

March 28, 1961

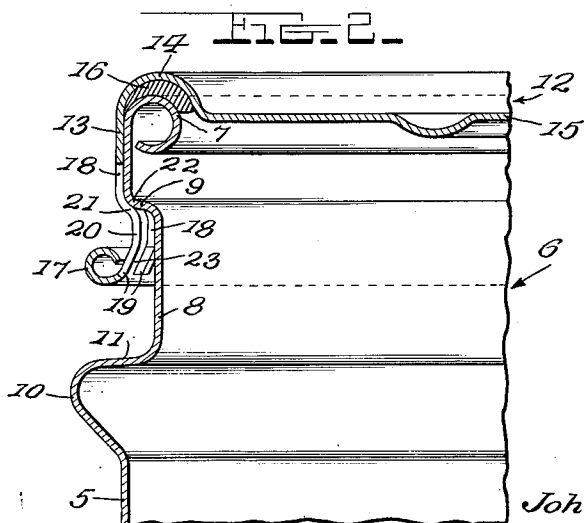
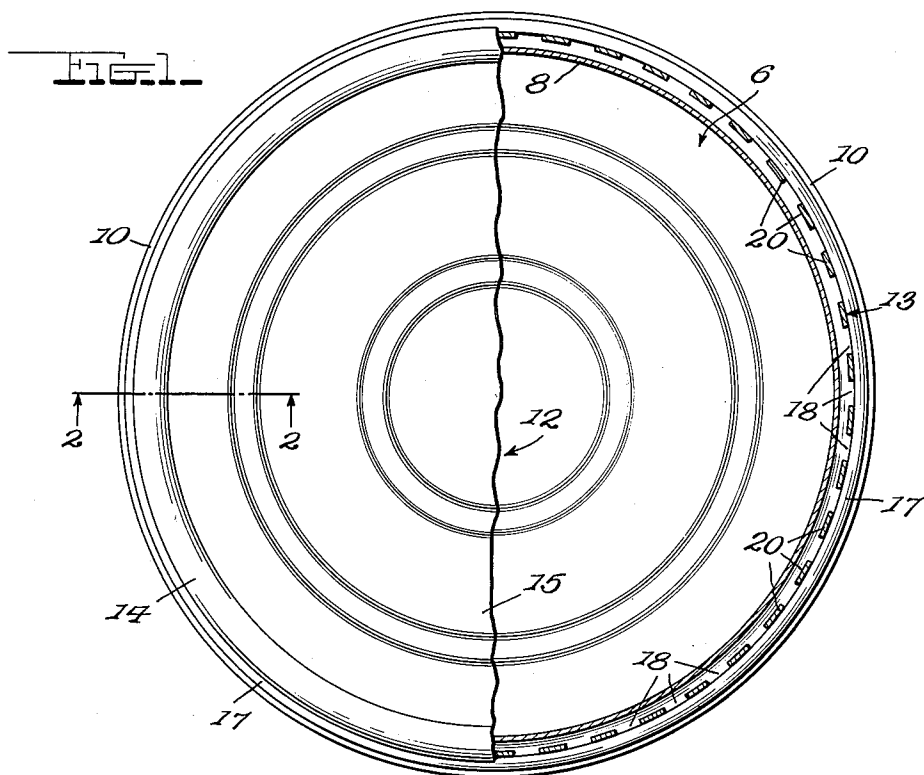
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2,977,019

