Feb. 10, 1925. 1,525,484

W. P. WHITE

REMOVABLE BEAD CAP

Filed Jan. 6, 1921

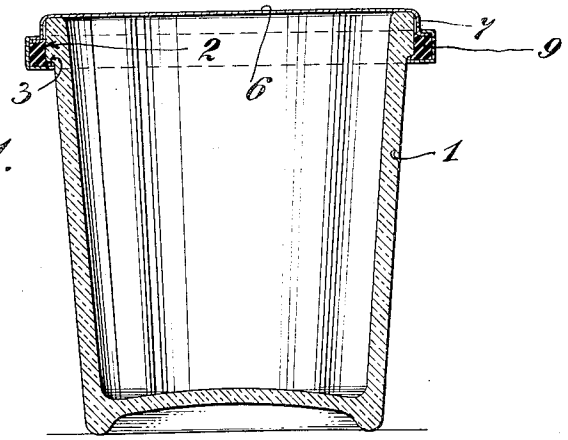


Fig. 1.

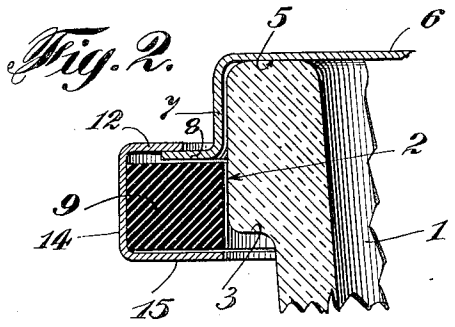


Fig. 2.

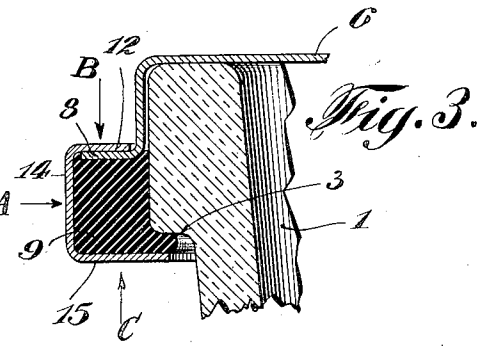


Fig. 3.

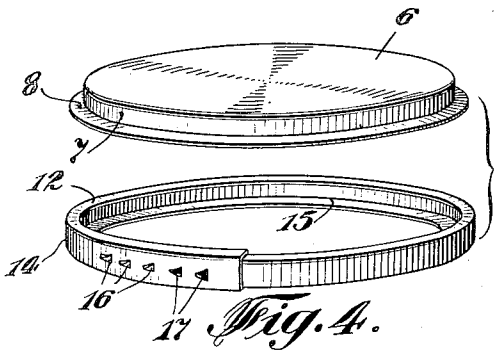


Fig. 4.

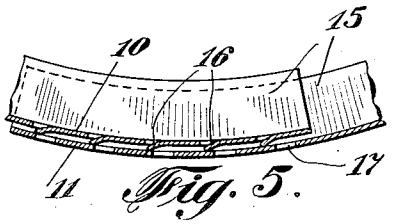


Fig. 5.

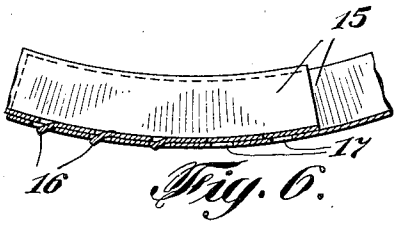


Fig. 6.

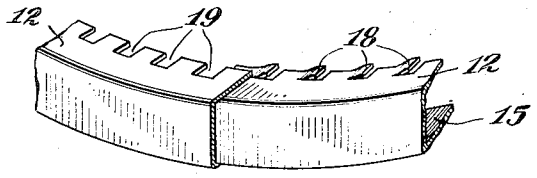


Fig. 7.

Inventor
William P. White

By his Attorney
George Ramsey

Patented Feb. 10, 1925. 1,525,484

UNITED STATES PATENT OFFICE.

WILLIAM P. WHITE, OF BROOKLYN, NEW YORK, ASSIGNOR TO ANCHOR CAP AND CLOSURE CORPORATION, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

REMOVABLE BEAD CAP.

