June 3, 1930. H. A. FINK 1,761,714

METAL CONTAINER

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FIG. 1.

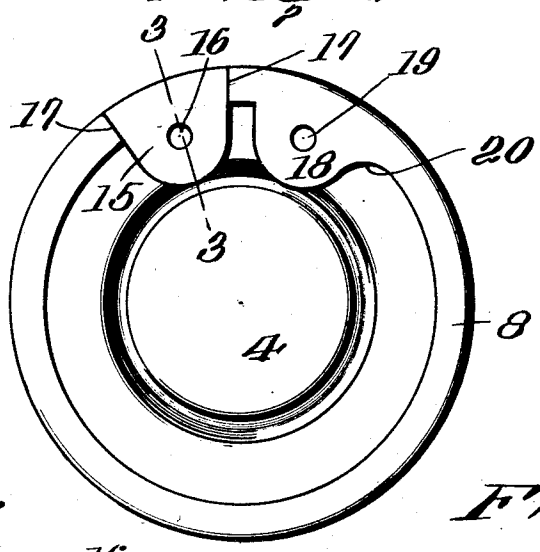


FIG. 3.

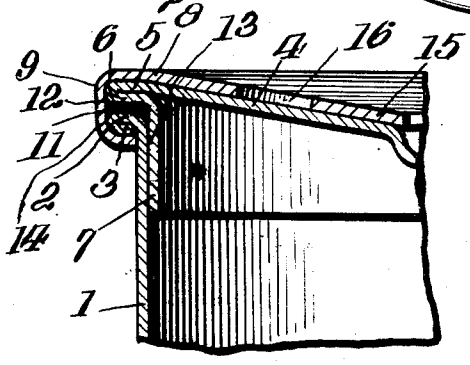


FIG. 4.

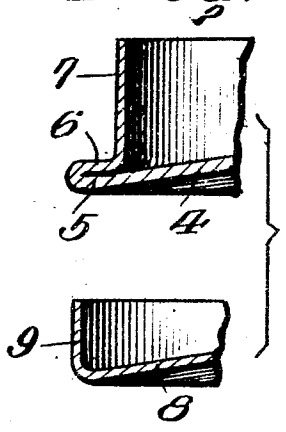
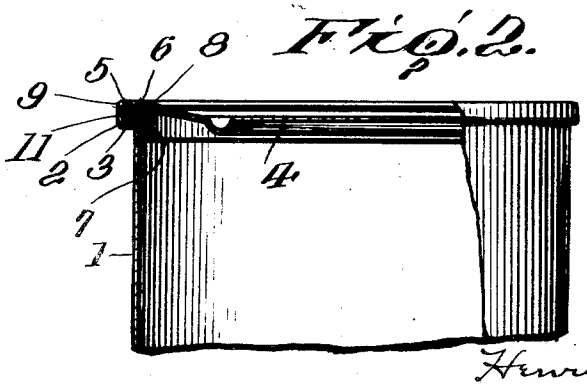


FIG. 2.



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Fig. 5.

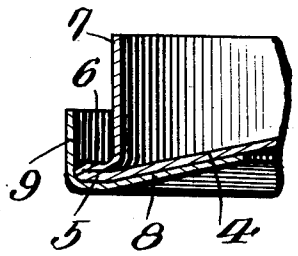


Fig. 6.

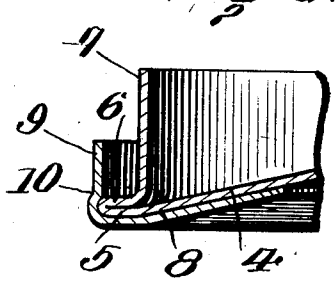


Fig. 9.

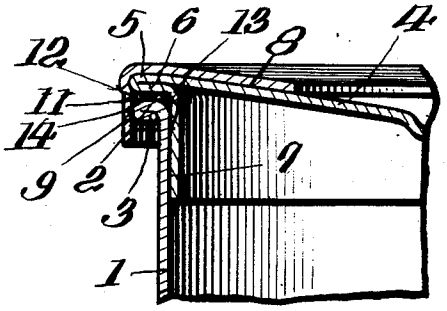


Fig. 7.

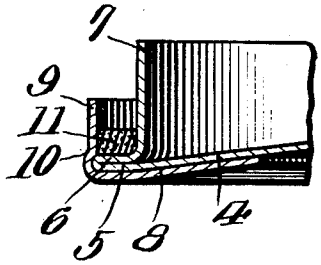
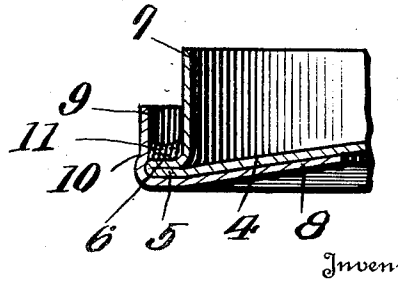


Fig. 8.