EASY OPENING CAN AND COVER ASSEMBLY

Filed Sept. 19, 1957

3 Sheets-Sheet 1



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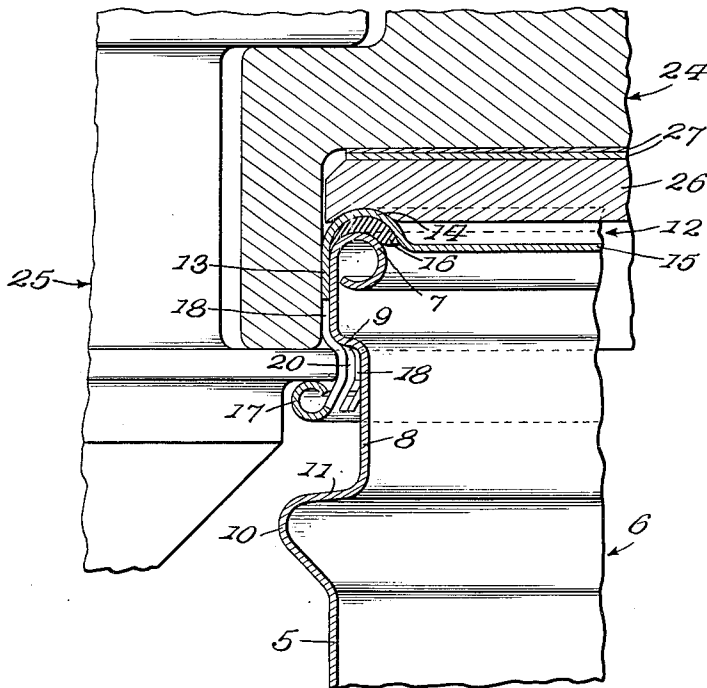
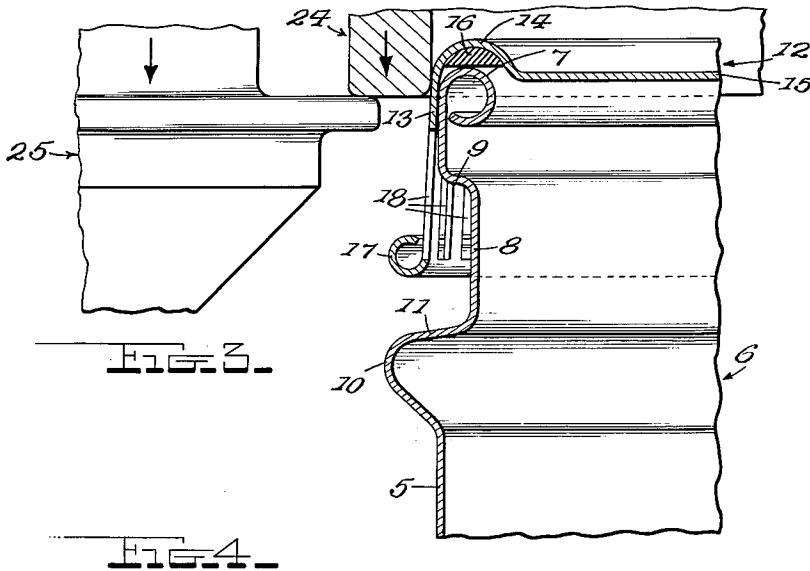
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EASY OPENING CAN AND COVER ASSEMBLY

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3 Sheets-Sheet 2



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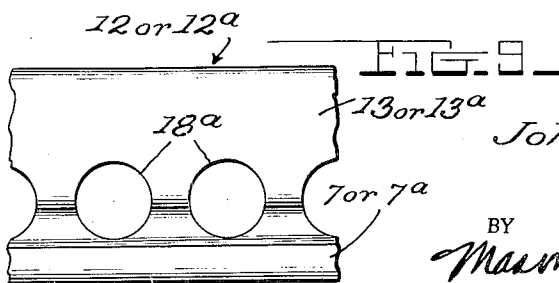
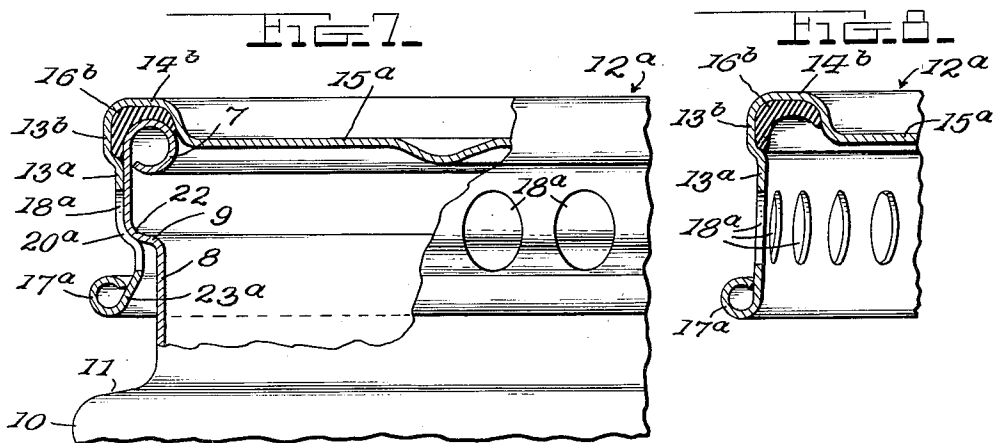
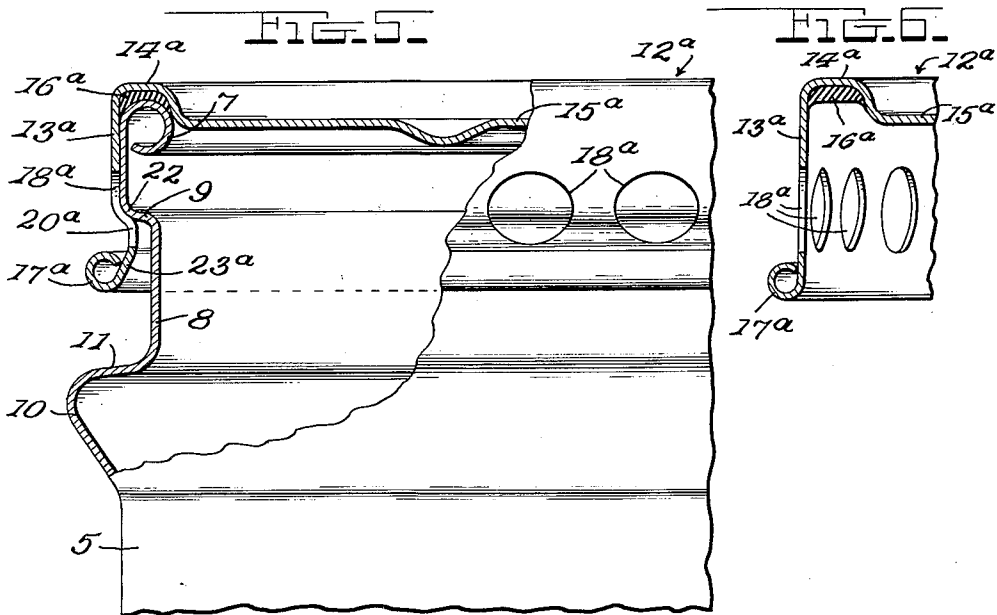
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EASY OPENING CAN AND COVER ASSEMBLY