Application filed January 6, 1921. Serial No. 435,315.

To all whom it may concern:

Be it known that I, WILLIAM P. WHITE, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Removable Bead Caps, of which the following is a specification.

This invention relates broadly to sealing caps and more specially to a cap adapted for forming hermetic seals.

The principal object of the present invention is a cap of the side seal type provided with a bead adapted for removal when the package is opened.

Another and important object of the present invention is a cap of the side seal type adapted for sealing with relatively low pressure and forming a lock adapted to withstand internal pressure within the package.

A still further object of the present invention is a cap of the side seal type wherein a bead is provided of material separate from the cover portion and with the ends of the bead formed with locking members adapted to lock the bead in contracted position when the seal is formed.

A still further object of the present invention is a cap of the side seal type with the cover portion and bead being separately formed and with a portion of the bead being adapted to slide over a portion of the cover during sealing operation and means being provided to lock the bead in contracted relation when the sealing operation is completed.

Another and important object of the present invention is a cap of the side seal type provided with a gasket carrying bead formed of a piece of material separate from the cover portion and arranged in such manner that when the seal is formed a part of the bead slides over a part of the cover portion and compresses the gasket against the side wall of a suitable container.

More specifically, one feature of the present invention comprises a cap of the side seal type with a removable bead adapted to carry a gasket and with the cap adapted for use in connection with containers having shouldered sealing surfaces in such manner that when the seal is formed a portion of the cap extends beneath the shoulder and locks the cap in position on the container.

Other and further objects of the present invention will in part be obvious and will in part be pointed out hereinafter in the specification following by reference to the accompanying drawings wherein like parts are represented by like characters throughout the several figures thereof.

It is realized that the present invention may be embodied in constructions other than those specifically shown herewith so therefore the present disclosure is to be understood as illustrative and not in the limiting sense.

Figure 1 is a sectional view illustrating a package embodying one form of the present invention and wherein the closure is sealed on the container;

Figure 2 is a detail cross-sectional view of a portion of the container wall and of the bead of the closure before the seal is made;

Figure 3 is a view similar to Figure 2 illustrating the completed seal and showing the direction of operation of the sealing forces;

Figure 4 is a perspective view illustrating a cap disassembled without the gasket;

Figure 5 illustrates one form of anchoring means for the end of the bead prior to sealing;

Figure 6 illustrates the anchoring means shown in Figure 5 after the sealing operation;

Figure 7 illustrates a different type of anchoring means.

The present invention, which relates to improvements in the side seal capping art, more specifically is an improvement upon the cap disclosed in the patent to J. V. Hull No. 795,283, July 25, 1905. In caps of this character which are manufactured by billions and used in corresponding numbers, it is of extreme importance that the cap be of such design as to conserve materials as much as possible. A very small amount of material saved on an individual cap, at the end of the year, amounts to an enormous saving in the manufacture of the caps. Furthermore, the saving in sealing pressures also pyramids, and if a small saving is made on each individual seal it means a large saving of power at the end of the year.

In the prior art referred to the sealing operation took place by vertical compression of parts in such manner as to cause

lateral compression of a suitable gasket, thereby forming a side seal. The parts were constructed in such manner that the diameter of the metal portions of the cap were at all times larger than the mouth of the vessel over which the cap fits. In such cases, if the sealing machine were not sufficiently powerful, or if for any other reason the gasket was not forced under the shoulder provided on the neck of the vessel, the cap lacked locking facilities to resist being blown off by internal pressure. Furthermore, the caps of the prior art, having removable beads, relied upon the resilience of the bead itself to hold it in position on the cap. It is to be understood that the present type of caps are distinct from what are known in the art as " band " caps, wherein a locking band without a gasket is fitted over a rib or collar on the jar or bottle and is locked in position by means of a slot and tongue. Such caps are top seal caps and not side seal caps and the parts require application by hand and are not well adaptable to machine application.

