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F. J. O'BRIEN

2,154,349

CAN CLOSURE

Filed Dec. 23, 1937

FIG. 1.

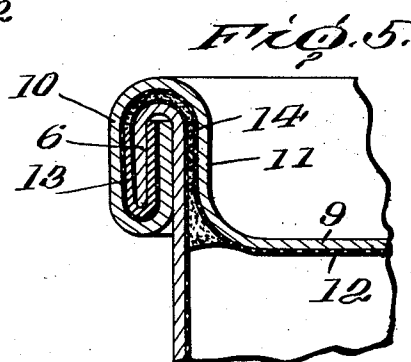
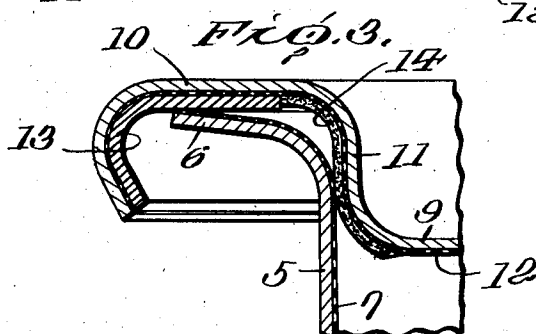
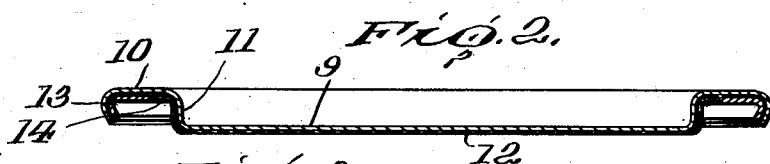
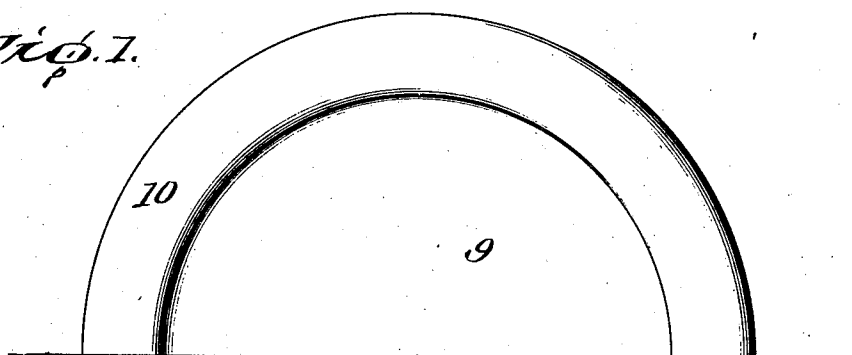


FIG. 4.

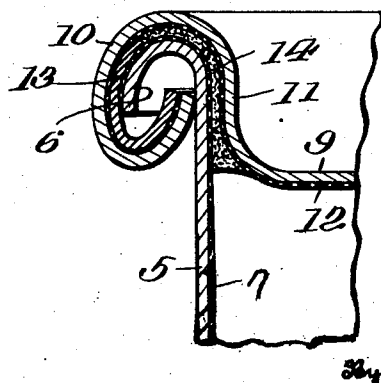
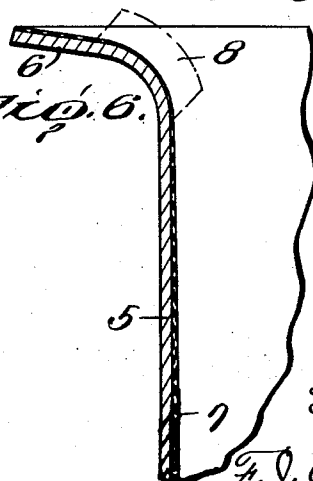


FIG. 6.



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UNITED STATES PATENT OFFICE

2,154,349

CAN CLOSURE

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Application December 23, 1937, Serial No. 181,438

1 Claim. (Cl. 228-81)

The invention relates generally to metallic receptacles and has for an object to provide a novel form of cover or end closure member adapted to be applied in completion of such receptacles and which embodies means for effectively lubricating the end seam by which the closure is secured in place in a manner for avoiding chipping and breaking away of can body coating enamel and the resultant presentation of bare metal portions, and for aiding in the effective sealing of said seam.

It is customary to interiorly coat metallic containers adapted to receive certain products, so that direct contact between said products and the metal of the containers is avoided. This is particularly true in the canning of beer since it has been found that the slightest exposure of the tin forming the inner surface of the metal cans causes a chemical reaction upon the beer sufficient to change its appearance, making it cloudy and unmarketable. Can body coatings have been applied in various ways, as by dipping, flushing, or flooding the can bodies in the coating solutions, usually lacquer or enamel. Surplus coating material, however applied, is drained off by suitably suspending the can bodies with one open end downwardly disposed. An example of this draining of surplus solution, following an application by the dipping method, is to be found in the application for Letters Patent filed by Alfred L. Kronquest, on April 12, 1937, Serial Number 136,473.

It has been found that when cans are thus permitted to drain off their surplus coating, the lowermost ends of the cans will retain an adequate coating film, but due to capillary action, or the surface tension of the draining coating material, the film at the upper extremity of the cans will become thin and often inadequate. After the protective coatings are applied and the surplus drained therefrom, they are suitably hardened, as by baking.