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3 Sheets-Sheet 3



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2,977,019

EASY OPENING CAN AND COVER ASSEMBLY

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5 Claims. (Cl. 220—60)

This invention relates to a new and improved metal can and cover assembly intended primarily for coffee but not restricted to this use. It also relates to a novel cover and to a novel method for securing the cover to the can.

The principal object of the invention is to provide novel connecting means between the can and cover which will normally hold the cover tightly upon the can, will permit easy prying-off of the cover and will allow said cover to be readily re-applied with a snap action after removal of part of the can contents.

The can side wall is provided with a circumferential downwardly facing external shoulder spaced downwardly from its lip, and the cover is provided with a depending skirt extending below said shoulder; and another object of the invention is to provide said skirt with novel resilient detents normally abutting said shoulder to hold the cover on the can, said detents being springable to released position as the cover is pried from the can and being then self-returned to normal shape in readiness to snap into re-engagement with said shoulder upon re-application of the cover.

Another object is to provide the cover skirt with a multiplicity of circumferentially spaced openings and to form the detents from the skirt portions intervening between said openings, by inwardly offsetting said skirt portions into substantially bowed form.

A further object is to provide the cover skirt with a continuous portion at the lower ends of the aforesaid openings and serving to restrain expansion of the lower end of said skirt, thus confining the spring action to the detents when removing and applying the cover.

A still further object is to provide the lower end of the cover skirt with a continuous curl constituting the aforesaid expansion restraining portion of said skirt.

Still another object is to provide the can side wall with an upwardly presented external shoulder under the aforesaid curl, permitting introduction of an instrument between said shoulder and curl for use in prying the cover from the can.

Yet another object is to initially form the cover skirt with the above mentioned openings and expansion restraining portion but without inwardly offsetting the skirt portions between said openings into detent form, the detents being shaped and engaged with the can shoulder after the cover is initially telescoped over the can.

A further object is to initially form the cover skirt of substantially cylindrical form yet slightly flared, to facilitate machine dropping of the covers accurately onto the cans as the latter are conveyed into position under the cover feeding means.

Yet another object is to so form the cover detents that they will exert a downward force on the cover and to utilize this force to hold a sealing gasket tightly seated on the can lip.

Still another object is to provide an expeditious method for simultaneously shaping the cover detents and tightly engaging them with the can shoulder to tightly mount the cover on the can.

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A still further object is to provide a novel cover construction to be readily snapped onto a can whether the snapping on be effected when the cover is first applied or after removal of the cover from the can.

A further object is to provide the cover with a downwardly open channel receiving a plastic sealing gasket to seat upon an inward curl at the can lip, the channel being cooperable with the curl in forming a closed chamber from which none of the plastic can escape during cover application.

Another object is to so shape the plastic-receiving channel that part of the gasket may surround the inward curl at the can lip to produce additional sealing.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a view partly in top plan and partly in horizontal section, showing the can and cover assembly.

