E. VNCKE

PROCESS OF MANUFACTURING CORK DISKS AND PRODUCT OF THE SAME

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES

INVENTOR,

OLIVER W. DONALD

ATTORNEY.
This invention relates to an improved process of manufacturing cork disks and the product of the same.

It is well recognized that all present day processes of making cork disks from cork bark in commercial quantities give rise to a high percentage of cork disks which are unfit for sealing purposes by reason of the pores in the disks. Irrespective of the method of cutting cork bark, even of the highest quality, this serious difficulty has not been obviated.

It is also well recognized that by reason of the pores in the cork disks of crown seals and similar closures, the contents of the bottles are brought in contact with the tinned cap as well as with the cork thereby leading to contamination and the imparting of a cork and a metal flavor to the contents, and often giving rise to dangerous conditions to health, as well as loss of the contents due to consequent leakage. Efforts have been made to overcome the defects due to the pores, by paraffining the cork disks, also by inserting parafin paper or other collet between the cork disk and the metal shell or by providing a covering of metal foil or plate on the portion of the face of the cork disk otherwise exposed within the mouth of the bottle to contact with the contents.

It has also been proposed to form the sealing disk of composition cork by granulating the cork and binding the granules together by means of a suitable waterproof glue; however, such composition cork disks are subject to eventual penetration by the contents of the bottle, whereby the glue as well as the cork particles and even the metal cap are brought into contact with the contents of the bottle thereby creating the said highly undesirable conditions and consequent leakage.

The heretofore practices of providing a covering of metal over the whole face of the cork disk has proven to be impracticable, largely by reason of the unavoidable sharp edges at the mouth of the bottle, inherent in the blowing method of bottle manufacture, causing the metal foil to be pierced, and thereby affording contact between the contents of the bottle and the cork and as well with the metal cap, and bringing about the same objectionable results as in the case of the unprotected cork disk; in this instance the deterioration of the cork disk causes the additional disadvantage of the loosening and dropping of the foil into the bottle. The metal foil procedure also embodies the serious condition of the practical impossibility of applying the metal foil without a wrinkle in the metal foil, and thereby rendering the seal between the metal foil and the neck of the bottle imperfect. In the effort to overcome this defect, it has been proposed to glue a metal disk of a smaller diameter on the exposed face of the cork disk with the object of providing the actual seal between the lip of the bottle directly with the cork disk, but this procedure is impracticable commercially by reason of the varying contour and dimensions of the lip and mouth of the bottle, giving rise to contact by the contents of the bottle with the glue, introducing further contamination and causing the metal disk to drop. Such procedure also necessarily involves greater expense of manufacture.

It has been further proposed to secure such metal disk or a thin sheet of metal to the cork disk by crimping it centrally into the face of the cork disk, but such procedure is not practicable by reason of the crimping giving rise to the cork disk to be punctured and resulting in an effectual opening through the cork. This procedure also introduces the defect of the metal disk being mechanically loosened and dropped, incident to shuffling and jarring encountered by the closure in the crowning machine and in shipment and subsequent use.

All such prior methods have sought to overcome the above enumerated defects by seeking to prevent the contents of the bottle from coming in contact with the disk of natural or composition cork and none of such heretofore proposed methods has made possible the use of the poorer qualities of natural cork disks resulting in the manufacturing process.

A principal object of my invention is to provide a product which overcomes all the defects of prior cork seals and an economical process for forming such product by utilizing not only the selected good disks cut from natural cork bark, but also the lower qualities of cork disks from natural cork bark which heretofore have had to be discarded.

It is also an object of this invention to provide an improved seal of the character...
described which will not only be of superior structural characteristics when formed of the usual materials, but which will enable the use of materials which hitherto have been unavailable for use in this class of seals.

A further object of my invention is to provide a construction of seal whereby even composition cork may be used for obtaining a perfect seal.

Pursuant to my invention, the cork disk is formed of two elements, one element being of a disk shape and of a diameter corresponding substantially to the inner diameter of the mouth of the bottle, the other cork element being of an annulus shape, the outer diameter of which is equal to the inner diameter of the metal cap while the inner diameter corresponds substantially to that of the disk element to effect a snug fit.