Hardened coatings of the character stated are somewhat brittle, and when the can end closures are secured in place, usually by double roll seams, portions of the hard coatings are cracked or ruptured by the rolling of the seams, and as a result, bare metal surfaces are exposed to contact with products to be contained in the cans, particularly at the ends of the cans where the coatings have thinned out during the draining away of surplus coating material.

In its more detailed nature the invention resides in the provision of a novel form of can cover

or end closure member comprising a body portion, a peripherally extended seam flange portion, a heel portion for snugly fitting within the open end of a can body, and a lubricant coating applied to the heel portion and extending into a part of the flange portion serving to lubricate the rubbing contact of can body end and cover member surfaces during formation of the seam, so as to prevent rupturing of protective coatings and baring of the metal, and to improve the efficiency of the seam seal.

With the above and other objects in view which will more fully appear, the nature of the invention will be more clearly understood by following the description, the appended claim, and the several views illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a top plan view illustrating one half of a can cover or end closure embodying the invention.

Figure 2 is a central vertical cross section of the cover.

Figure 3 is an enlarged fragmentary vertical cross section illustrating the cover applied to a can body prior to commencement of the seaming operations.

Figure 4 is a view similar to Figure 3 illustrating the seam partially formed, as by the first operation seaming roll.

Figure 5 is a view similar to Figure 3 illustrating the seam completed, as by application of the second operation seaming roll.

Figure 6 is an enlarged vertical cross section of a fragment of can body upon which the improved body is to be applied.

In the drawing I have illustrated a fragment of a can body 5 including the usual outwardly turned end flange 6 which is rolled into the seam by which the can cover or end closure is secured in place as shown in Figures 4 and 5. The protective coating of lacquer or enamel by which products contained in the can are protected from contact with the metal of the can is indicated at 7. After the can bodies have been coated, by dipping, spraying, flooding or flushing, the surplus of coating material is drained off by suspending the can bodies with one end downward, and during this draining the coating thins out at the upper end of the can, leaving a thin, sometimes inadequate coating at the extreme upper end. When the coating is hardened by baking it becomes brittle and subject to rupture at the portions engaged during the end closing or cover seaming function, and it often happens that por-

tions of the can body metal are bared by this rupturing of coating material. This is particularly true at the thinnest end sector indicated at 8 in Figure 2 of the drawing. As has been previously stated, the invention resides in the provision of a novel form of cover or end closure applicable to interiorly coated can bodies and having means for engaging and lubricating coated can body surfaces heretofore subject to rupture during the shifting of the surfaces relative to each other, incident to the reforming of the metal parts in the seaming operation.

The improved cover comprises a body portion 9 and a peripherally extended seam flange portion 10 joined with the body portion by a substantially vertically disposed heel portion 11 proportioned to snugly fit within the end of a can body with the seam flange portion overlying and extending beyond the can body flange 6 as shown in Figure 3 of the drawing. This heel portion is formed by the recessing of the cover so as to receive the seaming chuck. On its under surface the cover body, heel and flange portions carry a protective coating of enamel or lacquer designated 12. A ring of sealing compound 13 is applied to the under surface of the seam flange beginning just outwardly of the juncture with the heel portion 11, and a lubricating film 14 of a suitable substance such as wax is applied to the heel portion 11 and extends outwardly to the inner terminus of the sealing compound and inwardly over the rounded juncture between the heel portion 11 and the countersunk main body portion of the cover, as shown in Figures 2 and 3 of the drawing.

The usual procedure of double seaming the end closure is shown in the enlarged fragmentary sectional views 3, 4 and 5. In Figure 3 the cover is shown loosely applied to the can body end with the waxed surface 12 of the heel portion 11 thereof contacting the coated sector 8 of the can body which has heretofore been subject to rupturing and baring of metal during the seaming operation.

In Figure 4 that condition of the seam is shown which results from the functioning of the first operation roller. It will be noted that the sealing

ring 13 has been rolled into the seam, and that the wax film 14 is drawn over the opposed can body surface and rolled partly into the seam, all shifting contact of the cover and can body surfaces in the critical sector 8 hereinbefore referred to being lubricated by the wax film with the result that rupturing of coating and baring of metal is avoided. It will be obvious also that the wax film 14 aids in the efficient sealing of the seam. Figure 5 illustrates the seam as completed by the function of the second operation seaming roller. The wax film 14 not only lubricates the engaging, brittle coating bearing surfaces during the rolling of the seam but also fills the space between the can body end portion and the countersink or heel portion 11, providing a protective coating around the entire can. In cans embodying the usual lock and lap side seam structure this lubricating and sealing effect of the wax film is found to be particularly effective at the area of the lapped portion of the side seam.

I claim:

A closure member for interiorly coated can bodies comprising a peripheral flange portion adapted to be rolled into sealing engagement with the flange of a can body, and a central depressed portion shaped so as to fit within the open end of the can body, said closure member on its inner face having an overall protective coating and a coating of wax applied to said protective coating and extending from the bottom of the wall of the depressed portion to the flange and terminating adjacent the inner portion of said flange, and a coating of sealing material extending from the outer edge of the wax coating to the outer edge of the flange whereby said sealing material is rolled with the flange on the closure member and the flange on the can body into a double seam for sealing the same, while the wax coating serves to lubricate the surfaces sliding one upon the other during the seaming operation and close and seal the space between the body wall and the wall of the depressed portion in the closure member.

FRANK J. O'BRIEN.