Figure 2 is an enlarged vertical sectional view, on line 2—2, for example.

Figure 3 is a vertical sectional view showing the initially formed cover in place on the can and showing portions of the chuck and roll employed in completing the union of the cover with the can.

Figure 4 is a view similar to Figure 3 but showing the chuck and roll in their final positions and the cover fully connected with the can.

Figure 5 is a fragmentary side elevation, partly in section, showing a somewhat modified construction.

Figure 6 is a fragmentary sectional view showing the cover of Figure 5 as initially formed.

Figures 7 and 8 are views corresponding to Figures 5 and 6 but showing another modified construction.

Figure 9 is a fragmentary side elevation showing circular openings in the cover skirt.

Preferences have been shown in the drawings and will be specifically described but attention is invited to the possibility of making variations.

Attention is first invited to Figures 1 and 2.

The side wall 5 of the metal can 6 is provided with an inwardly curled lip 7. A short distance below the lip, the wall 5 is formed with a portion 8 of reduced diameter providing said wall with an external downwardly facing narrow shoulder 9 at the upper end of said portion 8. At the lower end of this portion 8, the wall 5 is provided with an external reinforcing bead 10, the upper side of which constitutes an upwardly presented relatively wide shoulder 11 for a purpose to appear.

The metal cover 12 is formed with a skirt 13 and with an upward bead 14 at the juncture of said skirt with the disk portion 15 of said cover. The bead 14 provides the cover with a channel in which a sealing gasket 16 is secured by adhesion to the channel walls.

The skirt 13 is of a length to extend downwardly below the shoulder 9 but terminates in upwardly spaced relation with the shoulder 11. The lower edge of this skirt is provided with a rather tight outward curl 17 to reinforce it and restrain expansion. Also, an instrument may be inserted between the curl 17 and shoulder 11 for use in prying the cover from the can.

The skirt 13 is formed with a multiplicity of circumferentially spaced openings 18 which extend from a plane above the shoulder 9 to a plane somewhat above the lower extremity of the skirt. These openings are shown in the form of vertically elongated slots with their lower ends 19 extending into the inner wall of the curl 17 but they could well be of other shape.

The portion of the skirt metal between the openings 18 are inwardly offset into substantially bowed form to pro-

vide bowed resilient detents 20 under the shoulder 9 and abutting this shoulder to secure the cover 12 on the can 6, with the sealing gasket 16 conforming to and tightly seated on the can lip 7.

Each detent 20 has an outwardly inclined upper end portion 21 contacting with the correspondingly shaped portion 22 of the shoulder 9, said portions 21 and 22 coacting in maintaining downward pressure on the cover 12 to hold the gasket 16 tightly seated on the lip 7. These portions 21 and 22 also coact in causing outward springing of the detents 20 to released positions during prying-off of the cover. Upon complete removal of the cover, the detents 20 are self-returning to their normal shape in readiness for snapping into re-engagement with the shoulder 9 upon re-application of the cover to the can. To outwardly spring the detents during such cover re-application, each detent is formed with an outwardly declined lower end portion 23 to contact with the upper end portion of the can side wall and act as a cam. As soon as the outwardly sprung detents pass the shoulder 9 they snap into their prior normal positions and again tightly secure the cover on the can. Due to the expansion-restraining curl 17 at the lower end of the skirt 13, skirt expansion during cover removal and replacing is confined to the detents 20 and therefore, as no effort need be exerted to otherwise expand the skirt, the cover may be removed and re-applied with ease.

The cover 12 is initially formed as shown in Figure 3, with the substantially cylindrical skirt 13 flared somewhat and provided with the openings 18 and curl 17 but without shaping of the skirt portions between said openings into detent form. This initial cover shape allows machine dropping of the covers onto the cans as the latter are progressively advanced into position under the cover feeding means. Then, while each initially covered can rests upon a spring-supported pad or the like, a cupped driven chuck 24 (Figures 3 and 4) is employed to contract the skirt 13 to truly cylindrical form and to rotate the can and cover: and during such rotation, a roll 25 (or a plurality) is moved inwardly to deform the skirt portions between the openings 18 and thus form the detents 20. Prior to these operations, the can is, of course, filled but to simplify illustration no contents have been shown.

The sealed can may be easily opened by prying off the cover, and may be reclosed by re-application of said cover after removal of a desired quantity of the contents. During such re-closing, the detents 20 snap into re-engagement with the shoulder 9 and the seal is again complete.

