

Feb. 7, 1967

J. KOSAR

3,302,811

CONTAINER WITH CROWN-TYPE CAP

Filed June 21, 1965

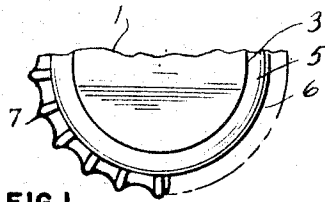


FIG. 1

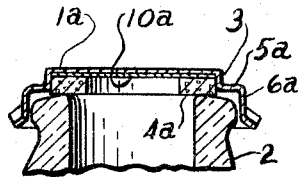


FIG. 2

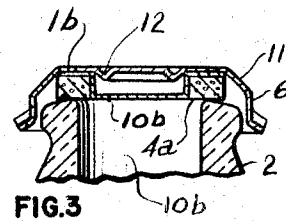


FIG. 3

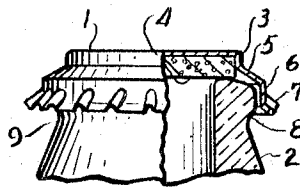


FIG. 1A

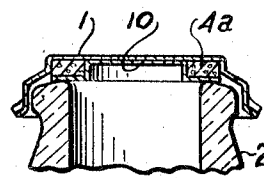


FIG. 1B

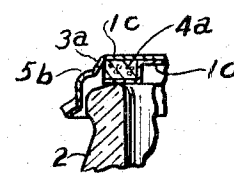


FIG. 4

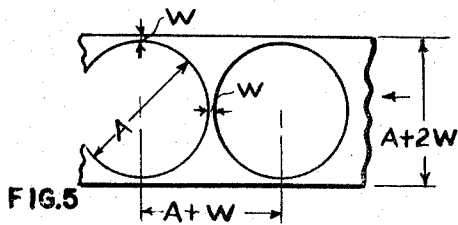


FIG. 5

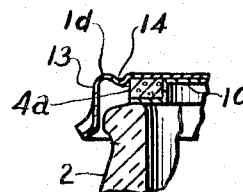


FIG. 6

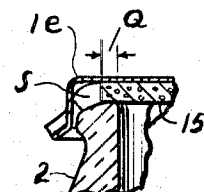


FIG. 9

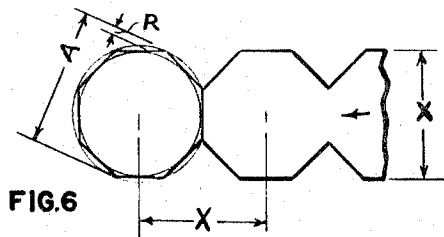


FIG. 6

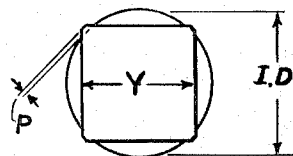


FIG. 10

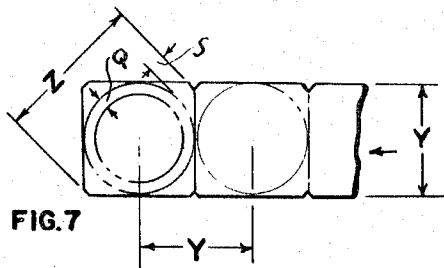


FIG. 7

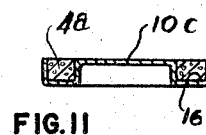


FIG. 11

INVENTOR.

JOHN KOSAR

BY

1

3,302,811

CONTAINER WITH CROWN-TYPE CAP

John Kosar, 29—09 Bridge Plaza N.,

Long Island City, N.Y. 11101

Filed June 21, 1965, Ser. No. 465,417

8 Claims. (Cl. 215—39)

This application is a continuation-in-part of a prior continuation-in-part application Ser. No. 337,880, filed January 15, 1964, of which the parent application Ser. No. 121,570, now abandoned, was filed July 3, 1961.

This invention relates to crown caps such as used on beer and soda bottles and occasionally also on bottles of other contents. The purpose of the invention is to economize in the material required for either or both the crown cap and the cork liner, as compared to the conventional crown cap and cork liner.

