7 is first formed from a band which is shaped into cylindrical form and the edges joined,

or the collar may be formed by drawing the same from a blank so that it is an endless band. After being formed in band shape, it is then curled as indicated at 8. It is also provided with an outwardly projecting bead 9. This curling of the edge and forming of the bead intermediate the side edges of the collar will form the collar into circular shape of uniform diameter and will permit the collar to be handled as a unit without becoming out of round.

The formed container body 1 is placed in half molds 16 and 17 which round up the end of the cylindrical container body. The container body is without any flange at either end thereof and may be slightly out of round. These half molds engaging the outer face of the container body will bring them into true circular condition. The collar 7 is centered by these half molds and placed in alignment with the body. The lower edge portion 10 of the collar is of considerably less diameter than the inner diameter of the container body and a plunger 18 engaging flat against the outer curled edge of the collar will move the collar into the container body sufficiently to unite the collar and the container body. The bead 9 as noted is slightly greater at its crown than the inner diameter of the container body and therefore the edge portion of the container body engaging the rounded curved face of the bead will be expanded slightly and the bead will possibly be contracted slightly, thus bringing about a very tight line contact between the collar and the container body which will hold the collar firmly in a set position in the body. Thus the container body and assembled collar, as shown in Fig. 4, may be handled and placed in a flanging machine for the purpose of turning flanges in the opposite ends of the container body. The flanging dies are indicated diagrammatically at 19 and 20 in Fig. 5 of the drawing. The container body 1 with the assembled collar 7 is placed between these flanging die heads which move toward each other. The flanging die 19 enters the container body and will curl or roll the edge of the container body into a flange which is indicated at 21. This flanging head is of the usual construction and is preferably provided with a limiting wall to limit the extent to which the flange is turned so as to insure the forming of a flange in the other end of the container body.

The flanging die 20 is provided with a portion 22 which passes into the container body between the collar and the wall of the container body. The collar is of such dimension as to leave an annular space between the collar and the container body and above the bead 9 which receives the collar on the container end, as noted above. The portion 22 on the flanging die is therefore of such dimensions as to sustain the wall of the container body and force the container body to roll or curl so as to form the flange 3. There is likewise a limiting wall on this die which insures that a flange will be formed at the other end of the container body.

As the flanging die moves into the container body and forms the flange 3 on the container body, the collar 7 is forced further into the container body and preferably to a position where the lower edge of the collar is still out of contact with the bead 2. When the container end is placed on the container body and forced into contact with the flange by the seaming chuck, the end will engage the cover and force the collar further into the container body. The lower edge of the collar will engage the bead and said edge portion will yield slightly so as to firmly grip the bead. During the double seaming of the end to the container body, the collar will be finally positioned or seated with the lower edge thereof terminating substantially at the crown of the bead, and with the crown of the bead in the collar slightly below the score line 5. This enables the collar to be so placed in the container body that the upper curled edge 8 will contact with the inner face of the container end 11. This, together with the depending collar 14 on the container end prevents any spilling of the contents during the removal of the tearing strip, even though the container body be in an inclined position to facilitate the rolling of the tearing strip on to a key.

While the method has been particularly described for the inserting of a collar in a container which has not been flanged, it will be understood my improved method may also be used for inserting a collar in a container body which has already been provided with a flange. Inasmuch as the collar is considerably smaller in diameter than the container and the gripping contact between the collar is accomplished solely through the projecting beads, the collar may be easily centered and placed in the container and the beads will through their cam action on the parts, contact therewith further centering the collar and producing a gripping line contact which substantially makes the collar a permanent part of the container body. The bead on the collar is, of course, so positioned that the gripping line between the bead and the container body is below the tearing strip so that when the tearing strip is removed the grip of the container body on the collar is not released.

As has already been noted, the collar may be an endless band made by drawing a metal blank, or it may be a band made from a strip having its ends joined. In either case, the forming of the bead in the collar produces the gripping surface which secures the collar to the container body. This bead is preferably die-formed so that it can be accurately dimensioned and so that the collar may be given a true round shape during the beading of the same.

While I have described the collar as finally seated in the container body by the engagement of the container end therewith and during the double seaming of the container end to the body, it will be understood that the flanging die might be constructed so as to force the collar to its fully seated position, with the lower edge of the collar at the crown of the bead in the container body. In this case, the upper edge of the collar would be placed in a predetermined position relative to the formed flange, and this would insure a proper positioning of the collar relative to the container end, so that it would be in contact therewith, or substantially so. The fact that the collar is held in the container body by frictional contact therewith, permits the positioning of the collar during the double seaming operation, or during the flanging operation, as desired.

