Aug. 10, 1943. V. I. McCARTHY 2,326,545

SEALING RING

Filed Nov. 25, 1940

Fig. 1

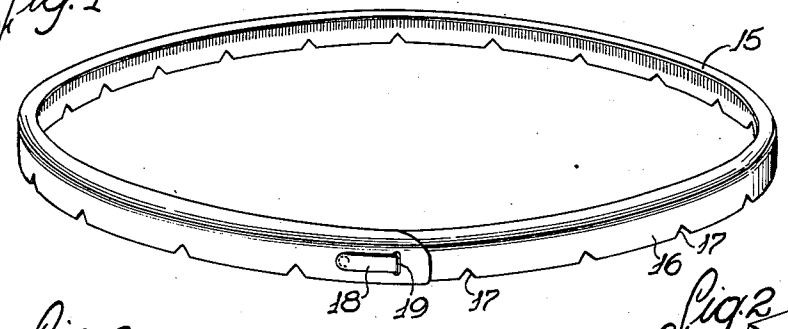


Fig. 2

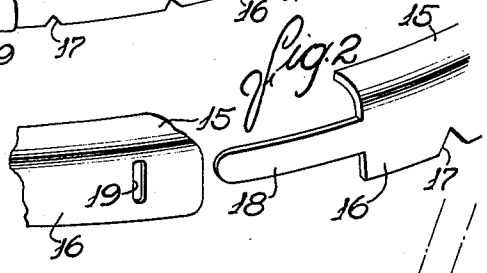


Fig. 3

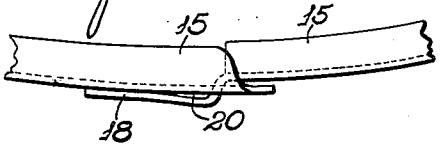


Fig. 4

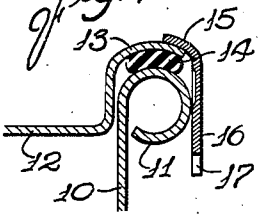


Fig. 5

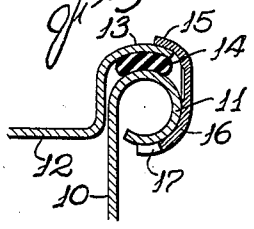


Fig. 6

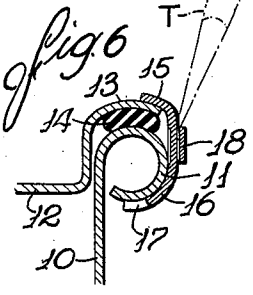


Fig. 7

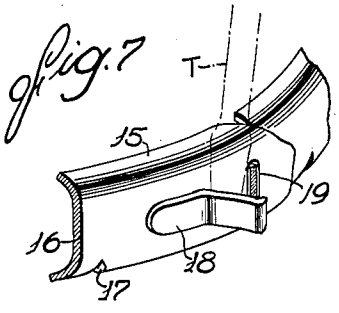


Fig. 9

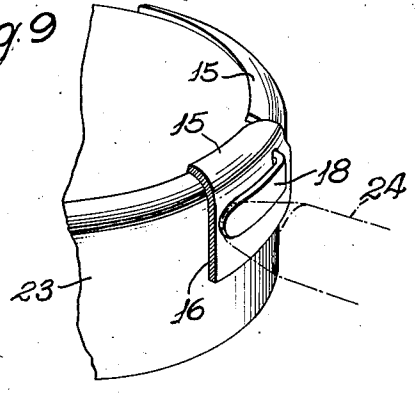
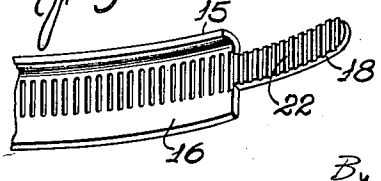


Fig. 8



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SEALING RING

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Application November 25, 1940, Serial No. 366,965

2 Claims. (Cl. 220—61)

The invention relates to sealing rings for clamping the covers to metal pails, drums, barrels and similar containers, and more particularly to an improved sealing ring of the continuous type which must be torn, broken or otherwise severed to permit removal of the cover from the container.