The blank of a sheetmetal crown cap may be polygonal as shown on accompanying drawing as well as on drawings of my pending parent application, or the cap blank may be circular. The circular cap blank may be smaller than or equal to the conventional cap blank. In the latter case only a saving of the cork liner may be desired. In the conventional cap the cork liner is much greater in diameter than actually required for sealing the mouth of the bottle and a substantial peripheral margin is merely used to engage the I.D. of the skirt of cap.

The conventional cork liner often has a foil or plastic facing-liner of a smaller diameter adhesively cemented to the cork. Of late, some conventional crown caps, on bottles for ginger ale and club soda are provided with a flow-in sealing compound thereby replacing the cork. The flow-in compound is relatively inexpensive in comparison to the conventional cork liner; however, the cost of the equipment for putting the compound into the caps is prohibitive and only a very large company can afford to pay for it. Bottles for crown caps have an outwardly-downwardly sloping, wall-end surface of neck which explains why a sealing liner is only compressed adjacent the I.D. of mouth edge of neck.

One object of the invention is to economize on the cork-liner by reducing its O.D.

A 2nd object is to further economize on the cork liner by providing it with a central hole. The I.D. of cork-ring may be engaged by a cap-shaped foil which flange may be on the face side or backside of cork. The foil may also be a disk attached to either or both the backside and face side of cork-ring.

A 3rd object is to reduce the upper skirt diameter of cap to thereby produce a circular recess for seating and confining the cork having the reduced O.D. The reduction of upper skirt diameter automatically reduces the amount of metal required for the cap which flat blank may be circular. The reduced upper skirt diameter may be cylindrical or conical.

A 4th object is to further reduce the amount of metal by forming the cap from an octagonal or other polygonal blank. This also increases the production because of the lesser feeding distance from blank to blank because of the absence of waste between the adjoining blanks.

A 5th object is to use instead a square or other polygonal cork liner in either a conventional or in any of my modified crown caps. The purpose of a square cork-liner is to save on cork while utilizing the corners to centralize it with the cap and simultaneously retain it therein through frictional engagement of the corner edges with the I.D. of cap. The diameter over the corners of cork is greater than the I.D. of cap resulting in conically bending the corners of cork in its assembled position in the cap, while serving to concentrically align the cap with the bottle neck in its final assembled position.

2

A 6th object is to also confine the I.D. of a cork-ring by providing a circular bead or a recess in the top of cap. The bevel formed by the bead or recess to make contact with the I.D. of liner. A similar bead may be provided in a conventional top of cap, for confining a reduced O.D. of cork-ring.

A 7th object is to cement the cork-ring into a circular channel formed in a foil or vinyl facing-liner to thereby confine both the O.D. and I.D. of cork-ring.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice. A preferred embodiment of the invention has been chosen for the purpose of illustration and description and is shown in the accompanying drawing forming a part of the specification, wherein

FIG. 1 is a top view of a crown cap and FIG. 1A is a partial side view and section of FIG. 1. The cap is shown loosely assembled over a bottle neck and contains a cork liner making contact with the mouth edge of the bottle.

FIG. 1B is a full sectional side view of cap, liner and bottle-neck which are similar to FIG. 1A except that the cork liner is provided with a central hole and which face and hole is covered by a cap-shaped foil.

FIGS. 2, 3 and 4 are sectional side views of modifications of FIG. 1B.

FIG. 5 is a plan view of a sheetmetal stock and circular blank layout for the caps in FIGS. 1—9, while FIG. 6 is a plan view of an optional polygonal blanking layout and sheetmetal stock for the same caps.

FIG. 7 is a plan view of a square cork-liner and its stock.

FIG. 8 is a sectional side view of a cap and liner similar to FIG. 1B except that the cap is without the reduced upper skirt diameter while being provided with a bead in top.

FIG. 9 is a sectional side view similar to FIG. 8 except without a bead in the top of cap while the skirt of cap is engaged by the corners of the square liner shown in FIG. 7.

FIG. 10 is an inverted view of cap in FIG. 9 having the square cork-liner lying over its skirt edge.

FIG. 11 is a sectional side view of cork-ring in a channelled foil face liner.

A detailed description of typical or preferred features of drawings or species follows herewith, in which similar reference characters refer to similar parts.

