

1,016,390.

Fig. 1.

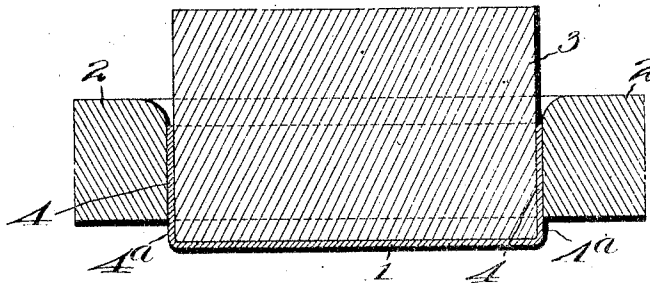


Fig. 2.

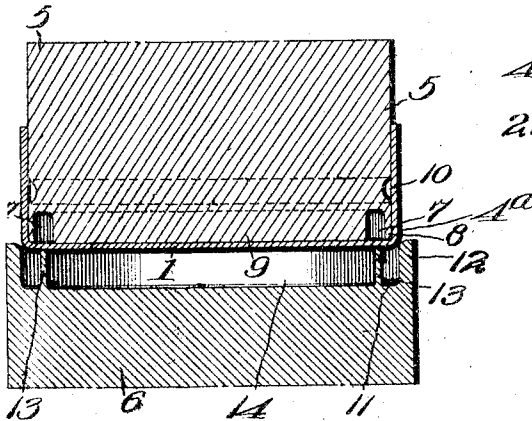


Fig. 4.

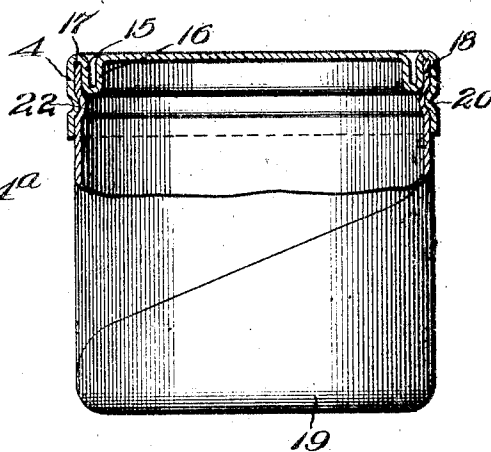
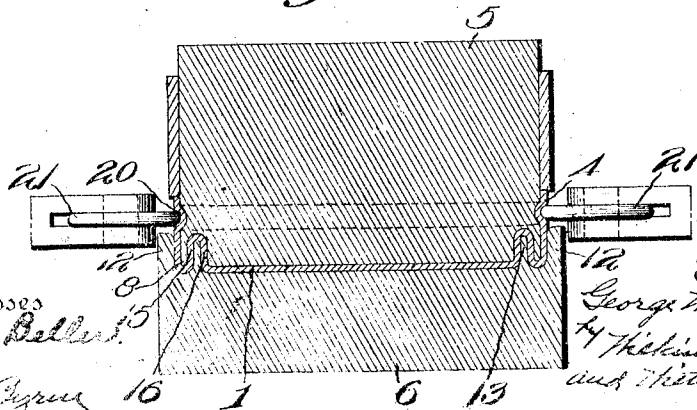


Fig. 3.



Witnesses

Edwin J. Bell.

H. H. Rogers

Inventor
H. Beale
James Fisher
Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. BEADLE, OF BAYONNE, NEW JERSEY, ASSIGNOR TO SINGLE SERVICE PACKAGE CORPORATION OF AMERICA, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

METHOD OF MAKING REMOVABLE END CLOSURES FOR VESSELS.

1,016,390.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Application filed March 18, 1911. Serial No. 615,421.

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 Making Removable End Closures for 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 making removable end closures for vessels, particularly for cartons and of that type of closure disclosed in my co-pending application for U. S. Patent, Ser. No. 611,450 dated February 28th, 1911.

The invention has for its purpose a method of making such closures from flexible disks by dishing the disk to fit the carton, and provide an outlying flange or apron which constitutes the closure securing means and protector for the pouring rim of the vessel; folding a portion of the disk body closely upon itself to provide a rigid reinforcing and supporting flange which fits wholly within the vessel; and in so constructing and arranging the several parts that the exterior surface of the closure lies substantially flush throughout with the exterior surface of the carton body.

