

April 16, 1935.

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1,998,372

SEALED PACKAGE FOR EASY OPENING

Filed Feb. 14, 1933

3 Sheets-Sheet 1

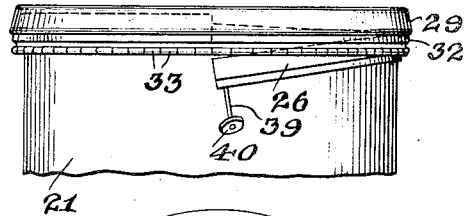
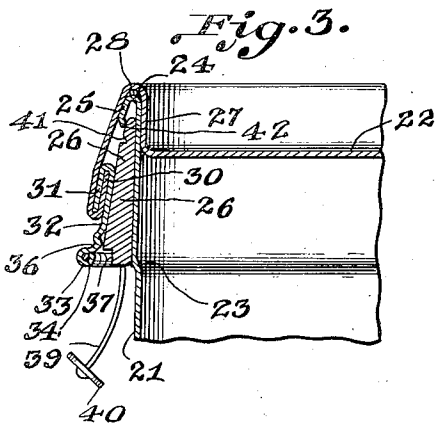
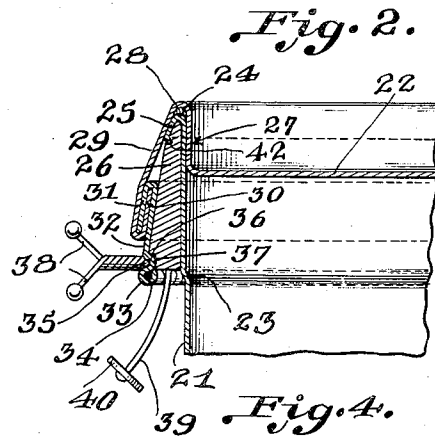
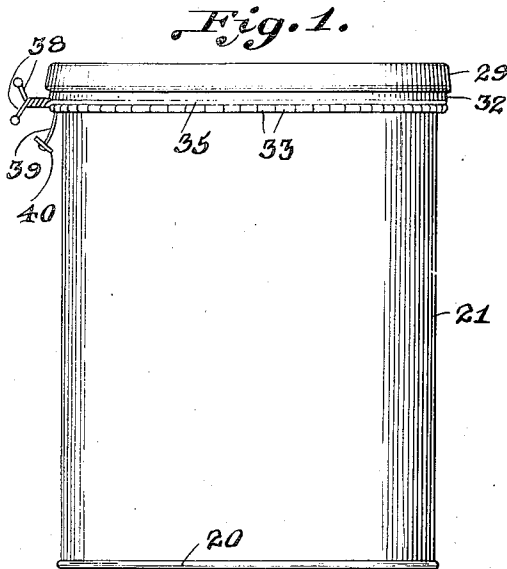


Fig. 5.

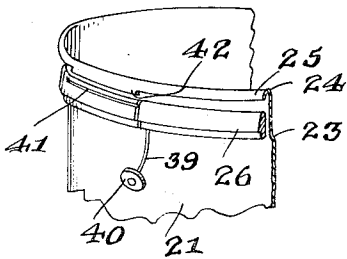
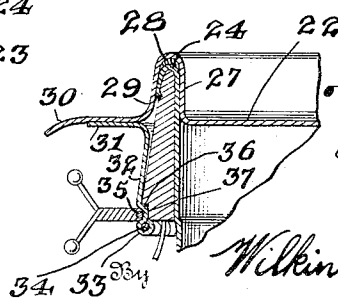
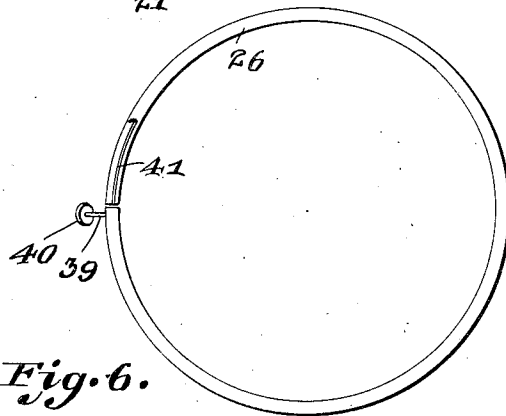


Fig. 6.



