Dec. 1, 1931. R. PATTERSON 1,833,973

METHOD OF MOLDING GLASS CONTAINERS

Filed Feb. 5, 1931

Fig. 1.

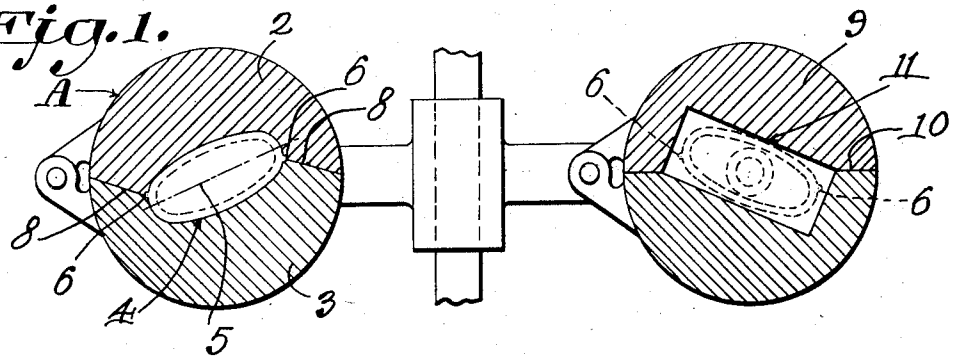


Fig. 4.

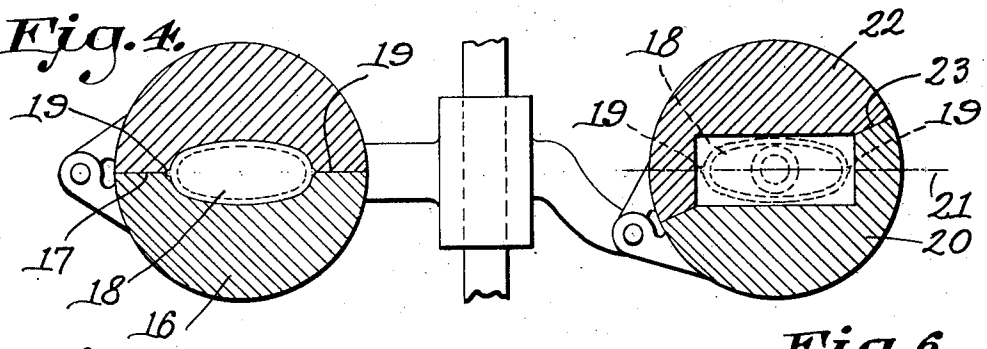


Fig. 2.

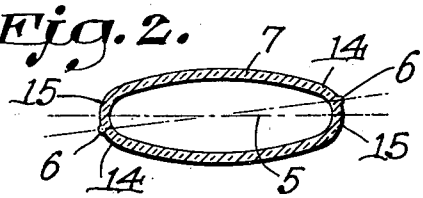


Fig. 6.

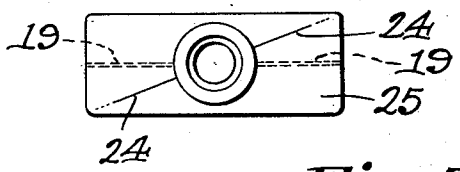


Fig. 3.

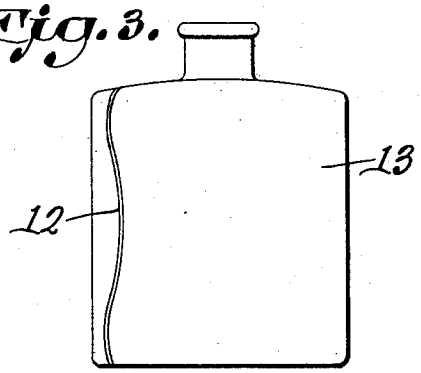


Fig. 7.

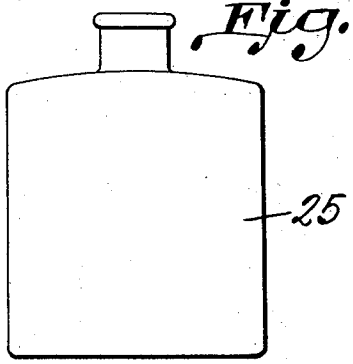
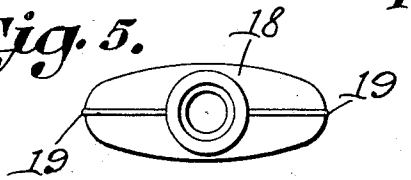


Fig. 5.



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UNITED STATES PATENT OFFICE

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METHOD OF MOLDING GLASS CONTAINERS

Application filed February 5, 1931. Serial No. 513,747.

This invention relates to an improved method of molding glass bottles and like containers and more especially to the formation of oblong bottles, etc. In producing an oblong container of glass it has been the practice heretofore to make an elliptical blank in a mold the meeting faces of the members of which have been in a plane extending diagonally across the cavity in which the blank is to be shaped. This has been done with the idea that when the blank is transferred to the finishing mold, the ribs or seams produced by the blank mold will lie in the plane of the meeting faces of the finishing mold members. These faces extend diagonally across the cavity in the mold from one corner to another. Consequently when the blank is given its final shape in the finishing mold the ribs or seams first formed are supposed to be merged by outward pressure into the ribs or seams produced by the finishing mold. These latter ribs are intended to extend along diametrically opposed corners or angles of the bottle so as not to be noticeable.