While, in the present disclosure, the cover is initially shaped as shown in Figure 3 and reshaped as shown in Figures 2 and 4 after initial application to the can, said cover could well be completely shaped as in Figures 2 and 4 and snapped onto the can, in cases not requiring such a tight seal between cover and can.

In Figure 4, the chuck 24 is shown as including a plate 26 which forces down on the cover bead 14 to tightly seat the cover and compress the sealing gasket 16 while the can is supported: and to obtain the desired pressure, shims 27 may be interposed between said plate 26 and the chuck body. The plate 26 also functions as a knock-out for each finally closed can.

In Figures 5 and 7, the can construction is the same as in Figures 1 and 2 and the same reference numbers, plus the exponent "a" have therefore been employed to denote corresponding characteristics. In these views and in Figures 6, 8 and 9, however, the cover 12a is of somewhat different construction.

In these views, the openings 18a in the skirt 13a, do not extend into the downward flare 23a of the skirt 13a, thereby slightly changing the shape of the detents 20a between said openings. The flare 23a must therefore yield with the detents during cover removal and re-application, and a stronger snap action is therefore obtained. The bead 17a does not appreciably yield and

therefore maintains the normal diameter of the lower end of the skirt.

In Figures 5 and 6, the openings 18a are shown elliptical with their lengths disposed horizontally; in Figures 7 and 8, said openings are also elliptical but have their lengths disposed vertically; and in Figure 9, said openings are circular. These shapes and the rectangular form of the openings shown in other views are simply illustrative of a few of the many shapes which may be used.

In Figures 5 and 6, the upward bead 14a at the juncture of the cover skirt 13a with the cover disk 15a is radially narrower than the bead 14 of Figures 1 and 2 and when the cover is applied, the inner wall of the gasket channel formed by said bead substantially abuts the inward lip curl 7 of the can. Thus, the plastic gasket 16a is confined in a closed chamber from which the plastic cannot creep to impair the seal.

In Figures 7 and 8, the upper end 13b of the cover skirt 13a is outwardly offset and the bead 14b extends to this offset. This provides the gasket channel with a portion surrounding the lip curl 7: and the gasket 16b may therefore have a side-seal action as well as an end-seal action.

From the foregoing, it will be seen that novel and advantageous provision has been disclosed for attaining the desired ends. However, attention is again invited to the possibility of making variations within the scope of the invention.

I claim:

1. In a re-closable container, a side wall having an outwardly stepped upper portion including an uppermost wall part and a next upper wall part disposed inwardly of said uppermost wall part and connected thereto by a downwardly facing inwardly directed external shoulder, a sheet metal cover having a skirt closely surrounding said uppermost wall part and projecting downwardly below said shoulder, said skirt having a multiplicity of circumferentially spaced openings transversing said shoulder and extending from a plane above said shoulder to a plane below said shoulder, said skirt having a continuous lower edge portion restraining skirt expansion under said openings, the metal between said openings being inwardly offset under said shoulder to provide resilient detents which normally hold said cover engaged in telescoped relation over said side wall, said detents and shoulder having abutting surfaces which coact in temporarily outwardly springing said detents to released positions during prying off of the cover, said detents being resilient and self-returning to normal shape upon complete cover removal, whereby said detents may snap into reengagement with said shoulder when the cover is re-applied to tightly retain the cover in place.

2. A structure as specified in claim 1: said continuous lower edge portion of said skirt being provided with a continuous reinforcing curl, said side wall being provided with a continuous external reinforcing bead spaced below said curl, said bead having a substantially horizontal upper side between which and said bead a cover-pry-off device may be inserted.

3. A structure as specified in claim 1: said upper end of said side wall being provided with an inwardly curled lip, said cover having a yieldable gasket seated on said lip, said abutting surfaces of said bowed detents and shoulder being normally cooperative to exert a downward force on said cover to hold said gasket tightly seated on said lip.

4. A structure as specified in claim 1: said side wall being provided with an inward lip curl, said cover being provided with an upward continuous bead at the upper end of said skirt and providing a downwardly open channel over said lip curl, and a plastic gasket in said channel and abutting said lip curl, said lip curl and bead being relatively dimensioned to cause said lip curl to close the lower side of said channel to prevent creeping of the gasket plastic from said channel.

5. A sheet metal snap-on container cover having a skirt,

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said skirt having a multiplicity of circumferentially spaced openings, said skirt also having a continuous lower edge portion restraining skirt expansion under said openings, the metal skirt portions between said openings being inwardly offset into substantially bowed form to provide resilient bowed container-engaging detents, said continuous skirt lower edge portion having an outwardly directed continuous curl to reinforce said continuous edge.

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