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Fig. 7.

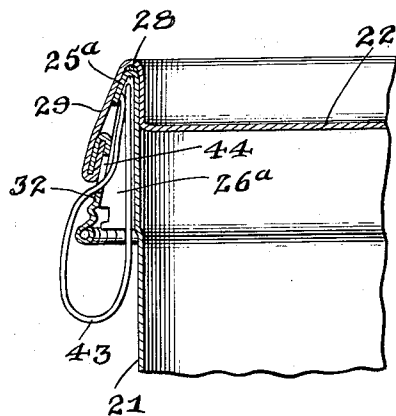


Fig. 8.

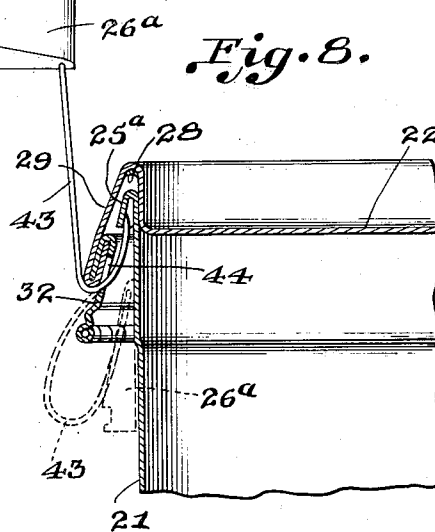


Fig. 9.

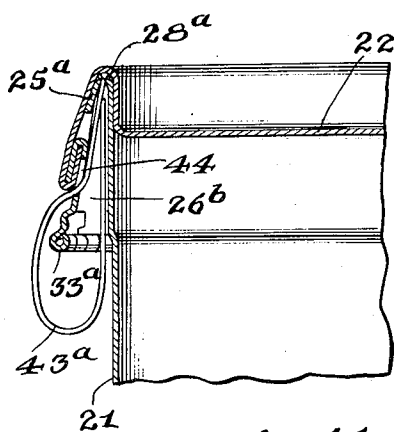


Fig. 10.

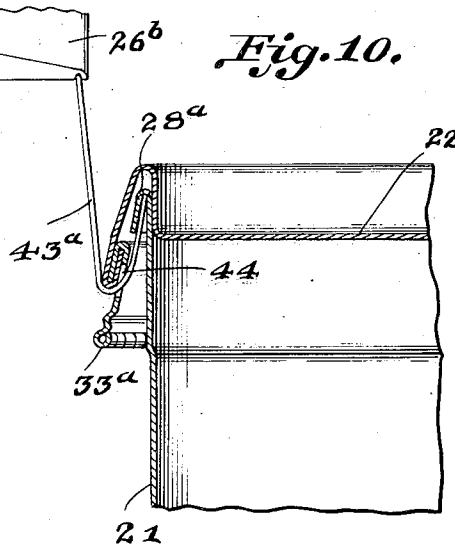
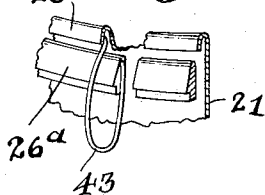


Fig. 11.



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Fig. 12.

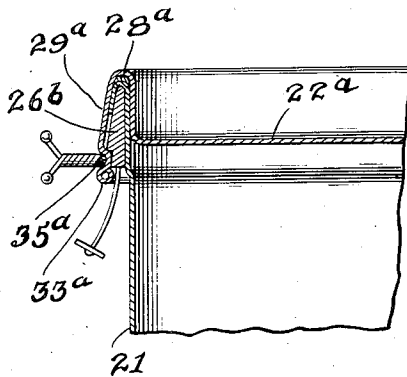


Fig. 13.

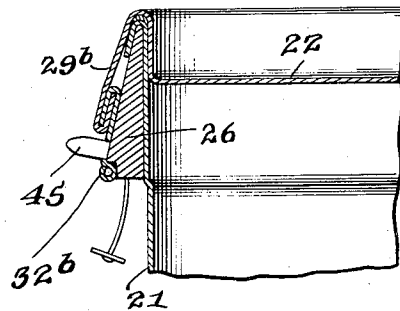


Fig. 14.

