

G. W. BEADLE.
METHOD OF REMOVABLY APPLYING END CLOSURES TO VESSELS.
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1,035,305.

Patented Aug. 13, 1912.

Fig. 1.

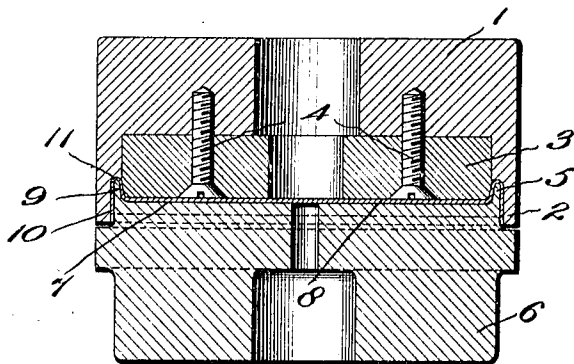


Fig. 2.

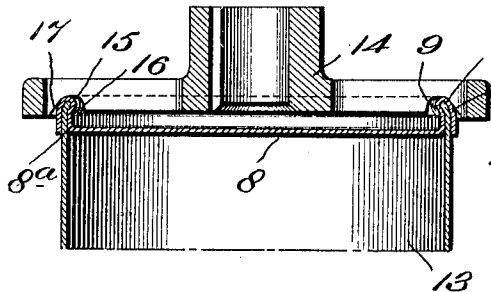


Fig. 3.

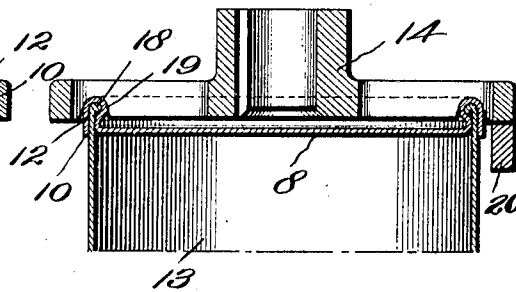


Fig. 6.

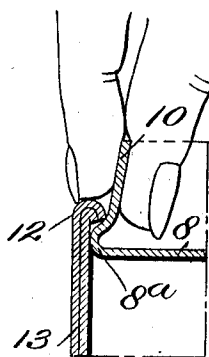


Fig. 4.

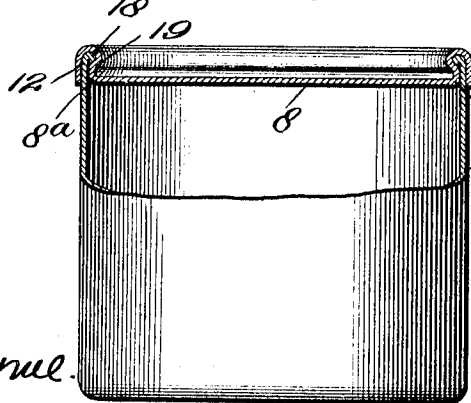
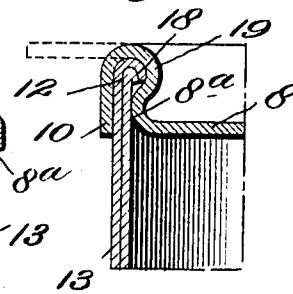


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

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METHOD OF REMOVABLY APPLYING END CLOSURES TO VESSELS.

1,035,305.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed February 28, 1911. Serial No. 611,448.

To all whom it may concern:

Be it known that I, GEORGE W. BEADLE, a citizen of the United States, residing at Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Methods of Removably Applying End Closures to Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a method of removably applying end closures to cartons, particularly to those of the type disclosed in my co-pending application Ser. No. 611,451 dated February 28, 1911 wherein the closure consists of a dished disk having a securing flange and an outlying apron; and has for its purpose a manner of applying such closures to vessels and securely locking the same by forming complementary interlocking elements on the carton rim and closure flange respectively, and ironing the apron against the carton's outer surface, all in one continuous operation, and all to the end that a tighter locking joint and more effective liquid seal is obtained than heretofore; also to keep the pouring rim of the vessel in its sterilized condition, and wherein the closure may not be removed and replaced without showing evidences thereof.

The manner of making the closures and the various stages in the operation for applying the same is described in detail in the following specification, and the necessary apparatus for carrying the same into effect is disclosed in the accompanying drawings wherein:—

Figure 1 is a central vertical sectional view through the dies for forming the closure. Fig. 2 is a central sectional view of the closure applied to the carton showing the spinner as forming the initial interlocking therebetween. Fig. 3 is a similar view showing the completion of this operation. Fig. 4 is a view of the carton and closure, partly in section, to show the interlocking joint. Fig. 5 is an enlarged detail section of Fig. 4, and; Fig. 6 is an enlarged detail section illustrating the manner of removing the closure.

