

[54] CLOSURES WITH CORROSION HALTING MEANS

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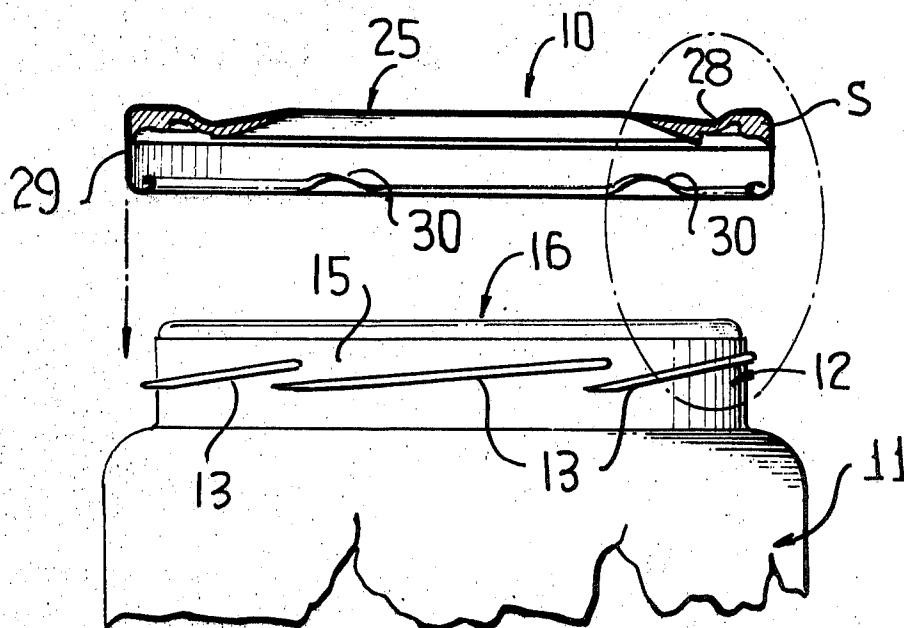
Attorney, Agent, or Firm—Diller et al.

[57]

ABSTRACT

This disclosure relates to closures including means for halting corrosion, and more particularly to a closure which includes an end panel having a recessed radius which is disposed radially outboard of an inner surface of a container mouth with sealing compound between the radius and a lip of the container whereby the radius which is conventionally positioned radially inboard of the container mouth inner surface and is thus subjected to the corrosive effects of packaged products cannot now be so effected. In further accordance with this disclosure the container lip is at least in part defined by a radius opening generally concavely axially outwardly in opposed spaced relationship to the end panel radius, and the radii are complementary contoured.

2 Claims, 2 Drawing Figures





**CLOSURES WITH CORROSION HALTING MEANS**

The present invention evolved from attempts to find some means of halting corrosion of caps for jars in which are packaged pickles. It was found that such metallic closures corroded because the sealant or reverse coating on the closure developed minute cracks during a forming operation due to tensile stresses set up in the reverse coating and the outer panel as the radius of the closure was formed. Due to this cracking the coated radius, though seemingly protected, was not and consequently the underlying metal oxidizes at various rates depending, of course, on the contents of the jar.

The most simple elimination of this problem would be, of course, to avoid recessing the closure end panel but such cannot be done since paneling or recessing (depressions of many sorts in the end panels of a closure) are used because of a specific problem or problems, and in some cases simply for esthetic appeal. For example, paneling is necessary for providing containers with stacking features, strengthening the closure, and controlling the amount of sealing compound applied thereto, particularly when the compound is applied by conventional "spinning" methods. In addition, the profile of the panel and the process heretofore noted makes it easier to apply the compound and utilize the highly desirable "feather edge" principle.

In keeping with the present invention undesired corrosion has been eliminated by in effect moving the lower highly stressed or radius area from inside the container where it can be attacked by the packaged product radially outward to the top seal or lip area with the radius and the lip being complementary contoured. In this fashion even should cracking occur in the radius area, it is not exposed to the packaged contents. Moreover, in most cases such packages are vacuum packed and the sealing compound inboard and outboard of the container mouth at non-stressed areas or areas of limited stress preclude the introduction of exterior atmosphere or interior packaged product to the radius area. Finally, the present construction results in approximately one-third decrease of sealing compound, as compared to previous prior art constructions.

**IN THE DRAWING:**

FIG. 1 is a fragmentary exploded side elevational view with a closure shown in axial cross section and illustrates the closure and an associated container prior to the assembly thereof.

FIG. 2 is an enlarged fragmentary sectional view of the encircled portion of FIG. 1, and illustrates the closure and container in assembled relationship.

A novel closure or cap for preventing and/or minimizing corrosion is generally designated by the reference numeral 10, and is adapted to be secured to a container 11 which may be, for example, a glass bottle or jar having a neck or finish 12 provided with lugs, threads or equivalent means 13, for securing the closure 10 thereto. The neck or finish 12 includes an inner cylindrical surface 14, an outer cylindrical surface 15 and an upper terminal lip generally designated by the reference numeral 16 which includes a radius 17 opening generally concavely axially outwardly and blending

at opposite ends thereof with convexly curved radiuses 18, 19. The radius 18 merges with an annular axially upwardly facing shoulder 21, whereas the radius 19 merges with a radius 22 which in turn terminates at another axially upwardly facing shoulder 23.

The closure 10 is constructed from precoated metallic material and includes an end panel 25 and a peripheral skirt 29 terminating at a lower edge in a plurality of lugs 30, or similar locking means which secure the closure in the manner illustrated in FIG. 2 by interlocking with the lugs 13 in a conventional manner.

The end panel 25 includes a recessed central panel portion 26 merging with a further recessed annular panel portion 27 which is inclined radially outwardly and downwardly, as viewed in FIG. 2. The annular panel portion 27 in turn merges with an abrupt radius 28 defined between points A and B which define an angle of approximately 35°. The radius 28 is spaced above and is complementary contoured to the radius 17 of the lip 16 and is respectively radially inboard and outboard of the respective surfaces 15, 14. Sealing compound S is applied atop the precoating (not shown) of the end panel 25 between the peripheral skirt 29 and upon an annular panel 31 connecting the peripheral skirt 29 to the radius 28, radius 28 itself, the recessed annular panel portion 27, and the central panel portion 26. The sealing compound S in the area of the radius 28 thereby covers any minute cracks or fissures in the precoating resulting from tension forces during the forming of the recessed portions 26, 27 and 28. However, due to the location of the radius 28 and the radius 17 generally centrally of the surfaces 14, 15 and the sealing compound S upon and outboard of the shoulders 21, 23, atmosphere or packaged products can in no way reach these cracks or fissures and thus corrosion is precluded.

While a preferred form and arrangement of parts has been shown in illustrating the invention, it is to be clearly understood that various changes in detail and arrangement of parts may be made without departing from the spirit and scope of this disclosure.

I claim:

1. A container and closure comprising a container body terminating in an axially facing lip defining a mouth of the container body, a closure, means securing said closure to said container body, said closure including an end panel and a peripheral skirt, said end panel including a recessed radius, said radius opens upwardly and in a direction toward the closure axis, an annular panel connecting said radius to said peripheral skirt, said radius being disposed radially outboard of an inner surface of said container mouth, sealing compound between said radius and said container lip, said lip includes a radius opening generally concavely axially outwardly in opposed spaced relationship to said end panel radius, said last mentioned radius is further disposed radially inboard of an outer surface of said container mouth, and said radii are complementary contoured.

2. The container and closure as defined in claim 1 wherein said sealing compound is adhered to coating material upon said radius.

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