

Sept. 1, 1964

P. SADA

3,146,905

DEVICES FOR OPENING THE HERMETICALLY SEALED CANS

Filed Jan. 8, 1963

2 Sheets-Sheet 1

Fig. 1

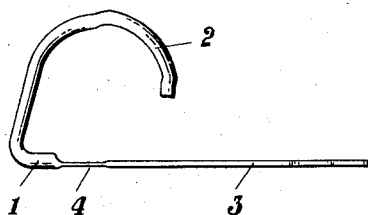


Fig. 2

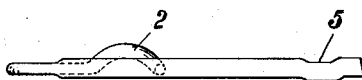


Fig. 3

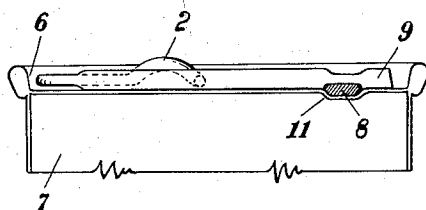


Fig. 4

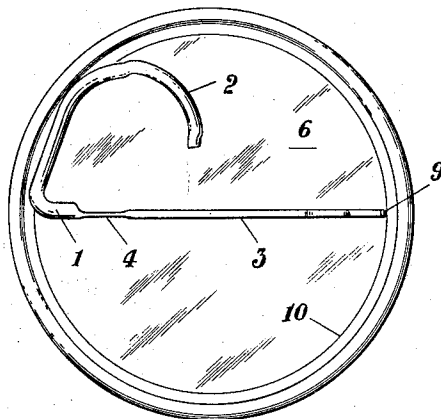


Fig. 5

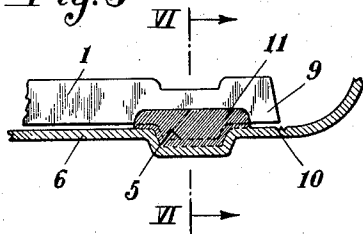
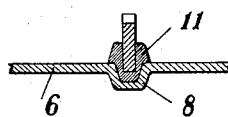


Fig. 6



Pietro Sada
INVENTOR.

BY Wendert, Lind
And Ponack, Attorneys

Sept. 1, 1964

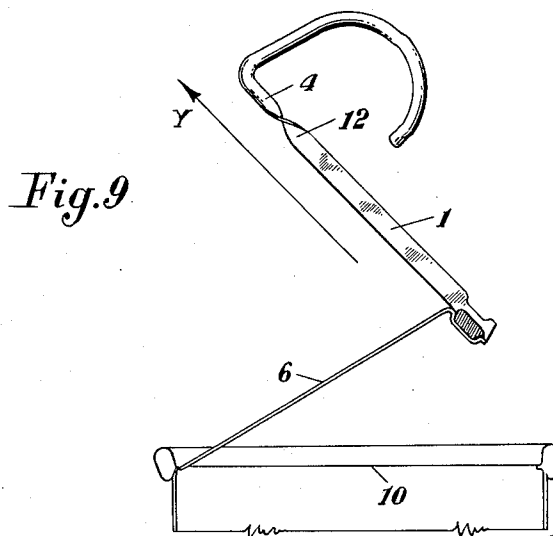
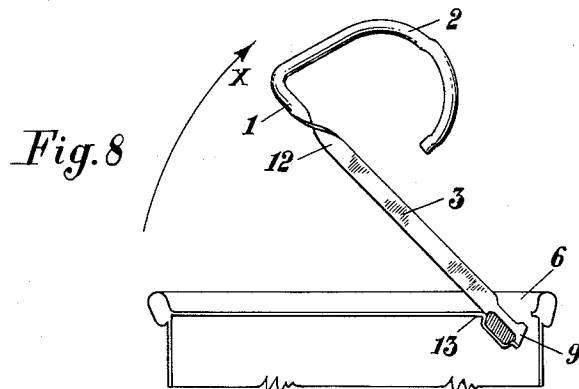
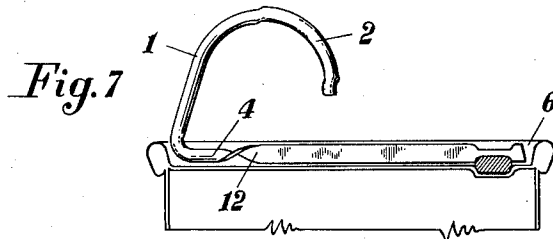
P. SADA

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2 Sheets-Sheet 2



Pietro Sada
INVENTOR.

BY Wendt, Lind
and Ponack,
attorneys

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DEVICES FOR OPENING THE HERMETICALLY SEALED CANS

Pietro Sada, Aprilia, Latina, Italy, assignor to Industrie Verwertungsprodukte Anstalt, Vaduz, Liechtenstein

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1 Claim. (Cl. 220—48)

According to this invention, a device is provided comprising a lever applied to the cover of the can, said lever having at one of its ends a bent portion, while the same lever has at its other end a slightly inclined cut portion. The bent portion of the lever has a round cross sectional shape, and said sectional shape at about one half of the total length of the lever is flattened so as to be transformed into a rectangular shape, while in the transition zone from one another of the two cross sectional shapes, by a further flattening a little zone having a minor strength is provided.

