Screw Threaded Closure for a Container

Richard F. Hendrickson, Erie, and Roderick V. King, Girard, Pa., assignors to Sterling Seal Company, Erie, Pa., a corporation of Pennsylvania

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13 Claims

Abstract of the Disclosure

The cap disclosed is especially suited to be injection molded or thermoformed or blown. The base shell has an inner skirt which is threaded having a top portion connected to an inner top. The lower part of the inside skirt is attached to the lower portion of the outer skirt, or the outside skirt can have a trimmed off edge at its upper end. The upper or top portion of the inside skirt has a recess at the end of the threaded part. This recess will hold a liner of a shape commonly used for sealing purposes.

A thermoformed, blown or injection molded base shell is provided having an inner skirt which is threaded and having a top portion connected to the inner top. The lower end of the inside skirt may be attached to the lower portion of the outer skirt, or the outside skirt can have a trimmed off edge at its upper end. The upper or top portion of the inside skirt may have at the end of the threaded area, a recess larger than the threaded outside diameter. This small recess can be used to hold in a suitable liner of a shape and made of a material normally used in closures. This design may also be made without a liner by distorting the flat, solid inner top at the normal sealing area. Thus, this can be used as a seal. This distortion could be a concave or convex narrow rim to fit the curvature and dip in the threaded container neck. The basic design of this type of cap lends itself well to this type of seal because of the pulling-down effect of the threaded skirt and also the pulling-down of the inner top when the cap is screwed onto a container.

It is, accordingly, an object of the invention to provide an improved cap for a container.

Another object of the invention is to provide a cap that is especially suited to be thermoformed, blow molded or injection molded.

Another object of the invention is to provide a cap that has a threaded inner rim and a smooth outer rim for appearance, convenience and structural strength.

Another object of the invention is to provide an improved cap that has threads formed in the inner rim and a smooth outer rim and has a liner supported inside the cap.

Another object of the invention is to provide a cap with a threaded inner rim and a smooth outer rim with the top and an overtop, the overtop being supported over the first mentioned top.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

FIG. 1 is a longitudinal cross sectional view of one embodiment of the invention;

FIG. 2 is a partial view of another embodiment;

FIG. 3 is a partial view of another embodiment;

FIG. 4 is a partial cross sectional view of still another embodiment of the invention;

FIG. 5 is a partial view of another embodiment of the invention;

FIG. 6 is a longitudinal cross sectional partial view of another embodiment of the invention;

FIG. 7 is a longitudinal cross sectional partial view of another embodiment of the invention;

FIG. 8 is a longitudinal cross sectional partial view of another embodiment of the invention;

FIG. 9 is a longitudinal cross sectional partial view of yet another embodiment of the invention;

FIG. 10 is a longitudinal cross sectional partial view of yet another embodiment of the invention;

FIG. 11 is a longitudinal cross sectional partial view of another embodiment of the invention;

FIG. 12 is a partial cross sectional view of another embodiment of the invention;

FIG. 13 is a partial cross sectional view of another embodiment of the invention;

FIG. 14 is a partial cross sectional view of yet another embodiment of the invention; and

FIG. 15 is a cross sectional partial view of another embodiment of the invention.

Now with more particular reference to the drawing, the embodiment of the cap shown in FIG. 1 has a top 10 integrally attached to the inner skirt 11 and having the outer skirt 13 attached to the inner skirt integrally at 16. The upper end of the outer skirt indicated at 15 is formed down over the second top 20 at 14. Thus, the second top 20 and inner top 10 are coextensive with each other. The top 20 rests on top of the top 10 and is formed to print advertising material on it and further strengthens and reinforces the top 10 and also forms a bearing surface for the ends 14 of the outer skirt 13. The top 10 may be made of a more flexible material than the top 20.

FIG. 2 shows a partial view of the cap shown in FIG. 1 prior to having the upper end 14 formed down over the second top 20.

In the embodiment of the invention shown in FIG. 3, an inner top 110 is integrally attached to the inner skirt 112 and the outer skirt 113 is integrally attached to the inner skirt 112 at 130. The inner skirt is threaded at 112 and the upper end 114 of the outer skirt 113 extends upwardly to and is sandwiched in the ends 116 of the outer skirt 117. The outer top 117 is coextensive with the inner top 110 and terminates at its outer end in the upwardly then outwardly then downwardly extending end 116.