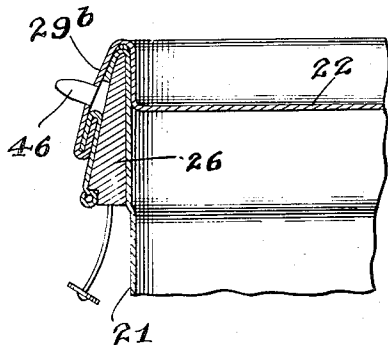


Fig. 15.

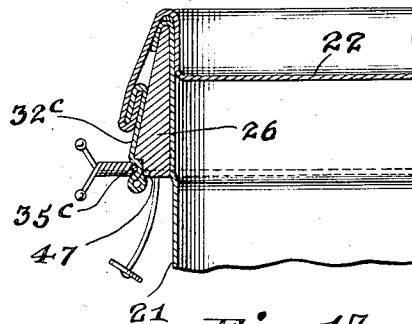


Fig. 16.

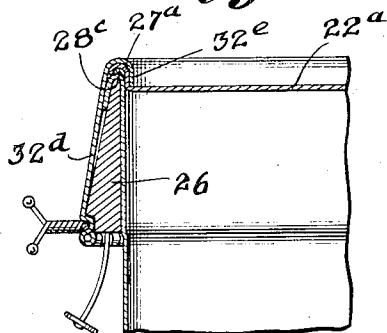
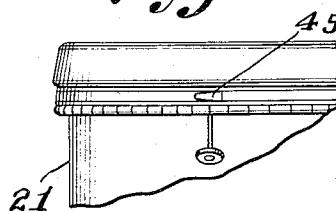


Fig. 17.



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UNITED STATES PATENT OFFICE

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SEALED PACKAGE FOR EASY OPENING

John Noble Laycock, Boston, Mass.

Application February 14, 1933, Serial No. 656,742

5 Claims. (Cl. 220-61)

The present invention relates to improvements in packages which are equipped to be hermetically sealed and consists in certain improvements whereby the packages may be rapidly, safely and conveniently opened.

Another object of the invention is to provide an improved closure for hermetically sealed containers which is rugged and capable of withstanding knocks and jars incident to transportation, but which will readily yield to be opened when that occasion arises.

A further object of the invention is the provision of a simple strong seam or joint for attaching removable covers to their containers, which seam is not susceptible to damage in shipment, but which can be opened quickly without tools with a minimum of effort or danger of cutting the operator's hands.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a side elevation of an improved container and cover constructed according to the present invention and in the sealed condition.

Figure 2 is a fragmentary sectional view taken on an enlarged scale showing the container and cover sealed.

Figure 3 is a similar view showing the initial step taken to open the package.

Figure 4 is a fragmentary side elevation taken at substantially right angles to Figure 3.

Figure 5 is a fragmentary perspective view with the cover removed and the sealing wedge ring in a lowered position.

Figure 6 is a top plan view of the wedge ring apart from the package.

Figure 6a is a vertical section similar to Figure 2 but with the sections of the skirt member unfolded.

Figures 7, 8, 9, and 10 are fragmentary vertical sections taken through a modified construction and showing the various phases involved in the opening of the same.

Figure 11 is a fragmentary perspective view of the wedge ring and container according to this form of the invention.

Figures 12, 13, 14, 15 and 16 are fragmentary vertical sections showing various further modifications of the invention, and

Figure 17 is a fragmentary front elevation taken at right angles to Figure 13.

Referring more particularly to the drawings and for the present to Figures 1 to 6 inclusive, 20 designates the bottom of a tin can which is attached to the cylindrical body 21 thereof, such can being constructed in any conventional manner. The top or closure 22 of the can is secured to the cylindrical side walls 21 by a seam or joint as shown in cross section in Figure 2. The cylindrical wall 21 is slightly offset outwardly as indicated at 23 and belled slightly outward between 23 and 24, and the upper edge of this outwardly offset upper portion of the can body is annularly turned outwardly as indicated at 24, thus providing a short downwardly and outwardly extending skirt 25 which overlies the upper edge of the wedge or freeing ring 26. The can top 22 has a flange 27 interfitting with the offset portion of the can body. At the upper edge of this flange 27 the metal is overturned outwardly and downwardly in such a manner as to provide a space above the ridge 24 of the can body in which space is located a gasket 28. From the overturned portion of the can top there is formed a skirt 29 which envelopes the short skirt 25 and a great portion of the wedge ring 26. At its lower portion the skirt 29 is turned upwardly to provide an interlocking tongue 30. This annular tongue 30 engages in a bight formed by the outwardly and downwardly turned tongue 31 on the sheet metal ring 32 which extends about the wedge ring 26.