Sealing rings of the above general character are used extensively for closing cylindrical metal containers which are formed with a bead around the open end. After the container has been filled, a flanged cover is placed thereon with its flange seated on the bead of the container. The sealing ring is then slipped over the cover flange and, as the cover is pressed firmly into sealing engagement with the bead, the lower edge of the ring is turned or clinched under the bead to hold the cover securely in place. To open the container, the ring is opened by tearing, after which it may be pulled free of the cover flange and bead so that the cover may be lifted from the container.

As heretofore constructed, sealing rings arranged for removal in the above manner have been found objectionable because of difficulties experienced in opening the containers to which they are applied and because the rings when torn or broken for removal, often present sharp slivers which are dangerous to the workmen handling the same. With this in view, the primary object of the present invention is to overcome the above objections by providing a sealing ring of novel and improved construction which is easy to open and which breaks cleanly so that it is safe to handle.

Another object is to provide a novel sealing ring capable of being broken or severed in a single operation by means of a simple tool such as a screw driver.

A further object is to provide an improved sealing ring which when applied to a container is substantially free of bulges or projections liable to catch the clothing or injure the hands of workmen handling the containers.

It is also an object of the invention to provide a novel sealing ring which can be manufactured inexpensively yet kept within very close tolerance limits.

Other objects and advantages of the invention will become apparent from the following detailed description of the preferred embodiment illustrated in the accompanying drawing in which:

Figure 1 is a perspective view of a sealing ring embodying the features of the invention.

Fig. 2 is a perspective view showing the ends of the strip from which the ring is formed before final assembly.

Fig. 3 is a fragmentary top view of the finished ring showing the ends of the strip in assembled relation.

Fig. 4 is a transverse sectional view through the ring and the cooperating parts of a container and its cover showing the ring as initially applied to the container.

Fig. 5 is a sectional view similar to Fig. 4 but showing the ring turned or clinched under the bead of the container.

Fig. 6 is a sectional view of the ring and container showing the manner in which a tool blade is applied to the breakable section of the ring.

Fig. 7 is a fragmentary perspective view of the ring showing the final step in the breaking operation.

Fig. 8 is a perspective view of one end of the ring forming strip showing the transverse indentations or corrugations which promote clean breaking of the ring.

Fig. 9 is a fragmentary perspective view showing the manner in which the ring is formed to accurate size.

For purposes of illustration, I have shown the improved sealing ring in a form particularly suitable for use with a conventional metal container such as a cylindrical drum 10 of the type having a bead 11 rolled around the open end as shown in Figs. 4–6. Such containers are adapted to be closed by a telescoping metal cover 12 having a peripheral flange 13 seating on the bead 11. A gasket 14 of rubber or other suitable material may be interposed between the cover flange and the bead.

The sealing ring in its preferred form comprises an annular top or cover flange engaging portion 15 and a depending side wall portion 16 dimensioned to fit over the bead 11 of the container as shown in Fig. 4. The side wall portion 16 is arranged to extend substantially below the bottom of the bead 11 when the cover is pressed down tightly thereon so that it may be turned or clinched under the bead as shown in Fig. 5. Notches 17 are cut at spaced points along the lower edge of the side wall to compensate for the change in the diameter of the turned-under portion and prevent the formation of unsightly bulges or projections which are liable to catch on the clothing or injure the hands of the workmen handling the containers.

After the sealing ring has been applied in the above manner, the container can be opened only by breaking, tearing or otherwise severing the

ring so that it can be pulled free of the bead and cover flange. To facilitate opening of the container, the ring is constructed to provide a novel tearing or breaking section including a relatively narrow strip or tongue 18 adapted to be broken in a single operation by a simple tool such as a screw driver.

To form the breaking section above referred to, the ring is preferably constructed from a flat, elongated strip of metal having the tongue 18 projecting longitudinally from one end. The other end of the strip is provided with an elongated transverse slot 19 adapted to snugly receive the tongue. The strip is bent into generally circular configuration with the slotted end overlapping the tongue end as shown in Fig. 3. In this bending operation the upper edge portion of the strip may be turned inwardly to form the bead engaging portion of the ring. It will be observed that the tongue and slot are located on the wall portion of the ring slightly below the bead engaging portion. This is highly advantageous as the tongue is therefore disposed on the outer periphery of the ring when the ring is applied to a container so that it is readily accessible for engagement by a tool T (see Fig. 6).

