CLOSURE AND OPENER FOR CANS

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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CLOSURE AND OPENER FOR CANS

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ABSTRACT OF THE DISCLOSURE

This patent describes a novel closure normally for use in combination with the conventional can, said closure comprising an end closure member adapted to be crimped with the flared can body to form a flange and thereby seal the end of the can, said closure having an annular groove in the underside thereof in proximity to said flange, cutting means received in said groove, said cutting means having a cutting edge, said cutting means also having a portion thereof projecting through said closure, a torsion bar carried diametrically on the outer side of said closure and being secured to a portion of said cutting means extending through said closure.

It is a primary object of the present invention to provide a novel closure means for cans.

More particularly, it is an object of the present invention to provide a novel closure construction particularly adapted for use in steel cans, wherein the closure is provided with means for opening of the same.

Still another object of the present invention is the provision of a novel built-in opener for a steel closure which is simple to fabricate and does not interfere with the stacking of cans.

These and other objects and advantages of the present invention will be apparent from the more detailed description which follows taken in conjunction with the accompanying drawings.

DESCRIPTION OF PREFERRED EMBODIMENTS

Turning to the drawings:

FIGURE 1 shows a perspective view of the novel closure of the present invention with the closure having been partially rotated to begin the opening of the closure.

FIGURE 2 shows the can of FIGURE 1 wherein the closure has been rotated 180° so that the closure is opened.

FIGURE 3 is a sectional view with parts broken away of the closure of the present invention prior to the closing of the flange at the top edge of the can.

FIGURE 4 is a perspective view of the cutting components of the closure of the present invention.

FIGURE 5 is an enlarged partial side view of the closure of the present invention showing the manner in which the portion cut out of the closure by the opener relates to the side flange of the can.

Turning to the drawings in greater detail, can 10 is a conventional steel can normally having a seam at the side and a bottom closure 12. The novel closure of the present invention is indicated generally as 14 and is provided at its underside with an annular groove 16. Within the annular groove rides alignment members 18 of the cutters 20. The cutters 20 have a cutting edge 22 adapted to cut the closure during the opening operation. The cutters also have a portion 24 extending through the closure which is connected to torsion bar 26. The cutting edge 22 preferably has the configuration shown in FIGURES 3 and 4, that is, a sharp leading edge which makes an acute angle with the closure 14. This configuration in conjunction with groove 16 maximizes the shear forces produced by the cutters.

In operation, the torsion bar 26 is simply rotated as shown in FIGURE 1 to thereby cut out a circular disk as shown in FIGURE 2. The torsion bar is adapted to remove the cut out portion which is carried by the alignment members 18.

In production, the can is normally received from the manufacturer having the bottom closure already attached, and the top open. The closure of the present invention is then prepared as shown in FIGURE 3 with the flared can body 30 and the flared end 32 of the closure overlying each other. Thereafter, the assembly is passed through a flanging machine which forms the flange as shown in FIGURES 1 and 2. At some point in the operation, normally a solder or weld 34 is applied to that portion of the cutter passing through the closure in order to assure complete and permanent sealing and the retention of vacuum within the can. The formation of the torsion bar is simply accomplished by crimping a piece of steel over the projecting ends of the cutters after the cutters have been welded or soldered to the closure.

In FIGURE 3, there is also depicted an alternate embodiment of my invention in which there is positioned a
partial closure 36 under closure 14. The partial closure 36 has a prefabricated central opening 38 therein. The purpose of partial closure 36 is to provide a smooth finished edge 40 after closure 14 has been opened. The edge of the cut made by cutters 20 is necessarily sharp and slightly jagged, a result which is not suitable where repeated access to the interior of the can 10 is required. This embodiment is particularly well adapted to coffee cans.

As will be apparent to those skilled in the art, the alignment groove 16 is generally needed to maintain the cutters in a circular path during operation and to increase the shear forces produced by the cutters. However, when the cutters are positioned in close proximity to the flange, the flange will keep the cutters in a circular path so that the groove can be eliminated.

Another embodiment of this invention (not shown) is where a single cutter operates in a groove around the side wall of the can body. The cutter has a means for gripping on the portion extending outwardly from the can wall so that it can easily be applied thereto to cause the cutter to cut all around the can wall, with the end of the can and a portion of the body being removed.

Generally speaking, the cutters are made of a hard cutting steel. The other members of the closure are normally made of soft steel and therefore cutting is no problem and can be carried out even by a woman or a child by the use of moderate rotational force on the torsion bar.

It will be noted that the torsion bar projects slightly above the edge of the flange of the can. However, since the cans are normally stacked in a top-to-bottom relationship, there is no interference with stacking because the distance between the bottom closure and top closure of adjoining cans is great enough to accommodate the height of the torsion bar.

Having fully defined the invention it is intended that it be limited only by the lawful scope of the appended claims.

I claim:

1. A novel closure normally for use in combination with the conventional can, said closure comprising an end closure member adapted to be crimped with the flared can body to form a flange and thereby seal the end of the can, said closure having an annular groove in the underside of said closure, cutting means having an alignment portion received in said groove, said cutting means having an upstanding cutting edge, said cutting means also having a portion thereof projecting through and above said closure member, a torsion bar carried on the outer side of said closure and being secured to a portion of said cutting means extending through said closure.

2. A novel closure normally for use in combination with the conventional can, said closure comprising an end closure member adapted to be crimped with the flared can body to form a flange and thereby seal the end of the can, said closure having an annular groove in the underside of said closure, cutting means having an align-

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