The cover is previously prepared with a double circumferential scratch, little spaced apart from its peripheral edge, and with a rectangular recessed seat obtained when the cover is pressed. The cover is then crimped onto the filled can which, soon after the filling operation, is submitted to sterilization.

After the last cited operation, the lever is welded to the cover in register with the aforesaid recessed seat, so that the flattened portion will be located with its greatest dimension perpendicular to the surface of the cover, while the bent round sectional portion will lay onto the cover. The last cited portion shows a projecting part with respect to the plane of the cover, in order to render easy its raising when the can is to be opened. In order to predispose the can for its opening, the bent portion of the lever is raised while rotating through 90°, so as to carry said portion from its horizontal position to its vertical position. This is possible as the minor strength portion, yielding to the twisting stress, will take a helical shape.

In order to open the can, the action is as follows:

The can is firmly held by the left hand and the finger of the right hand is inserted into the ring of the raised portion of the lever, exerting a pulling stress.

The lever which will behave as a lever fulcrumed at its welded zone, will enter by its flattened end into one of the two scratches of the cover so as to open an arc into said scratch.

Subsequently the lever will be upwards pulled causing the complete cutting of the portion of the cover surrounded by said scratches and the removal of said portion.

By the above described device, the advantages as follow will be embodied:

(a) The lever is manufactured from a round rod of tinned steel, by a simple pressing operation;

(b) Said manufacture will be remarkably economical due to its simplicity.

This invention will be hereinafter described with reference to the attached drawings, where:

FIGURE 1 shows a top plane view of the lever;

FIGURE 2 shows a side view of the lever of FIGURE 1, where it has been shown at the end of the flattened portion, a projecting member serving the purpose of increasing the welding surface onto the cover;

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FIGURE 3 shows, in vertical cross sectional view, the upper portion of the can with the lever welded to the cover;

FIGURE 4 shows the top plane view of FIGURE 3;

FIGURE 5 shows, in an enlarged scale, the detail of the flattened portion of the lever and the zone of its welding to the cover;

FIGURE 6 shows a sectional view taken along the plane VI—VI of FIGURE 5;

FIGURE 7 shows the sectional view of the upper portion of the can with the ring shaped lever located in a vertical plane after the rotation through 90° of the ring;

FIGURE 8 shows the vertical cross sectional view of the upper portion of the can when the pressure of the flattened portion of the lever starts cutting the cover along the circumferential scratch, the arrow showing the direction of the stress to be exerted;

FIGURE 9 shows the vertical cross sectional view of the upper portion of the can, with the cover detaching therefrom due to the pulling stress exerted onto the lever ring towards the direction shown by the arrow.

With reference to the drawings, and particularly to FIGURES 1 and 2, this invention consists first in a lever 1, comprising the bent portion 2 having a circular section, the portion 3 the cross section of which is flattened and rectangular, the intermediate zone 4, suitably weakened, and the zone 5, obtained by a pressing operation in order to obtain a good welding of the lever to the cover.

The FIGURES 3 and 4 show the position of the lever 1, welded to the cover 6 of the can 5 in the recess 8, so that the end 9 of said lever will be in register with one of the two circumferential scratches 10.

As shown in FIGURES 5 and 6, the lever is welded by its portion 5 to the cover 6 by a drop of welding alloy 11 which is poured into the recessed zone 8.

FIGURE 7 shows in vertical sectional view, the lever 1 welded to the cover 6 and with its ring shaped portion 2 raised and rotated through 90° and lying thus in a plane at right angles with respect to the cover.

In said figure has been shown the intermediate zone 4, helically shaped as depicted at 12, due to the torsional stress exerted onto the ring of the lever, overcoming the strength of the weakened zone 4.

The FIGURES 8 and 9, show how the opening operation of the can is to be carried out.

The can is firmly gripped by the left hand, while the finger of the right hand raises the lever 1, inserting the finger into the ring 2, exerting a stress towards the direction X and causing thus a strong pressure to be exerted by the end 9 of the flattened portion of the rod 3 onto the zone of the double scratch 10 and thereby starting an arc of cutting.

The stress causes simultaneously a portion of the cover 6 to inwards move and thus the cover to bend along a chord passing through the point 13 of the welding zone.

By pulling then the lever 1 towards the direction Y the cutting will be caused to prosecute along the cutting circle 10 until the cover 6 will be entirely removed.

Of course the opening system can be applied to containers having any shapes and sizes.

The present invention has been described in one preferred embodiment, being however understood that constructive changes might be practically adopted without departing from the scope of the present industrial privilege.

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I claim:

An opening device for a hermetically sealed metal can having a cover comprising a pair of closely spaced scratches extending parallel to the peripheral edge of said cover, a metal rod located on said cover substantially parallel thereto having a pointed end turned towards the intermediate zone of said pair of scratches, said cover having a rectangular recess adjacent said scratches, welding means provided in said recess securing said rod to said cover adjacent said pointed end, a ring shaped circular handle portion on said rod, a rectangular portion on said rod adjacent to said welding means and an intermediate portion on said rod located between said handle portion and said rectangular portion having a weakened cross section area for facilitating the turning of said

handle portion upwardly from its horizontal inoperative position on the cover to its vertical operative position, whereby a first pulling stress exerted onto said ring shaped portion of the metal rod around said welding means causes said pointed end to enter into said scratches and to initiate the rupture thereof and a second pulling stress exerted on said handle portion away from the can causes the cover to be removed along said scratches.

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