The closures are made by the apparatus disclosed in Fig. 1, consisting of an upper

or female die 1 having an annular and downwardly disposed lip or rim 2, and a central and downwardly disposed plate or head 3, which plate is removably secured to the die 1 by a plurality of screws 4. The projecting portion of the head 3 provides with the rim 2 an annular groove or channel which is of substantially inverted U-shaped design and is adapted to receive the annular edge 5 carried by the lower or male die 6. In operation the die head 3 cooperating with the recess, provided by the edge 5, dishes the inserted disk 8; and said edge 5 cooperating with its respective elements on the female die forms on the disk its inner or locking flange 9, the outlying apron 10, and the rim 11 formed at the juncture of said flange and apron.

In applying the closure to the carton said closure, when in the form shown in Fig. 1, is loosely fitted over and infolds the open end wall 12 of the carton 13, and by the means of a die 14 the closure is locked to said carton wall by a spinning operation.

The spinning die 14 is provided with a channel 15 having a relatively abrupt inner curved surface 16 and a gradual and outwardly disposed surface 17. In the initial spinning operation the surface 17 curls or turns inwardly the flange 9 and apron 10 infolding the rim 12 into substantially that position shown in Fig. 2. This operation partially crimps the surrounding edge 8^a of the dished portion 8. In the further spinning operation the surface 16 is brought into cooperation with the surface 17 and forms on the edge of the pouring rim 12 a bead 18 and on the closure rim a complementary bead 19 inclosing and interlocking therewith. This operation also finally effects the crimping of the edge 8^a binding the same against the inner carton surface 12. During the foregoing operation it may, in some instances, be desirable to iron the apron 10 against the carton surface and to this end it is proposed to equip the spinning tool 14 with any suitable ironing device as illustrated diagrammatically at 20 in Fig. 3. By thus interlocking the removable flexible closure of the carton the following advantages are obtained, viz:—A more secure and liquid tight joint is effected than heretofore; the pouring edge of the carton is maintained in its sterilized condition; the apron

may be flexed for the ready removal of the closure as indicated in dotted lines in Fig. 5 and in full lines in Fig. 6. Further in thus removing this closure of flexible material a cup is made which catches the dirt; and the closure can not be removed or replaced without evidences thereof, since the flexing of the apron breaks or cracks the outer surface thereof.

10 It is evident that those skilled in the art may vary the details of the steps disclosed without departing from the spirit of the invention, and therefore I do not wish to be limited to such features except as may be
15 required by the claims.

What I claim is:—

1. The method of removably applying locking closures to vessels which consists in closing the vessel with a dished disk of flexible material having a protruding rim of
20 double thickness; and curling the edge of said rim by means of a spinning operation and thereby forming a bead on the marginal edge of the vessel, while leaving an outlying
25 apron and producing a hollow interlocking bead on the closure at the edge of the rim, substantially as described.

2. The method of removably applying locking closures to paper vessels which consists in closing the vessel with a paper disk,
30 and infolding the wall of the vessel and marginal edge thereof with a rim of double thickness; turning inwardly the marginal edge of said rim by means of a spinning operation and thereby forming a bead on the
35 marginal edge of the vessel, and a complementary interlocking bead on the inturned edge of the closure, and in the same operation ironing the outer thickness of said rim
40 against the wall of the vessel, substantially as described.

3. The method of removably applying locking closures to cartons which consists in closing the vessel with a dished paper
45 disk and leaving a protruding rim; turning inwardly said rim by means of a spinning operation to form interlocking beaded portions on the carton's marginal edge and the rim edge of the closure respectively, and
50 forming on the dished portion of the disk an oppositely disposed bead contacting with the interior surface of the carton, substantially as described.

4. The method of removably applying
55 locking closures to cartons which consists

in closing the vessel with a dished paper disk and leaving a protruding rim infolding the end of the carton wall, and an apron disposed against and extending longitudinally of the carton's exterior surface; turning
60 inwardly said infolding rim by means of a spinning operation to form a bead on the marginal edge of the carton and a complementary interlocking bead on the edge of said infolding rim; and in the same operation
65 forming on the dished disk portion an oppositely disposed bead contacting with the carton's interior surface, and ironing the apron against the carton, substantially as described.

5. The method of removably applying locking closures to cartons which consists in closing the vessel with a paper disk having a dished portion fitting within the carton and an infolding rim overlying a portion of the carton's inner surface and a relatively greater portion of the carton's outer surface; turning said rim inwardly by spinning to form a bead on the marginal edge of the carton and a complementary interlocking bead on the edge of said infolding rim, and in the same operation forming on the dished disk portion an oppositely disposed bead contacting with the interior surface of the carton, and ironing the outer
85 infolding rim portion against the exterior carton surface, substantially as described.

6. The method of removably applying locking closures to cartons which consists in closing the vessel with a paper disk having a dished portion closely fitting within the carton, and having a protruding rim closed by infolding the open end of the carton's wall; turning said rim inwardly by spinning to form a bead on the marginal edge of the carton and a complementary interlocking bead on the edge of the infolding rim, and by and during the same operation forming around the dished portion an oppositely disposed bead contacting with
100 the interior surface of the carton immediately beneath said interlocking beads, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

GEORGE W. BEADLE.

Witnesses:

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