The present invention overcomes the difficulties of the known art by providing a side seal cap wherein the cover portion of the cap and the bead are formed of separate pieces of material. Preferably the bead is an open ring, having overlapping ends which are adapted to telescope slightly when the cap is sealed. In order to insure the parts remaining in sealed relation, suitable locking tongues are provided in the telescoping portions of the bead and preferably these tongues are associated with notches in such manner that the relation of the tongues and the notches are progressive so that small amounts of contraction are sufficient to catch at least one of the tongues in its respective notch, thereby holding the bead in suitable contracted form. The upper edge of the bead and the outer flange of the skirt of the cover of the cap are adapted also to telescope radially during the sealing operation so that the under edge of the bead moves radially inward. The size of the cap is such that where the cap is used in connection with a shouldered receptacle the under edge or flange is of sufficient size to easily drop over the shoulder and when the sealing operation is completed the under edge of the bead is radially moved inward to such a degree that it is beneath the shoulder on the vessel, thereby providing a definite lock which effectively prevents the cap from being blown off by internal pressure. During the sealing operation the gasket is automatically forced into intimate association with the lower portion of the skirt of the cap and also with the side sealing face of the vessel, whereby a positive hermetic seal is provided of sufficient stability and security to insure prevention of leakage of gases either into or out of the sealed receptacle so that the receptacle may be sealed under a vacuum or under internal pressure. The seal may be made by various types of sealing mechanism of which the patent to Townsend No. 1,154,352 September 21, 1915, is an example. In this form of sealing device an anvil rests on the top of the bead and segmental jaws swing inwardly to compress the bead radially and then the jaws are moved toward the anvil whereby the bead is compressed laterally, thereby the tongues and slots act to lock all parts effectively in compressed position.

Referring now to the drawings, which more or less diagrammatically illustrate a preferred embodiment of the present invention, a container 1 which may be of glass or other suitable substance capable of sustaining pressure necessary for side seals, is preferably provided adjacent the mouth thereof with a sealing zone 2 which may be formed with a shoulder 3 adjacent the lower edge of the sealing zone. In view of the fact that the present seal is a side seal, the upper portion 5 of the sealing zone may be rounded, thereby obviating special finishes, etc., which tend to render the package more liable to fracture and which increases the cost of manufacture.

The closure member adapted to cooperate with the container 1 preferably comprises a lid having a cover portion 6 adapted to rest on the end of the package and preferably is provided with a short depending skirt 7 adjacent which is an outstanding annular flange 8. A separate member comprising a hollow channel annular bead cooperates with the flange 8 to form a retaining space for a suitable gasket 9. This annular bead preferably is formed with overlapping ends 10 and 11 (Figs. 5 and 6) and is provided with an upper flange 12, a side wall 14, and a lower flange 15. The upper flange 12 is adapted to have a radial telescopic movement over the flange 8 on the cover and the width of flanges 8 and 12 are such that when the parts are compressed to form the seal these flanges do not quite reach their maximum possible travel. The lower flange 15 is longer than the upper flange 12 and before the cap is sealed it terminates substantially adjacent the inner edge of the gasket 9. The ends 10 and 11 of the annular bead are provided with anchoring means which may take the form of tongues 16 in one wall and slots 17 in the other wall, as shown in Figure 5, or this anchoring means may comprise tongues 18 (Fig. 7) in one end of the flange 12 and openings 19 in the adjacent and overlapping end of the flange 12, or the tongues and slots or other anchoring means may be provided in the lower flange 15.

Preferably where the tongue and slot construction is used as is illustrated in Figures 5 and 7, the tongues are arranged in series having a spacing dimension slightly different from the spacing interval of the slots so that when the bead is compressed during sealing, thereby causing a telescopic movement of the ends thereof, the tongues will progressively come into engagement with the slots, thereby catching and holding any small movement of the telescoping action. As illustrated in Figure 3, the seal of this cap preferably is formed by compressing the bead both radially (arrow A) and laterally (arrows B to C) so that where the bead is in the form of a rectangular channel the compression takes place on three sides thereof. This forces the gasket tightly against the sealing surface and where this surface is provided with a shoulder as illustrated in Figure 3 a portion of the gasket material may tend to flow under the shoulder and the lower flange 15 will be pushed radially inwardly so that it lies beneath the shoulder. This provides a very secure locking of the closure in position on the container to enable the sealed package to withstand considerable internal pressure without the cap being blown off. This is particularly desirable where the packages are to be heat treated or "processed" as is required for many food packages.