In the carrying out of the method the collar end is preferably made by the manufacturer and the container is filled through the other flanged end of the body and the end closed in the packer's seaming machine. It will be understood, however, that the container may be filled through the collar and the end at the collar attached thereto for closing the container if desired.

It is obvious that minor changes in the steps of the method and in the construction described

may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body, forming a collar of smaller diameter than the container body and providing said collar with an outwardly projecting bead intermediate the edges of the collar, which bead is of greater diameter at its crown than the inside of the container body and forcing said collar into the container body until the bead is in gripping sealing contact with the container body along a line beneath the tearing strip.

2. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body, providing said container body with an inwardly projecting bead, forming the collar of slightly larger diameter than the crown of the bead in the container body, providing said collar with an outwardly projecting bead intermediate the edges of the collar, which bead is of slightly greater diameter at its crown than the inner diameter of the container body and forcing said collar into the container body until the bead of the collar is in gripping sealing contact with the container body along a line beneath the tearing strip and the lower edge of the collar is in gripping sealing contact with the crown of the bead in the container body.

3. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body of uniform diameter at and adjacent the ends thereof, forming a collar of smaller diameter than the container body and providing said collar with a projecting bead intermediate the edges of the collar, which bead is of greater diameter at its crown than the container body, entering the end portion of the collar into the container body and forcing said collar into the container body until the bead is in gripping sealing contact with the container body along a line beneath the tearing strip.

4. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body of uniform diameter at and adjacent its ends, forming a collar of smaller diameter than the container body and providing said collar with an outwardly projecting bead, which bead is of greater diameter at its crown than the container body, simultaneously flanging the container body and forcing said collar into the container body to a predetermined fixed position relative to the formed flange on the container body.

5. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body of uniform diameter at and adjacent its ends, providing the container body with an inwardly projecting bead forming a collar of a diameter smaller than the container body and slightly larger than the diameter of the bead at its crown, forcing said collar into said container body and the lower edge portion of said collar into gripping sealing contact with said bead.

6. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body of uniform diameter at and adjacent its ends, providing the container body with an inwardly projecting bead forming a collar of a diameter smaller than the container body and slightly larger than the diameter of the bead at its crown, providing said collar with an outwardly projecting bead intermediate the edges of the collar, which bead is of slightly greater diameter at its crown than the container body, forcing the collar into the container body until the bead in the collar is in gripping sealing contact with the container body along a line beneath the tearing strip and the lower portion of the collar is in gripping sealing contact with the bead in the container body.

7. The method of making containers consisting in forming a tearing strip, forming said body blank into a container body of uniform diameter at and adjacent its ends, providing the container body with an inwardly projecting bead forming a collar of a diameter smaller than the container body and slightly larger than the diameter of the bead at its crown, providing said collar with an outwardly projecting bead intermediate the edges of the collar, which bead is of slightly greater diameter at its crown than the container body, simultaneously flanging said container body and forcing said collar into the container body until the lower edge of the collar makes gripping sealing contact with the bead in the container body.

8. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a cylindrical container body, forming a collar of smaller diameter than the container body and providing the collar with an outwardly projecting bead, which bead is of slightly greater diameter at its crown than the container body, aligning the collar and container body and forcing the collar into the container body a short distance so as to unite the collar and a container body as a unit, subjecting said container body with the collar in gripping contact therewith to a flanging head for simultaneously flanging the container body and forcing the collar entirely within the container body and to a predetermined position relative to the formed flange.

9. The method of making containers consisting in forming a body blank with a tearing strip, forming said body blank into a container body, forming a collar of smaller diameter than the container body and providing said collar with an outwardly projecting bead intermediate the edges of the collar, which bead is of slightly greater diameter at its crown than the inside of the container body, forcing the collar into the container body until the lower edge thereof is adjacent the bead in the container body, placing an end on the container body, seaming the end to the container body, and simultaneously forcing the collar to its fully seated position with the lower edge thereof substantially at the crown of the bead in the container body.

10. The method of making containers consisting in forming a body blank with a tearing strip, forming said blank into a container body, forming a collar having a portion of greater diameter than the inside of the container body and with the lower portion of said collar of less diameter than the container body, forcing said collar into said container body and simultaneously flanging the container body.

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