The lower edge of the sheet metal ring 32 is sub-divided by a number of incisions forming separated teeth 33 which are rolled over to form eyes, which eyes may be hollow but are preferably rolled over upon a wire core 34. The teeth 33 are bound by a tight band of wire 35 which occupies a groove or indented portion 36 of the band 32. The offset part 36 fits into a cut-away shouldered portion 37 of the wedge ring 26 and thus the top of the can is locked with the sheet metal band 32 and in the same way pressure will be exerted by the can top upon the gasket 28, such pressure preserving the hermetic seal. The ends of the binding wire 35 are twisted together as indicated at 38. When it is desired to open the container, the twisted joint 38 of the wire is untwisted and the binding wire 35 is removed. A knife blade or other elongated object is then run around the can just under the wedge ring 26. This instrument is used to pry out the rolled edges 33, as indicated in Figure 3. Thus the teeth are unhooked from the groove and shoulder 36. The freeing or wedge ring 26, when formed, is provided with a pull wire 39 with a button 40 for

convenience in pulling. This wedge ring, as shown in Figure 4, is a split ring and the end carrying the pull tab is shown as drawn down in Figure 4. It is easy to pull down this end of the freeing ring for the reason that only friction holds it in place after the teeth 33 have been pried out.

Due to the tapered cross-sectional form of the ring 26, it may be readily removed by pulling on the button 40. The wedge or freeing ring 26 has an under-cut notch 41 therein at one point to receive the hooked tongue 42 of the skirt 25 of the can body. This construction is preferably formed on the last end of the ring 26 to be pulled out and this hooked construction exists over only a short arc of the circumference. The tail end of the ring 26 in being pulled downwards draws the hooked portion 42 of the skirt 25 down with it before sufficient pull is exerted to disengage the parts. Such distortion of the skirt 25 occurs that the hermetic seal is broken, thus relieving the vacuum in the container and rendering the top 22 free to be lifted off with the sheet metal band 32.

The sheet metal ring 32 is bound to the freeing ring 26. The tight wire 35 binds both rings to the body of the can. This may all be accomplished before the interlocking joint is formed between the skirt 29 and the sheet metal ring 32. These parts are shown in initial position in Figure 6a where the ends 30 and 31 extend at right angles from the body of the can. While they are in this position the folded edge 24 is pressed, rolled or spun to a tight contact with the gasket 28 upon the upper portion of skirt 25.

Thereupon the ends 30 and 31 are rolled, folded or spun into the locked joint, as shown in Figures 2 and 3. This rolled joint is shown as rolled downward, but it may alternatively be rolled in the opposite direction. The freeing ring 26 may consist of one piece, or of two or more rings which fit together to form the required cross-sectional shape to fit any case.

Many other variations of the particular form of the invention herein described and illustrated are of evident practicability and utility, and the principle of this invention is applicable to joints between many different kinds of materials, in many forms and for many purposes. The foregoing description covers only a favored form of the invention which has been selected to make its principle clear.

Referring more particularly to Figures 7 to 11 inclusive, instead of hooking the tail end of the freeing wedge ring 26 to the skirt 25, the skirt 25a is attached to one end of the wedge ring 26a as by a short wire 43, so that when the wedge or freeing ring 26a has been completely drawn out from its position against the container, such end of the ring 26a may be pulled upwards, as indicated in Figure 8. The connecting wire 43, which extends through a groove 44 in the band 32 and opposite the skirt 29, will act to raise the skirt and hold down the inner skirt 25a; thus releasing the lid 22 and the gasket 28 from off the can. In this way the vacuum is broken and the cover may be readily removed.

As shown in Figures 9 and 10, the wire 43a may be attached to the gasket 28a instead of to the inner skirt. It is also practicable in certain cases to run the wire 43a between skirt 29 and skirt 25a to a connection with the gasket 28a; or the wire 43a may, when gently pulled, open a small vent hole in the wall of the container 21 clear of the gasket 28a to release the vacuum.