Combined with such cork disk and cork annulus is a coating of foil of tin or aluminum or their alloys, metallized paper, or similar material, the central portion of which is scored or bent on itself to form a cup of sufficient diameter to snugly fit the cork disk and the cork. The aforesaid parts are combined within a crown closure by locating the central cup portion of the metal foil as a covering on the forward face of the cork disk otherwise exposed to the contents of the bottle and the peripheral portion of the foil is brought between the forward face of the annulus and the inner face of the metal shell. In my seal, solely the annulus is brought into contact with the lip of the bottle, while the central portion of the metal foil solely is in contact with the bottle contents.

It is proposed to use cork as will be hereinafter explained in the preferred form of seal disclosed herein as a suitable material, but it is to be understood that either natural cork or composition cork or equivalent substitutes are comprehended within this term and that it is proposed to use either or both in carrying out the invention.

Further features and other forms of my invention will be more fully understood from the following detailed description and the accompanying drawings in which—

Fig. 1 is an exploded perspective view showing one form of a crown closure embodying my invention, and comprising an annulus of cork, a cork disk and a foil covering extending over the forward face of the disk, then between the lateral face of the disk and the inner face of the annulus and extending over the rearward face of the annulus, the aforesaid being assembled within the crown shell and mutually held in assembled position, with or without the use of an adhesive;

Fig. 2 is a side elevation indicating a bottle sealed by a closure formed of parts illustrated in Fig. 1;

Fig. 3 is an exploded perspective view of another form of my invention, and comprising a forward disk of cork of a diameter corresponding approximately to the inner diameter of the mouth of the bottle; a rearward disk of cork of larger diameter and corresponding to the interior of the crown shell; an annulus of cork having its outer diameter corresponding approximately to the interior diameter of the crown shell and its inner diameter to provide a snug fit with the smaller disk, and foil of metal extending forwardly over the forward face of the small disk, between the rearward face of the annulus and the forward face of the larger disk; and

Fig. 4 is a side elevation, indicating a bottle sealed by a closure formed of the parts illustrated in Fig. 3.

Referring to Figs. 1 and 2, the shell 1 is of the usual crown formation and dimensions. The annulus 2 of cork has an outer diameter conforming to the diameter of the metal shell. The width of the cork annulus 2 is sufficient to provide ample area for effective sealing with the mouth 5 of a crown bottle 6.

Within the cork annulus 2 is disposed the cork disk 7 of a diameter corresponding approximately to the inner diameter of the mouth of the bottle 6. As a covering for the frontal face 8 of the cork disk 7 is provided the metal foil 9, extending thence between the peripheral face 10, of the cork disk 7 and the inner peripheral face 11 of the cork annulus 2, and the peripheral portion 12 of the metal foil extends rearwardly of the cork annulus 2. In the assembling of the aforesaid elements of my closure, the metal foil 9 is scored or bent, see 13, upon itself circularly about its central portion, corresponding substantially to the inner diameter of the mouth of the bottle. The cork disk 7 is located within the metal foil 9 and upon assembling the same together with the cork annulus 2 within the metal shell 1, with or without the use of adhesive at the desired intercontacting locations, the peripheral portion 12 of the metal foil 9 is anchored between the rearward face of the cork annulus 2 and the inner face 15 of the metal shell 1.

The parts of the aforesaid sealing member may be assembled as a unit prior to insertion within the crown shell or equivalent, or the bottle cap assembling machine may be employed and the individual elements of my sealing means inserted successively within the crown shell and in proper co-originated relation to one another as aforesaid.

In the form of the invention shown in Figs. 3 and 4, a large cork disk 20 has an outer diameter conforming substantially to the diameter of the metal shell 1. Forwardly of the disk 20 is a smaller cork disk 21 having a diameter conforming approximately...
to the inner diameter of the mouth 5 of a crown bottle 6. The cork annulus 22 has an outer diameter at its peripheral face 23 conforming substantially to the outer diameter of the aforesaid larger cork disk 20 and an inner diameter at its circular face 24 to snugly fit over the smaller disk 21. The foil 25 of metal corresponds substantially to the foil 9 of the aforesaid form shown in Figs. 1 and 2, and accordingly is bent or scored, see 26, on itself circularly about the centre, conforming substantially to the diameter of the smaller disk 21. The circular or central portion 26a of the foil 25 serves as a covering for the smaller disk 21 and the intermediate portion 27 of the foil 25 is anchored between the peripheral face 28 of the smaller disk 21 and the inner face 24 of the annulus 22.