FIGS. 1 and 1A illustrate a crown cap 1 on a conventional bottle neck 2 for soda or beer. The cap has a reduced upper skirt diameter portion 3 thereby forming a recess within for adhesively seating a cork liner 4 which lower surface is in contact with the mouth edge of bottle neck. A bevel 5 connects the upper skirt portion with a lower skirt portion 6 of cap surrounding the neck and which lower skirt portion is provided with projecting axially directed ribs 7. During capping operations a pad presses over the top of cap to compress the cork liner within while a hollow tool descends for pushing said ribs inwardly thereby causing the metal between the ribs to move inwardly for locking engagement with the inverted shoulder 8 formed by the annular groove 9 of bottle neck. The number of ribs in cap may be 21 if cap is formed from a circular blank or 24 ribs if cap is formed from an octagonal blank. A large saving of metal and cork results from the reduced upper skirt portion of cap while a substantial additional saving is effected if the cap is formed from an octagonal blank. The cork liner may be sliced from an extruded cork rod or punched out from a cork

3

sheet. In either case there is no waste since cork waste can be re-processed, therefore a saving in cork can only be attained thru a reduction of the volume of cork used in a cap. A foil may be cemented to the lower face of cork.

FIG. 1B is similar to FIG. 1A except that the cork liner 4a is provided with a central hole and having a cap-shaped foil 10 cemented to the I.D. and lower face of cork-ring 4a. A hole in cork-ring results in a substantial additional saving of cork while a non-porous foil-facing is sometimes required for certain contents of bottle to avoid contact with cork and in this case to also avoid contact of contents with the cap-metal which would otherwise be exposed because of the hole in cork. The foil and cork may be cemented to each other before assembly with cap and both cemented to the cap during assembly.

FIG. 2 is similar to FIG. 1A except that the cap 1a is provided with a horizontal flange 5a connecting with both the reduced upper skirt diameter portion 3 and a lower skirt portion 6a while the upper face of cork ring 4a is cemented to a foil-disk 10a which upper face is in turn cemented to the bottom of cap.

FIG. 3 is similar to FIG. 2 except that the cap 1b is provided with a bevel 11 connecting with the flat top of cap and the lower skirt portion 6 while the side-wall of a cap-shaped foil 10b is cemented to the I.D. of cork ring 4a as well as to the top face of cork ring thereby stiffening the cork and foil assembly. A circular bead 12 in top of cap serves to confine the I.D. of cork-ring.

FIG. 4 is similar to FIG. 1B except that the reduced upper skirt diameter portion 3a of cap 1c is made conical and which lower end connects with a horizontal flange 5b similar to that in FIG. 2. The conical skirt portion 3a permits easier insertion of cork into the cap.

FIG. 5 illustrates a single row circular cap blank layout wherein A is the hole diameter of the blank punched out, W being the marginal waste at its smallest width around the hole or blank, resulting in a blank to blank or feeding distance of stock $A+W$, and a stock width $A+2W$.

FIG. 6 illustrates a single row octagonal cap blank layout wherein A is the distance across corners, and X the distance across the flats as well as the center distance and stock width of blank. There being no waste between adjoining sides of blanks. R designates the radial distance between the circumscribed and inscribed circle of blanks. The A distance is equal to the A diameter in FIG. 5, and the difference in stock area from blank to blank is obvious if used for same size crown cap, as intended.

FIG. 7 illustrates a single row, square cork-liner layout wherein Y is the distance from blank to blank as well as the stock width, while Z is the distance across the truncated corners of cork blank, S being the amount of radial projection of each corner from the inscribed circle of blank, while Q is the radial width of compressed ring area of cork at assembly. This layout is for cork-liners punched out of cork sheets. However, in most cases the square cork-liner may be sliced off from an extruded square cork rod.

FIG. 8 is similar to FIG. 4 except that the cap 1d having a conventional skirt height 13, may be provided with an annular bead 14 in its top, for confining the O.D. of cork ring. The blank for the cap may be circular or octagonal.