A suitable apparatus for carrying the method into effect is disclosed in the accompanying drawing wherein:—

Figure 1 illustrates in vertical central section the dies for initially forming the closures from the disks. Fig. 2 is a vertical central sectional view of the dies for finally shaping the dished disks. Fig. 3 is a view similar to Fig. 2 showing the parts on the completion of the operation, and with the rollers for beading the apron, and Fig. 4 is an elevation, partly in section, of a closure made in accordance with this method and showing the closure applied to the vessel.

In carrying out the process the disks 1 are drawn through a female die 2 by a male die 3 to dish said disks and provide the same with vertical and relatively deep flexible aprons 4, as shown in Fig. 1. In the next step of the operation the dished disk 1 is closely fitted over the end of a mandrel 5 and shaped by a spinning tool 6 which co-

operates with said mandrel. The mandrel 5 is constructed on the end face thereof with an annular and relatively deep channel or groove 7, providing a circumferential flange 8 and a head 9 concentric therewith. On its peripheral face the mandrel 5 is provided with an annular groove 10 having a curved surface in cross section. The spinning tool is constructed with an annular channel 11 providing a rim 12 and forming a complementary disk shaping member with the flange 8 of the mandrel. The spinning tool is also provided with an annular thin flange or blade 13 providing the complementary forming member for the groove 7. The end of the spinning tool within the flange 13 is formed with a recess 14 complementary with and adapted to receive the head 9 of the mandrel.

In the actual spinning operation the blade 13 moves within the channel 7 and draws the apron portion 4^a over the marginal rim of the flange 8 and forces the same in a folded condition within the channel 7, and since said channel and flange are relatively narrow it results that the folded-in portions 15 and 16 are brought into substantially close contact and thus provide a rigid supporting or reinforcing flange for the closure. Simultaneously with this operation the flange 8 enters the channel 11 of the spinning tool and forms the annular space 17 between the flange portion 15 and the apron 4, which space is adapted to receive the end wall 18 of the closure 19, as shown in Fig. 4. In the next step of the operation the apron 4 is formed with an annular bead 20 by a pair of rollers 21, that work within the annular groove 10, as shown in Fig. 3. The bead 20 is adapted to spring within the annular groove 22 of the carton to lock the closure in position, as shown in Fig. 4.

The closures are constructed from paper material, and in the spinning operation are gradually drawn into the shape shown without being subjected to excessive strain at any particular part thereby avoiding tearing or other mutilation of the material.

What I claim is:—

1. The method of making removable end closures for cartons consisting in dishing a disk by a drawing operation and providing an annular and relatively deep flexible apron; then drawing inwardly by a spin-

ning operation the body of the disk into a fold parallel with the apron to provide a substantially rigid flange; and finally forming in the apron of the disk, by a rolling operation a locking element for the closure, substantially as described.

2. The method of making removable end closures for cartons consisting in dishing a disk by a drawing operation and providing an annular and relatively deep flexible apron; drawing inwardly by a spinning operation the body of the disk into a fold parallel with and of less depth than the apron to provide a substantially rigid flange; and finally forming in the apron of the disk, by a rolling operation, an inwardly disposed locking bead for the closure, substantially as described.

3. The method of making removable end closures for cartons consisting in dishing a disk by a drawing operation to provide an annular and relatively deep flexible apron; drawing inwardly by a spinning operation the body of the disk into a fold parallel with and of less depth than the apron to provide a rigid flange of double thickness, and providing an annular groove intermediate said

apron and flange to receive the open end wall of the carton; and finally forming, by a rolling operation, a bead in the apron adjacent the marginal edge thereof, to provide a locking element for the closure, substantially as described.

4. The method of making a removable end closure for cartons consisting in dishing a disk by a drawing operation to provide an annular and relatively deep flexible apron; forming from the body of the disk by a spinning operation, a rigid flange of closely fitting double thickness, disposed parallel to and of less depth than the apron, and providing an element to enfold the pouring rim of the carton, and with the edge of the enfolding portion lying substantially flush with the surface of the disk; and finally, by a rolling operation, forming a bead in the apron for locking the closure to the carton, substantially as described.

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

GEORGE W. BEADLE.

Witnesses:

H. H. RODGERS,

FRANK F. EDWARDS.