Another important feature of the present invention is the saving in material which is effected by the construction shown. In side seal caps having beads formed integral with the cover portion it is necessary that the diameter of the flat blank of material from which the cap is formed must be of a diameter sufficient to form the cap and the bead. In the present case the size of the flange forming the cover part is only of a diameter sufficient to form the cover, the skirt, and the flange 8, and the flange from which the bead is formed is cut from a flat strip of material so that there is no loss of material between adjacent flange blanks. In view of the above facts the cap comprising the present invention effects a saving in material since where a large circular flange is used a larger area of scrap is formed between the blanks and all portions of the blank which subsequently are formed into walls at right angles to the surface of the original blank necessarily are contracted upon themselves by the difference between the diameter of the cylindrical wall and the diameter of the outer edge of the circular blank from which the wall is formed. It has been found in practice that in the aggregate the difference in material between a cap in accordance with the present invention and a cap wherein the same shape is made from a single blank is a great saving in material. Furthermore the caps of the prior art, of this side seal type having beads integral with the covers have been very hard to remove when sealed, whereas the present cap may be removed by releasing the locking tongues and slots when the bead may be pulled away and the cover freed.

Having thus described my invention, what I claim is:

1. An article of manufacture comprising a closure cap having a cover portion, a separate flanged bead adapted to extend over the edge of said cover portion and being capable of telescoping radial movements relatively to said cover portion, with the ends of said bead being overlapping whereby said ends telescope circumferentially when said beads and said cover portion are telescoped radially, and a plurality of means to lock the ends of said bead in telescoped relation when the sealing is completed said means being differentially spaced to establish a locking interval which is less than the spacing of the means.

2. As an article of manufacture a closure cap comprising a cover portion, a depending skirt an annular flange extending outwardly at right angles from said skirt, a detachable channel bead enclosing a portion of said flange and being adapted to be radially telescoped with reference thereto, a gasket within said bead, said bead comprising an open ring with overlapping ends, and locking means on the ends of said bead to hold said bead when said gasket is compressed to form a seal said locking means comprising tongues on one end of the bead and differently spaced slots on the other end of the bead.

3. As an article of manufacture; a closure for rigid wall vessel or the like comprising in combination a cover portion; an outwardly extending annular flange on said cover portion; an annular bead adapted to enclose said flange and a suitable gasket, said bead having its ends telescoped one within the other, one end having a series of spaced slots and the other a series of tongues adapted to engage said slots, the spacing of said tongues being unequal to the spacing of said slots whereby when the bead is constricted circumferentially it is locked in the condition of least circumference within a limit that is less than the spacing of either the tongues or slots.

4. As an article of manufacture; a closure for a rigid walled vessel or the like comprising in combination; a cover portion; an outwardly extending annular flange on said cover portion; an annular bead adapted to enclose said flange and a suitable gasket, said bead having its ends telescoped one within the other, one end having a series of space changes in contour and the other a series of projections adapted to cooperate with said changes in contour, the spacing of said pro-

jections being unequal to the spacing of said contour changes whereby when the bead is constricted circumferentially it is locked in the condition of least circumference within a limit which is less than the spacing of either the projections or the changes in contour.

5. As an article of manufacture, a closure for a rigid walled vessel or the like; comprising in combination a cover portion; an outwardly extending annular flange on said cover portion; an annular bead adapted to enclose said flange and a suitable gasket, said bead having its ends telescoped one within the other, one end having a series of changes in contour and the other end having a series of raised portions adapted to coact with said contour changes, the spacing of said contour changes being unequal to the spacing of said raised portions whereby when the bead is constricted circumferentially it is locked in the condition of least circumference within a limit which is less than the spacing of either the raised portions or the changes in contour.

6. As an article of manufacture a closure for rigid walled vessels or the like comprising in combination; a cover portion; an annular cover flange extending outwardly from said cover portion; an annular bead having ends and comprising a flange movable telescopically with respect to said cover flange; an annular gasket within said bead, the radial width of said gasket when uncompressed being greater than the radial width of the cover flange; and a plurality of successively operative locking means on the ends of said flange to hold the flange in telescoped relation and the gasket compressed when the closure is applied to a vessel to be closed.

WILLIAM P. WHITE.