With certain kinds of metal, and in forming joints for various purposes, it may be desirable to omit rolled joint 30, 31 and to tighten binding wire 35a, as shown in Figure 12, at the same time the air-tight joint at 28a is worked into hermetic contact. In this case the freeing ring 26a is reduced in depth perpendicular to the plane of the cover 22 and the teeth 33a are formed directly on the lower end of the skirt 29a.

In other cases it may be desirable to substitute a circumferential tearing strip or other conventional detaching device for attaching the sheet metal ring 32 to the freeing ring 26 instead of using binding wire 35. For instance in Figure 13 a tearing strip is shown at 45 as being on the metal ring 32b; while in Figure 14 a tearing strip 46 is shown on the skirt 29b. In either case the part of skirts 29b and 32b left attached to freeing ring 26 may be split opposite the split in the latter with the breaking of the vacuum after the tearing strip is removed.

The seal in Figure 14 may be readily broken, without removing freeing ring 26, after tearing strip 46 is removed if the tearing strip is located high enough on skirt 29b to make the gasket accessible to a knife point. A freeing wire similar to 43 in Figures 7 to 11 may alternately be attached to the tearing strip instead of to freeing ring 26, for the purpose of breaking the vacuum.

In other cases, as shown in Figure 15, it may be advisable to insert a wire 47 under the sheet metal ring 32c. This wire may be an extra turn of the binding wire 35c. Such wire, on being pulled out, will spread the teeth of the sheet metal ring 32c to destroy their lock on the freeing ring 26.

In other cases it may be advisable to use a more or less flat cover 22a, as shown in Figure 16, having a flange 27 hooked over the gasket 28c. The sheet metal ring 32d is formed with an inwardly and downwardly turned flange 32e enveloping the flange 27a of the flat cover 22a.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:—

1. In a sealed package for easy opening, including a receptacle, a closure therefor, and means for releasably sealing said closure in said receptacle, said means comprising an annular flared skirt member having a portion thereof engaging over the upper edge of the receptacle, and another portion extending downwardly and outwardly from said first portion, a reverted skirt member carried by the upper edge of the receptacle, a gasket between the portion of the first skirt member engaging over the upper edge of the receptacle and the upper edge of the reverted skirt member, a tapered freeing ring disposed beneath said reverted skirt member and beneath a portion of said first skirt member, means for releasably compressing a portion of said first skirt member beneath said ring and means for withdrawing said freeing ring when said compressing means has been released.

2. In a sealed package for easy opening, a receptacle, a closure therefor, an outwardly and downwardly flared relatively long skirt carried by said closure and extending downwardly from the upper end of said receptacle, an outwardly

and downwardly flared relatively short skirt carried by said receptacle, a gasket interposed between the upper portions of each skirt, a freeing member engaging the peripheral portion of said 5 receptacle and disposed beneath each of said skirts, releasable means carried by said long skirt and engaging beneath said freeing member to releasably hold said freeing member in position, and a pull member carried by said freeing 10 member.

3. In a sealed package for easy opening, a receptacle, a closure therefor, an annular flared skirt engaging said closure and extending downwardly from the upper end of said receptacle, 15 an annular flared skirt integral with said receptacle and snugly engaging beneath said first skirt at the upper portion thereof, a freeing ring wedge-shaped in transverse section disposed beneath each of said skirts, means carried by said 20 first skirt and engaging beneath said ring for releasably securing said freeing ring in position and a pull member carried by said ring and projecting therebelow.

4. In a sealed package for easy opening, a re-

ceptacle, a closure therefor, a flared skirt integral with said closure and extending downwardly from the upper end of said receptacle, a flared skirt integral with said receptacle and snugly engaging beneath said first skirt at the 5 upper portion thereof, a ring engaging beneath each of said skirts, means carried by said first skirt and engaging beneath the outer portion of said ring for releasably securing said ring in position, and a pull member carried by said ring. 10

5. In a sealed package for easy opening, a receptacle, a closure therefor, a skirt carried by said closure, a skirt carried by said receptacle snugly engaging beneath said first skirt at the 15 upper portion thereof, a split relatively flat freeing ring having a reduced portion providing a shoulder disposed beneath said second skirt and a portion of said first skirt, a gasket interposed between the upper ends of each of said skirts, means carried by one of said skirts engaging said 20 ring for compressing said gasket, and a releasing means for said ring.

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