FIG. 9 is similar to FIG. 8 except that the cap is without the bead 13 while the cork-liner 15 is square shaped like that in FIG. 7 and wherein its corners S are forced to bend down in the cap during its assembly because of the distance across the corners being greater than the I.D. of cap. This interference helps to retain the liner in the cap due to the friction which develops between skirt of cap and the corner edges of liner. The bent-down corners also serve to center the cap with neck during its initial engagement with bottle neck while the centering

4

tendency is intensified during the capping operation because of the spreading of the cork during its compression. The radial width of ring area of cork compressed between cap and mouth edge of neck is indicated by letter Q.

FIG. 10 illustrates the radial interference P of the corners of the square liner with the I.D. of cap before its insertion.

FIG. 11 illustrates the cork-ring 4a being seated adhesively within a circular U-channel 16 of foil or other facing liner 10c. This serves to confine both the O.D. and I.D. of cork-ring while imparting rigidity for easier assembly with the cap.

Since certain changes may be made in the articles described and different embodiments of the inventions may be incorporated without departure from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In combination with a crown-type container having an opening defined by an annular lip having an inner periphery, an outer periphery, and a sealing surface between said peripheries, a closure comprising a crown-type cap having a top and a depending skirt comprising a lower portion embracing the outer periphery of said lip, and an upper portion offset radially inwardly from said lower portion and overlying said sealing surface, and a resilient sealing liner adhesively seating on the inner face of said top and fitting within said upper portion of said skirt, the inner diameter of said upper skirt portion and the outer diameter of said sealing liner being greater than that of the inner periphery of said lip and less than that of the outer periphery of said lip and said liner extending radially inwardly of the inner periphery of said annular lip whereby said sealing liner sealingly engages only a radially inner portion of said sealing surface, said sealing liner having a thickness adjacent said upper skirt portion greater than the downward extent of said upper skirt portion whereby said upper skirt portion does not engage said sealing surface.

2. The combination as in claim 1, wherein said upper and lower skirt portions of said cap are connected by an intermediate and downwardly outwardly sloping annular bevel and wherein said sealing surface is sloping outwardly and downwardly to form a convex corner with said outer periphery of said lip.

3. The combination as in claim 1, wherein said upper skirt portion is substantially midway of said sealing surface.

4. The combination as in claim 1, wherein said sealing liner comprises a cork disk adhesively seating on the inner face of said top and fitting within said upper portion of said skirt.

5. The sealing liner as in claim 4, wherein a relatively thin facing liner is cemented on the lower face of said cork disk, and said facing liner having a diameter substantially equal to that of said cork disk.

6. The combination as in claim 1, wherein said sealing liner comprising an annular cork disk fitting within said upper portion of said skirt and having its upper face cemented on the inner face of said top, and a relatively thin facing liner cemented on the lower face of said annular disk, and said facing liner being bent and cemented on the inner periphery of said annular disk and on the inner face of said top within the area of said inner periphery of said disk, the diameter of said inner periphery of said annular cork disk being smaller than the inner periphery of said lip, and the over all diameter of said facing liner being substantially equal to the outer periphery of said annular cork disk.

7. The combination as in claim 1, wherein said resilient sealing liner comprises an annular cork disk and a facing liner having a diameter substantially equal to that of the outer periphery of said annular cork disk, said facing

5

liner being cemented on the inner face of said top and on the upper face of said annular cork disk.
8. The combination as in claim 1, wherein said cap has a periphery of polygonal outline.

References Cited by the Examiner

UNITED STATES PATENTS

860,964	7/1907	Clay	215—39
1,209,980	12/1916	Lawson	215—39
1,240,383	9/1917	Stock	215—39
1,617,693	2/1927	Vincke	215—39
1,734,847	11/1929	Bond	215—39 X

5

1,956,217
2,149,533
2,357,416
2,786,593
3,122,116

6

4/1934	Booth	215—39 X
3/1939	McManus	215—40
9/1944	McManus	215—39
3/1957	Nofer	215—39
2/1964	Hagmann	215—40 X

FOREIGN PATENTS

583,750	9/1959	Canada.
393,545	6/1933	Great Britain.
19,239	8/1909	Norway.

10

JOSEPH R. LECLAIR, *Primary Examiner.*
D. F. NORTON, *Assistant Examiner.*