The embodiment of the invention shown in FIG. 4 shows inner top 210 and the outer top 217 coextensive with each other as in the embodiments of FIG. 1 and FIG. 3. The inner skirt 211 has threads at 212 formed in it and is integrally attached to the upwardly extending outer skirt 213. The outer skirt 213 terminates in a turned back portion 216, then is received in the curled outer periphery 215 of the outer top 217. The outer top 217 can be made of a rigid material, such as metal. The inner top 210 can be made of a more flexible material, such as a thermoformable material. The curled portion 215 is formed outward, downward, then upward under rim 216. Thus, the inner top 210 may engage the upper rim of a can or the like when the cap is threaded in place and advertising material or the like can be supported on the outer top 217. The outer top likewise reinforces the inner top and acts as a structural support for the outer skirt 213.

In the embodiment of the invention shown in FIG. 5, the cap has a top 310 integrally attached to the inner skirt 312 which is threaded as shown and extends downwardly
and terminates at 316. It then extends upwardly to form the outer skirt 313 which terminates at the upper end 314. The inner part 314 abuts a shoulder 320 on the upper top 310, thus the cap can be thermoformed or otherwise manufactured in a suitable manner well known to those skilled in the art.

In the embodiment of the invention shown in FIG. 6, the inner top 410 is integrally attached to the threaded portion 412. The threaded portion 412 is integrally attached to the outer skirt 413 which terminates at the upper end 414 and inwardly turned in and abuts the outer top 417 as shown. The outer top has the inwardly diverging downwardly extending rim 418 that rests in the shoulder in the side of the threaded portion 412 adjacent the inner top 410 as shown.

In the embodiment of the invention shown in FIG. 7, an inner top 510 is integrally attached to the inner skirt 512. The outer skirt 513 presents a smooth outwardly facing portion that extends upwardly and terminates in the end 514. The outer top 517 has the rim 519 that extends inwardly and rests in a shoulder portion of inner skirt 512 as shown. The upper end 514 rests against 517 as shown.

In the embodiment of the invention shown in FIG. 9, the inner top 710 has the threaded inner skirt 712 integrally attached to it which turns downwardly then extends upwardly in the outwardly facing smooth portion 713 which terminates in the end 714. The outer top 717 has the rim 719 turned inwardly then downwardly to form a shoulder as shown into which the end 714 rests.

The embodiment of FIG. 8 is similar to the embodiment of FIG. 9, except the rim 613 has a shoulder 614, which receives the end 619 of top 610.

The embodiment of the invention shown in FIG. 10 shows a top made of a single integral piece of material having a cap 810, threaded portion in the form of an inner skirt 812, and an outer skirt 813. The outer skirt is bent inwardly and has the rim 814 that overlies a corresponding rim 830 on the top 810 and the end 814 abuts against the shoulder as shown.

In the embodiment of the invention shown in FIG. 11, the outer top 910 has a thread portion 912 in the form of an inner skirt that is integrally attached at 930 to the outer skirt 913. The outer skirt 913 is curled at 915 and terminates in end 914 which rests against the cap as shown.

In the embodiment of the invention shown in FIG. 12, the inner part may be made of any suitable material; for example, it may be a plastic part. The inner part has a top 1010 bent to form the groove 1020 around its periphery. It then extends downwardly in the threaded inner skirt 1012 and terminates at a lower rim. The lower rim is inserted in the inwardly curled part 1021 which extends outwardly in the outer skirt 1013 which extends and is curved downwardly at 1015 then has the inwardly extending flange 1014 that extends into the groove 1020. The outer skirt 1013 is made of any suitable relatively rigid material; for example, metal. The material gives stiffness and rigidity to the cap yet is simple and efficient to manufacture and presents a smooth outer skirt as shown.

In the embodiment of the invention shown in FIG. 13, the cap shown has a top 1110 and inner skirt 1112 that is threaded and may be made from a suitable material; for example, it may be molded from a thermoforming plastic material. A groove 1114 is formed and in this groove the flange 1111 of the outer rim extends. The outer skirt portion 1113 presents a smooth outer peripheral surface and is curled around the lower end of the inner skirt 1112 as shown. The upper end of the outer skirt extends inwardly at 1115 then downwardly in the flange 1111.

In the embodiment of the invention shown in FIG. 14, the cup 1217 has the intermediate skirt 1216 on it that defines a ring. The inner part of the cap has an inner top 1210 that is integrally attached to the inner skirt 1212 that is threaded as shown. The outer skirt 1213 has an outer surface and it lies in coextensive relation to the intermediate skirt 1212. The outer surface can be smooth or it could have ribs. The upper end of the skirt 1213 is bent downwardly at 1215 and terminates against top 1217 as shown. Thus, the inner part, including parts 1210, 1212 and 1213, and 1215 may be made of a plastic thermoformed material or other suitable material and the parts 1216 and part 1217 may be made of a metallic material or other suitable material in the preferred embodiment.