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Patented June 3, 1930 1,761,714

UNITED STATES PATENT OFFICE

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METAL CONTAINER

Application filed July 24, 1928. Serial No. 294,982.

The invention relates to new and useful improvements in metal containers which are adapted to be hermetically sealed and the method of making the same.

An object of the invention is to provide a container which may be hermetically sealed and which may be easily opened without the aid of special tools.

A further object of the invention is to provide a container of the above type wherein an end is secured to the body portion by an integral sealing ring which may be broken to open the container, and wherein the sealing ring is attached to the end forming a unit structure therewith preparatory to the attaching of the end of the body of the container.

A further object of the invention is to provide a container of the above type wherein the integral sealing ring and the end are so constructed that when they are attached, a pocket is formed in which a sealing material may be placed for forming on the end a sealing gasket preparatory to the attaching of the end to the body of the container.

A further object of the invention is to provide a container of the above type with means for breaking the sealing ring which is so constructed that after the sealing ring is broken means is provided for pulling the remaining sections of the sealing ring from the container for releasing the end.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings:—

Fig. 1 is a plan view of a container embodying the improvements.

Fig. 2 is a view partly in side elevation and partly in section of the same.

Fig. 3 is an enlarged section view on the line 3—3 of Fig. 1.

Fig. 4 is a view showing in the upper portion thereof a portion of the end and in the lower view a portion of the sealing ring before the parts are assembled and united.

Fig. 5 is a similar view showing the parts assembled.

Fig. 6 is a similar view showing the bending of the vertical flange on the sealing ring for joining the same to the end.

Fig. 7 is a view similar to Fig. 6, but showing the sealing material as applied to the pocket formed between the vertical wall of the sealing ring and the vertical wall of the end.

Fig. 8 is a view similar to Fig. 7, but showing the sealing material converted into a sealing gasket firmly attached to the container end and sealing ring.

Fig. 9 is an enlarged sectional view showing the end with the sealing gasket therein placed on the container preparatory to the joining of the sealing ring to the container for closing the end of the container.

The invention is directed to a metal container which is adapted to be hermetically sealed and the method of making the same. The container is preferably of cylindrical form and one end of the body portion is provided with a flange preferably bent back upon itself to make a solid metal seating flange for a sealing gasket and to provide a rigid shoulder to which the sealing ring may be secured. The closure for this end of the container consists of a container end and a sealing ring. The container end is preferably bent back upon itself so as to form a projecting flange and thence at right angles to the plane of the end to form a vertical wall which is adapted to frictionally engage the inner wall of the container body when the end is placed on the container body for a closing of the container body or for a reclosure of the container body after the package has been broken open by the removal of the sealing ring. The sealing ring is provided with a portion which is adapted to engage the outer face of the container end and a vertical wall extending at right angles thereto. This is the construction of the ring when it is first made and after the ring is thus formed the end and ring are assembled, said end fitting against the inner face of the sealing ring with the vertical wall of the sealing ring extending along the extreme edge of the flange on the container end.

After the parts have been thus assembled, the sealing ring is subjected to the action of

a spinning tool so that the vertical wall is forced into close contact with the edge of the flange on the container end. In fact, the vertical wall is slightly inset and thus it is that the sealing ring is joined to the container end so as to provide a liquid tight joint between the two, and so as to hold the ring and end together as a unit.

The unit sealing ring and end is then inverted and the pocket formed between the vertical wall of the container end and the vertical wall of the ring partially filled with a sealing material which is preferably liquid or semi-liquid form, so that the sealing material engages the flange on the end and the vertical walls of the end and sealing ring. The sealing material is then converted into a gasket which is firmly attached to the ring and end. The constructed ring and end are then placed on the container with the gasket in contact with the flange on the container and the vertical wall on the ring is turned underneath the flange on the container so as to firmly join the end and sealing ring to the container, thus making a hermetic seal for the container.

Referring more in detail to the drawings, the container consists of a body portion 1 which is preferably of cylindrical form. Said body portion 1 is bent outwardly at 2 and then inwardly at 3 so as to form a solid seating flange for the gasket and shoulder on the body under which the sealing ring may be turned for securing the end to the body. The container end, indicated at 4 in the drawings, comprises a top portion 5 which is bent underneath as indicated at 6, thus forming a relatively solid projecting flange. The underneath portion is bent so as to provide a vertical wall 7. This vertical wall 7 is adapted to fit within the container body as shown in Figs. 3 and 9. Said wall of the end frictionally engages the wall of the container body both when the parts are assembled for closing the container and when the end after it has been removed is replaced for resealing the container. The container end, of course, may be otherwise formed, but it is essential that a comparatively solid flange be provided which is adapted to overlie the flange on the container body and also that a vertical wall be provided which extends into the container body and frictionally engages the wall thereof.