Upon assembling the aforesaid parts within a crown shell 1, with or without a suitable adhesive between the intercontacting faces, the peripheral portion 29 of the foil 25 is located between the rearward face 30 of the annulus 22, and the forward face 31 of the larger disk 20.

The sealing means comprising the large disk 20, the smaller disk 21, the annulus 22 and the foil 25 may be assembled as a unit prior to positioning within the crown shell, or the aforesaid parts may be assembled successively in proper order within the crown shell by the use of a regulation bottle cap assembling machine.

The form of my invention illustrated in Figs. 3 and 4, utilizes cork disks of lower grade as well as cork disks of the higher grades cut from natural cork bark. A particularly advantageous procedure is to cut the cork back into disks of the same diameter, namely that of the larger disk 20. The thickness of these disks is preferably substantially one half of that of the regulation disk.

The disks so obtained are sorted into a lower quality and into a good quality, and the latter are punched centrally about a diameter corresponding substantially to that of the smaller disk 21 and thereby also yielding annular rings having the form of the annulus 22.

The disks of lower quality which heretofore were not possibly of use to obtain a perfect seal, are utilized by my invention as the rearward or large disks and I thereby make it possible to economically use all the grades of disks obtained in the manufacturing process of cork disks.

Pursuant to the aforesaid forms of my invention upon positioning the crown seal on a crown bottle, the contact between the lip of the bottle is effected with the cork of good quality and at the same time the metal foil is solely brought in effectual contact with the contents of the bottle.

If desired, and to economize in the use of the foil, it is not necessary that the tinfoil extend over the entire width of the rearward face of the annulus, but sufficient to secure proper anchoring of the foil either between the rearward face of the annulus and the metal shell or between the rearward face of the annulus and the larger disk.

For certain purposes, the peripheral portion of the metal foil may extend beyond that indicated hereinabove, namely, to project between the outer face of the annulus and the crimping flange of the crown cap.

In certain circumstances it may be desirable to form the annulus element of my closure of composition cork and the remaining cork elements may also be formed of composition cork or of a combination of natural cork bark and of composition cork.

My invention also provides for the use of multiple disks in the forming of the central disks and also of the annulus, as relates to the form shown in Figs. 1 and 2, and also to the larger cork disks as well as smaller disks and the annulus as relates to the form shown in Figs. 3 and 4.

In the form of the invention shown in Figs. 3 and 4 the smaller disk 21 may be cut of natural cork integrally with the larger disk 20 or the central disk 21 and the larger disk 20 formed integrally of composition cork. Also, the peripheral face 28 of such integral disk portion 21 may be formed with a re-entrant angle with the plane of the major portion of the larger disk 20, to thereby form a joint in the nature of a tongue and groove connection between the disk portion 21 and the portion 27 of the foil 25 and the inner face 24 of the annulus 23.

The smaller disk may be formed of paper of like plastic and neutral material.

Whereas, I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention, as defined by the appended claims.

I claim:

1. A bottle closure formed of an annulus of cork, a disk of cork material disposed within said annulus, and a covering of metal foil extending over the forward face of said disk and between said disk and said annulus.

2. A bottle closure formed of an annulus of cork, a disk of cork material disposed within said annulus, said disk having a diameter substantially equal to the inner diameter of the mouth of the bottle intended to be closed by the closure, and a covering of metal foil extending over the forward face of said disk and between said disk and said annulus.

3. A closure for bottles comprising an annulus of cork material, a disk of cork material located within said annulus, a covering
of metal extending forwardly of the forward face of said disk and between said disk and said annulus and a larger disk disposed rearwardly of said annulus and of the afore-
said disk.

4. A closure for bottles comprising an annulus of cork material, a disk of cork material located within said annulus, said disk having a diameter substantially equal to the inner diameter of the mouth of the bottle intended to be closed by the closure, a covering of metal extending forwardly of the forward face of said disk and between said disk and said annulus and a larger disk disposed rearwardly of said annulus and of the afore-
said disk.

5. A closure comprising an annulus of cork material, a disk disposed within said annulus, and a metal foil covering the forward face of the cork disk passing thence between said annulus and said cork disk and extending over the rearward face of said annulus.

6. A closure comprising an annulus of cork material, a disk disposed within said annulus, said disk having a diameter substantially equal to the inner diameter of the mouth of the bottle to be closed by the closure, and a metal foil covering the forward face of said cork disk, passing thence between said annulus and said cork disk and extending over the rearward face of said annulus.