In the embodiment of the invention shown in FIG. 15, an inner top 1310 is integrally attached to the threaded inner skirt 1312 which is in turn integrally attached to the outer skirt 1313 that is then turned down at 1315. The outer top 1317 has the intermediate skirt 1326 integrally attached thereto and it forms a mold for the threads on the inner skirt 1312.

In the preferred embodiment of the invention, a cap having a closed end 1317 and a threaded skirt 1326 attached thereto is used as a foundation for the plastic or other suitable material 1310, 1312 and 1315 which are formed around it. Thus, the metallic or other suitable material adds strength and rigidity to the cap while the plastic or other suitable material has other features that are desirable in such a cap.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which is to be understood is broadly novel.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A cap for a can or the like comprising a ringlike body and an end member closing said body forming an open cuplike member, said ring having an inner skirt having threads formed in it, an outside skirt formed and having its rim turned back on itself and orienting said ring presenting a relatively smooth outer periphery, said cap being made of a sheet of formable material overlapping the inside surface of said end, formed to define said threads, extending from said open end over said threads in a smooth cylindrical form and terminating at the outer periphery of said end.

2. The cap recited in claim 1 wherein a said outer skirt is integrally attached to said end member, said end of said inner skirt terminating in upwardly extending ends, and a dislikable liner is supported above said upwardly extending end and in engagement with said end member.

3. The cap recited in claim 2 wherein the upper ends of said skirt are turned over and overlie said dislikable member.

4. The cap recited in claim 1 wherein said disk extends outwardly around its entire periphery and engages said outer skirt then extends over the upper edge of said skirt and is turned downwardly generally parallel to said skirt.

5. The cap recited in claim 2 wherein said dislikable member extends outwardly over the top of said outside skirt and the upper edge of said outside skirt is turned outwardly and downwardly, and the outer portion of said dislikable member extends upwardly under said skirt.

6. The cap recited in claim 1 wherein the said dislikable member is turned downward at its outer periphery and terminates in a rim that engages the outer portion of said inner skirt, said outer skirt terminating approximately flush with the outer surface of said dislikable member and engaging said dislikable member.
7. The cap recited in claim 1 wherein said disklike member is turned downwardly and extends generally parallel to said outer skirt,
the end of said downwardly turned portion of said disklike member rests on the outer portion of said inner skirt,
the end of said outer skirt remote from said rim abuts against said disklike member.

8. The cap recited in claim 1 wherein said disklike member is turned inwardly then downwardly adjacent its outer periphery defining a downwardly facing shoulder and the end of said outer skirt remote from said rim rests against said shoulder.

9. The cap recited in claim 1 wherein said end member has an outwardly facing annular shoulder adjacent its outer periphery,
and said outer skirt is turned inwardly generally parallel to said end member,
and the end of said inwardly turned portion of said outer skirt rests against said shoulder,
the upper surface of said inwardly turned portion being flush with the outer surface of said end member.

10. The cap recited in claim 1 wherein said outer skirt is defined by a ring having one end turned upwardly and inwardly defining a bead,
said bead receiving lower end of said inner skirt,
the end of said ring remote from said rim being turned downwardly and inwardly generally parallel to said end member,
said end member being turned downwardly and inwardly then downwardly and outwardly to join said inner skirt and defining a groove,
said groove receiving end of said ring member.

11. The cap recited in claim 1 wherein said end member is turned downwardly and inwardly then downwardly and outwardly adjacent its outer periphery and defines an upwardly facing shoulder,
said outer skirt being turned upwardly and inwardly adjacent its lower end and defining a bead receiving the lower end of said inner skirt.

12. The cap recited in claim 2 wherein said disklike member has an annular member integrally attached to its outer periphery and extending downwardly generally parallel to said outer skirt and being disposed coextensively with said outer skirt and between said inner skirt and said outer skirt,
said outer skirt being turned inwardly and downwardly at its upper end and terminating in an outer end engaging said disklike member.

13. The cap recited in claim 2 wherein said disklike member has an annular portion integrally attached to its outer periphery,
said annular portion being disposed between said inner skirt and said outer skirt,
said annular portion being threaded and threads of said annular portion registering with the threads of said inner skirt,
said outer skirt being turned downwardly and inwardly at its upper end and terminating in an end portion engaging said disklike member.

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GEORGE T. HALL, Primary Examiner
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