The sealing ring is indicated at 8 in the drawings. This sealing ring includes a portion which is adapted to fit close against the outer face of the container end 5. It is also provided with a vertical wall 9 extending at right angles to this portion which engages the end. As clearly shown in Fig. 4 of the drawings, the sealing ring is first formed with this vertical wall 9 arranged at right angles to the overlying portion of the sealing ring and of such diameter that the flange of the container end will fit freely within this cylindrical vertical flange 9 of the sealing ring.

After the parts have been assembled as shown in Fig. 5, then the parts are preferably subjected to the action of the crimping tool which bends the vertical flange of the sealing ring along the line 10 which causes the sealing ring to firmly grip the edge of the flange on the container end. The vertical wall 9 is really inset by this spinning action and the ring is secured to the end so as to form a liquid tight joint and also hold these parts together as a unit.

It will be understood, of course, that from certain aspects of the invention the ring and end may be otherwise secured so as to join these parts as a unit to aid in the handling of the parts. It is preferred, however, that this connection between the end and the sealing ring shall be, as stated, a liquid tight joint, as this aids in the forming of a gasket for the container.

The end and the sealing ring after they are joined are inverted as shown in Fig. 7, and the pocket formed between the vertical walls 7 and 9 is filled or partially filled with a liquid sealing material which may be of any well known character. After the sealing material has been placed in the pocket, it will be confined therein by the walls and allowed to remain until it is converted into a substantially solid elastic gasket adhering firmly to the walls of the end and sealing ring. As shown in Fig. 8, when the sealing material is subjected to a drying action for converting it into a gasket, the exposed face of the gasket will take a curved form, while the gasket itself adheres to the metal walls. The constructed unit of end and sealing ring with the gasket applied, is then placed on the container body as indicated in Fig. 9. The end is pressed against the body forcing the gasket, indicated at 11 in the drawings, against the flange 2 on the container body. The lower part of the vertical wall 9 is turned underneath the flange 2 on the container body as indicated in dotted lines in Fig. 9, and in full lines in Fig. 3. The spinning of the vertical wall of the sealing ring underneath the flange on the container body further draws the container end against the gasket and the gasket against the flange on the container body, and thus it is that a very efficient seal is produced between the end of the container and the container body.

The material of the gasket 11 will be forced into the joint 12 between the edge of the flange on the container end and the vertical wall of the sealing ring; also into the joint 13 between the vertical wall 7 of the container end and the vertical wall of the container body; and also into the joint 14 between the edge of the flange on the container body and the vertical wall on the sealing

ring. The sealing ring is shown of considerable thickness so that there is a comparatively wide region extending from the inner to the outer edges of the flange on the container body and the flange on the container end wherein there is a sealing material. This sealing material has sufficient elasticity to permit the metal parts where they make contact to be brought into very firm contact with each other, and thus it is that a seal is produced for a container which is very efficient and the container can be placed under vacuum, if desired.

The end of the container is attached, preferably, by the manufacturers, and after the container is filled with the desired product the other end is double seamed onto the can body in the usual way.

In order that the sealing ring may be readily removed without the use of special tools, the ring has been provided with a breaking tab 15. This tab lies in the plane of the portion of the sealing ring which engages the outer face of the end and is preferably provided with an opening 16 through which the tongue of a fork or an ice pick or any other handy kitchen tool may be inserted, if found necessary for the bending of the tab outwardly away from the end and backwardly over the flange on the container end so that the metal may be torn across and the ring ruptured. The metal is either scored or cut along the line 17—17 to aid in the breaking of the sealing ring. This breaking tab and sealing ring are generally similar in construction to those disclosed in the Patent 1,521,599, granted John Coyle et al. January 6, 1925.