7. The process of forming closures from cork bark, which comprises forming disks of uniform diameter corresponding substantially to the maximum diameter of the seal of the closure, separating the disks of good quality from the disks of poor quality, punching a disk of good quality to form a disk of relatively reduced diameter, and a corresponding annulus, assembling a disk of poor quality, the annulus of good quality and a disk of reduced diameter combined with a metal foil to dispose the disk of reduced diameter centrally within the annulus, and to dispose the metal foil to extend over the forward face of the disk of reduced diameter and the rearward face of the annulus.

8. The process of forming closures from cork bark, which comprises forming disks of uniform diameter corresponding substantially to the maximum diameter of the seal of the closure, separating the disks of good quality from the disks of poor quality, punching a disk of good quality to form a disk having a reduced diameter corresponding substantially to the inner diameter of the mouth of the bottle to be closed by the closure and a corresponding annulus, assembling a disk of poor quality, an annulus of good quality and a disk of reduced diameter within the annulus and to dispose the metal foil to extend over the forward face of the disk of reduced diameter and the rearward face of the annulus.

9. The process of manufacturing closures, which comprises forming an annulus of natural cork of good quality or of composition cork, forming separately a disk of smaller diameter and a disk of larger diameter of natural cork independently of its quality or from composition cork and assembling a metal foil to extend over the forward face of the disk of smaller diameter and the rearward face of the annulus.

10. The process of manufacturing closures, which comprises forming from natural cork bark independently of its quality or from composition cork, a cork element constituted of disk formation of larger diameter and a disk formation of smaller diameter of one piece, forming an annulus of natural cork of good quality or of composition cork, and assembling a metal foil to extend over the forward face of a disk formation of smaller diameter and the rearward face of the annulus.

11. A bottle closure formed of an annulus of natural cork, a disk of composition cork disposed within said annulus, and a covering of metal foil extending over the forward face of said disk and between said disk and said annulus.

12. A bottle closure formed of an annulus of composition cork, a disk disposed within said annulus, and a covering of metal foil extending over the forward face of said disk and between said disk and said annulus.

13. A bottle closure formed of an annulus of composition cork, a disk located within said annulus, a covering of metal extending forwardly of the forward face of said disk and between said disk and said annulus and a larger disk of composition cork disposed rearwardly of said annulus and of the foresaid disk.

14. A closure for bottles comprising a cup-shaped member of neutral material, a disk member enclosed within said cup-shaped member, the cup portion of said cup-shaped member being disposed exteriorly of said disk member and on an exposed surface of the closure, and an annular member of natural cork snugly fitting said disk member.

15. A closure for bottles and the like comprising a cup-shaped member of neutral material, a disk member enclosed within said cup-shaped member, the cup portion of said cup-shaped member being disposed exteriorly of said disk member and on an exposed surface of the closure, and an annular me-
A closure for bottles and the like comprising a cup-shaped member of neutral material, a disk member of natural or composition cork enclosed within said cup-shaped member, the cup portion of said cup-shaped member being disposed exteriorly of said disk member and on an exposed surface of the closure, and an annular member of natural cork snugly laterally fitting said disk member.

A closure for bottles and the like comprising a cup-shaped member of neutral material, a disk member of natural or composition cork enclosed within said cup-shaped member, the cup portion of said cup-shaped member being disposed exteriorly of said disk member and on an exposed surface of the closure, and an annular member of composition cork snugly laterally fitting said disk member.

A seal for bottle closures formed of a pair of superposed co-extensive cork disks, one of good quality and one of poor quality, said disk of good quality comprising an annulus and a smaller disk disposed therein, and a covering of impervious sheeted material extending over the exposed face of the smaller disk, upwardly between said disk and annulus, and outwardly between said annulus and said disk of poor quality.

A seal for bottle closures formed of an annulus of cork, a disk disposed within said annulus, and a covering of impervious sheeted material extending over the forward face of said disk and between said disk and annulus.

A closure for bottles comprising an annulus of cork material, a disk located within said annulus, a covering of impervious sheeted material extending over the exposed face of said annulus and between said disk and annulus, and a larger disk disposed rearwardly of said annulus and the afore-said disk.

In testimony whereof I have signed this specification this 29th day of August 1923.

ENRIQUE VINCKE.