In assembling the ring, the tongue 18 is inserted through the slot 19 from the rear and bent inwardly to position the end portion in closely fitting contact with the wall of the ring. Preferably a narrow space 20 (Fig. 3) is left between the tongue and wall adjacent the slot 19 to facilitate the insertion of the tool. The tongue may then be rigidly secured to the adjacent wall portion in any suitable manner, as for example, by spot welding. The weld is preferably made closely adjacent the outer end or tip of the tongue but in any case it is spaced a sufficient distance from the slot 19 to provide for the insertion of the tool blade T between the tongue and the ring.

As the tongue 18 is somewhat weakened by bending at the point of emergence from the slot 19 (see Fig. 3), the insertion of the tool blade behind the tongue will serve to break it off squarely substantially at that point. A break of this character is advantageous because of the absence of long, sharp slivers that might injure the workman removing the ring and that make the discarded ring dangerous to handle. A series of transverse indentations or corrugations 22 (Fig. 8) formed on the inner surface of the tongue, have been found to promote clean square breaking of the same.

The arrangement above described for connecting the ends of the strip to form a continuous ring not only facilitates the severing of the ring but materially simplifies the manufacture of the same with a resultant reduction in cost. In this connection it will be noted that the tongue 18 may be formed and the slot 19 and notches 17 may be cut in the strip by a simple stamping operation before it is bent into the final shape shown in Fig. 1.

The construction is further advantageous in that sizing of the ring can be readily effected by assembling it on a suitable gauge or mandrel 23 (Fig. 9) having an outside diameter corresponding to the desired diameter of the ring. The ring is placed over the gauge and squeezed tightly against the same, the tongue 18 being thereby forced into a predetermined relation to the slotted end of the ring. While the ring is thus held, a welding electrode 24 may be applied thereto to spot weld it to the body of the ring. Thus, rings of uniform accurate diameter can be produced quickly and inexpensively by reason of the novel construction employed.

It will be apparent from the foregoing that the invention provides a sealing ring of novel and improved construction, particularly suitable for clamping the covers to sheet metal drums and similar containers. The ring when applied to the drum, is neat and attractive in appearance. For opening the container, the ring may be quickly and easily broken in a single operation by means of a simple tool such as a screw driver. Due to the novel form of construction of the breaking section of the ring, the break is clean so that the discarded ring is safe to handle.

I claim as my invention:

1. A sealing ring for clamping a flanged cover to a bead encircling the open end of a metal container, said ring being formed from a strip of metal bent into generally circular configuration with the respective ends in overlapping relation and shaped to provide flange and bead engaging portions, means providing a breakable connection between the ends of the strip comprising a tongue projecting from the inner end of the strip through a slot in the outer end of the strip and extending closely adjacent the outer surface thereof, a weld securing the end portion of the tongue to the outer end of the strip at a point spaced from said slot to provide for the insertion of a tool between the tongue and the ring, a portion of the tongue adjacent said slot being weakened by transverse indentations on its inner surface arranged to cause the tongue to break off squarely upon application of the tool thereto.

2. A sealing ring for securing a cover to a container having a bead encircling its open end providing a seat for the cover, said sealing ring comprising a metal strip bent into circular configuration with the ends of the strip overlapping, an inwardly turned flange on the upper edge of the strip providing an annular cover engaging element, the adjacent portion of the strip forming a depending side wall adapted to fit over the bead of the container and to be clinched thereunder, connecting means permanently connecting the overlapping ends of the strip to form a continuous ring, said connecting means including a relatively narrow extension on the underlying end of the strip projecting outwardly through a transverse slot in the overlying end of the strip then forwardly closely adjacent the wall portion of the ring and having its tip rigidly attached to the ring, the point of attachment and said slot constituting spaced bearings for the extension on the overlying end of the ring so that the extension can be readily broken by insertion of a suitable tool between the extension and the wall portion of the ring intermediate said bearings.

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