When the sealing ring is torn across and the sections of the ring remain on the container, these sections of the ring grip the container very tightly and inasmuch as the ring is curved in form sometimes it is difficult to remove these remaining sections. To aid in the removal of the sections left on the container after the tab has been torn off, a pull-off tab 18 has been provided. This pull-off tab is formed with an opening 19. The tab is integral with the ring and is preferably similar in construction to the tab 16 except that there are no score lines or cutting lines through the sealing ring in connection with the tab. As a matter of fact, the tab 18 where it joins the edge of the sealing ring at one side thereof is provided with a fillet 20 which is for the purpose of insuring that the tab will not tear loose from the sealing ring, but will remain as an integral part thereof and aid in the pulling off of the parts of the sealing ring remaining when the tab has been broken. In the drawings, only one breaking tab is shown. It will be understood, of course, that a second breaking tab may be provided at a point substantially diametrically opposite the breaking tab 16, and also a pull-off tab provided on the opposite side of the container which, of course, will be disposed relative to the breaking tab so as to be attached to the other section of the sealing ring left on the container. That is to say, the pull-off tabs are arranged in a clockwise direction from the breaking tabs.

While there has been shown a pull-off tab independent of the breaking tab, it will be understood, of course, that the structure may be greatly varied, it being essential, however, that there shall be a means for breaking the sealing ring and a means still retained as a part of the sealing ring for removing the sections left on the container when the ring is broken through.

The invention is not only directed to the container described in detail, but to the method of making the container wherein the sealing ring and end are joined as a unit and the sealing ring placed on the end and a gasket built thereon so that the gasket is caused to fit snugly within the pocket for which it is intended, adhering to the metal parts with which it contacts. The steps of the method reside in the assembling of the end and sealing ring and the joining of these parts so as to form a substantially liquid tight joint, after which the joined parts are inverted and the liquid sealing material placed in the pocket thus formed, where it will be retained until it can be converted into a solid elastic gasket properly placed relative to the parts and adhering to the metal parts so as to create, when the end is secured to the container body by the sealing ring, a very efficient joint.

It will be understood, of course, that from certain aspects of the invention, there is a great advantage in the joining of the sealing ring to the container end as a unit to aid in the handling of the parts, and therefore, the sealing material may be otherwise applied to advantage in connection with certain characters of seal, and the sealing ring may be otherwise secured to the end to form a unit structure without departing from the spirit of the invention as set forth in the appended claims.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A metal container comprising a body portion having a flange, a closure for said body portion including an end having a flange adapted to overlie the flange on the body and an integral vertical wall adapted to extend into and frictionally engage the body, a sealing ring having a portion adapted to overlie the end and a vertical wall at its extreme outer edge, and means whereby said ring can be torn across for opening said container, said end being placed within said sealing ring and secured thereto by insetting the vertical wall of the sealing ring, said

closure having a gasket of sealing material between the vertical walls, the vertical wall of said sealing ring being adapted to be bent beneath the flange on the container body for securing the closure to the container body and sealing the end thereof.

2. A metal container comprising a body portion having the end thereof bent outwardly and back upon itself to form a rigid holding flange, a closure for said body portion including an end having a flange adapted to overlie the flange on the body and an integral vertical wall adapted to extend into and frictionally engage the body, a sealing ring having a portion adapted to overlie the end and a vertical wall at its extreme outer edge, and means whereby said sealing ring can be torn across for opening the container, said end being placed within said sealing ring and secured thereto by insetting the vertical wall of the sealing ring so as to form a liquid tight joint between said ring and end, said closure having a gasket of sealing material between and adhering to the vertical walls and forming a unit structure therewith, the vertical wall of said sealing ring being adapted to be bent beneath the flange on the container body for securing the closure to the container body and sealing the end thereof.

3. A metal container comprising a body portion having a flange, a closure for said body portion including an end having a flange adapted to overlie the flange on the body, a sealing ring having a portion adapted to overlie the end and a vertical wall at its extreme outer edge, said vertical wall being adapted to be bent underneath the flange on the container body for securing the closure to the container body, said sealing ring having a projecting tab formed integral therewith which may be utilized for tearing the ring across, and severing the same, the remaining portions of the sealing ring on the container being also provided with an integral projecting tab which may be pulled on for removing said remaining sections of the ring.

4. A metal container comprising a body portion having a flange adapted to overlie the flange on the body and an integral vertical wall adapted to extend into and frictionally engage the body, a sealing ring having a portion adapted to overlie the end and a vertical wall at its extreme outer edge, said sealing ring having a breaking tab formed integral with the portion overlying the end, said ring being weakened along lines parallel with the sides of the breaknig tab and across the portion overlying the end, said ring also being provided with a pulling tab formed integral therewith adjacent the tearing cab for pulling off the remaining sections after the ring is broken, said closure having an elastic gasket between the vertical walls of the end and sealing ring adapted to engage the flange on the container body when the closure is applied thereto, the vertical wall of said sealing ring being adapted to be bent beneath the flange on the container body for securing the closure to the container and sealing the same.

In testimony whereof, I affix my signature.

HENRY A. FINK.