The foregoing method has not resulted in the production of satisfactory containers but has produced irregular ribs or seams extending along opposed faces of the bottles, giving a waved effect that is very objectionable.

It is an object of the present invention to produce an oblong container of glass which will have the blank ribs or seams obliterated while the ribs or seams produced by the finishing mold will be properly located straight along diametrically opposed corners and thereby eliminate the irregular, waved effect noticeable in similar containers heretofore blown.

In the accompanying drawings have been shown the several steps of the method whereby the improved glass containers can be produced, as well as certain steps heretofore followed which have proven objectionable.

In said drawings:

Figure 1 is a view in diagram showing the positions of blanks in the blank mold and the finishing mold, when the usual procedure is followed.

Figure 2 is an enlarged section through the usual elliptical blank showing the line of separation of the blank mold and the relative bulk of the opposed portions of the blank.

Figure 3 is an elevation of an oblong bottle produced by the method shown in Figure 1.

Figure 4 is a view similar to Figure 1 illustrating the method constituting the present invention.

Figure 5 is a plan view of a blank produced in the blank mold in carrying out the present method.

Figure 6 is a plan view of the finished oblong bottle.

Figure 7 is an elevation of the bottle.

Prior to the present invention, oblong bottles and the like have been blown with the seam on the finished article extending diagonally thereacross and along diametrically opposed corners. The blank has been formed in a mold A the members 2 and 3 of which provide an elliptical cavity 4, the long diameter 5 of which is disposed obliquely to the meeting faces of the mold members. The gather has been blown in this mold and small ribs or seams 6 have been produced on blank 7 where the members 2 and 3 come together at 8. As clearly shown in Figure 2 the ribs 6 are spaced laterally from the long axis 5 of the blank.

Following the formation of the blank 7 it has been transferred to the cavity in the finishing mold 9 where it has been positioned with the seams or ribs 6 located adjacent to the meeting faces 10 of the members of the mold, which faces, as shown in Figure 1, coincide with one diagonal of the mold cavity 11. The blank is then given its final blow so as to be expanded against the walls of cavity 11 and produce a finished bottle.

As the ribs on the blank were placed in position adjacent to the meeting faces of the members of mold 8 it would naturally be supposed that they would merge into the diagonal ribs produced by the finishing mold and be concealed therewith in the diametrically opposed corner portions of the bottle but it has been found in practice that such is not the case. On the contrary the ribs 6 have drawn laterally out of the plane of the corners and have produced a finished bottle or the like on which the ribs are formed in ir-

regular or waved lines along opposed faces of the bottle adjacent to the corners, thereby producing an objectionable, unsightly appearance as shown at 12 on the bottle 13 in Figure 3. Because of this objection and failure to discover the cause, many manufacturers have discontinued the manufacture of oblong bottles having corner seams and have reverted to the practice of making bottles with matching mold seams along the centers of the narrow sides.

By careful study of the methods of bottle manufacture I have found that when a blank is produced as in Figure 1 and then transferred to the finishing mold, those portions 14 of the blank which constitute the shallow ends of the halves formed in the respective mold members 2 and 3 contain less metal than the adjacent deeper ends 15 of the blank. Consequently during the transfer the shallow portions 14 will cool and harden more rapidly than the deeper portions 15. Therefore when the blank is blown in the finishing mold the chilled harder portions 14 will exert a restraining influence on the ribs 6, and drag them laterally out of the plane of the meeting faces 10 so that the objectionable result described and shown in Figure 3 will be obtained.

The present invention has been evolved from a knowledge of the foregoing conditions and for the purpose of correcting them. It includes the step of forming the blank in a mold 16 the meeting faces 17 of which coincide with the long diameter of the blank 18. The ribs 19 lie in the same plane with the long diameter of the elliptical blank and said blank is of the same proportions at both sides of the rib. Thus during the transfer of the blank it will chill and harden uniformly adjacent to the ribs.

The blank thus produced is next placed in the finishing mold 20 at such an angle that its ribs will lie in the same plane with the long diameter 21 of the cavity 22 which is disposed obliquely to the plane of the meeting faces 23, said faces intersecting diametrically opposed corners of the cavity.

The blank is next blown to produce its final shape. This will cause equal distention of the ribbed portions against the end walls of the cavity and cause the obliteration of the ribs 19 by flattening them against the adjacent walls of the mold. As the lateral stresses are equal at both sides of each rib, no waved effect will be produced and the ribs 24 which are produced by the finishing mold will be merged into the corners of the finished container 25 and extend straight therealong.

What is claimed is:

1. The method of producing an oblong glass container which includes the step of forming an elliptical blank with ribs extending lengthwise of the blank in the same plane with the longitudinal axis of the ellipse thereby to insure uniform chilling of the blank at opposite sides of the ribs, and thereafter blowing the blank in an oblong cavity divided diagonally of the cavity and blank, thereby to produce straight corner ribs on the finished container, and to flatten the blank ribs against opposed flat walls of the cavity to obliterate said ribs without lateral distortion.

2. The method of producing an angular glass container which includes the step of forming a rounded blank with ribs extending lengthwise of the blank in the same plane with the longest diameter of the blank thereby to insure uniform chilling of the blank at opposite sides of the ribs, and thereafter blowing the blank in an angular cavity divided diagonally of the cavity and blank, thereby to produce straight corner ribs on the finished container, and to flatten the blank ribs against opposed walls of the cavity to obliterate said ribs without lateral distortion.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ROBERT PATTERSON.