

[54] **CAN WITH LID OPENER**
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[51] **Int. Cl.**B65d 43/04
[58] **Field of Search.....**220/43 R, 43 P

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[57] **ABSTRACT**

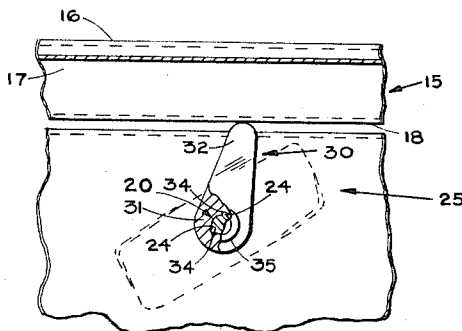
A lid opener lifts a replaceable can lid from the inside. An exterior lever and interior lifter arm made of aluminum are connected by a ribbed steel rivet driven through them and through the upper wall of the can. Turning the internal lever presses one of the lifter arms against the inner lid surface. The rivet ribs transmit adequate lifting torque.

1 Claim, 5 Drawing Figures

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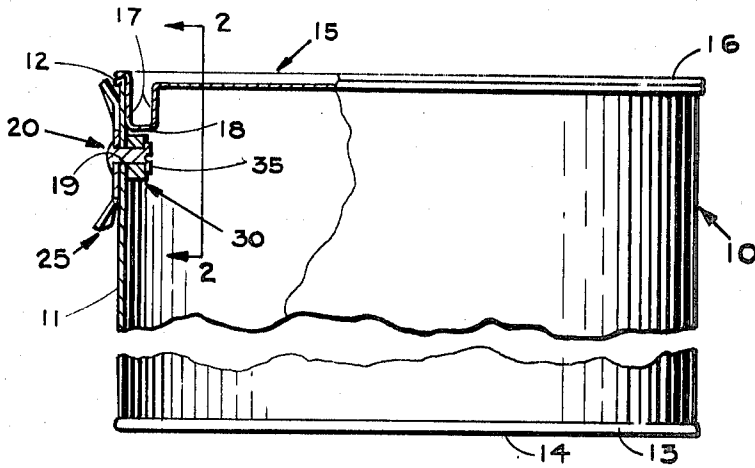


FIG. 1

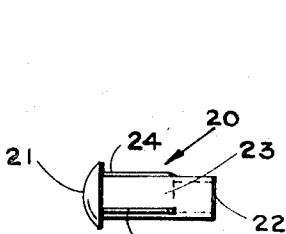


FIG. 3

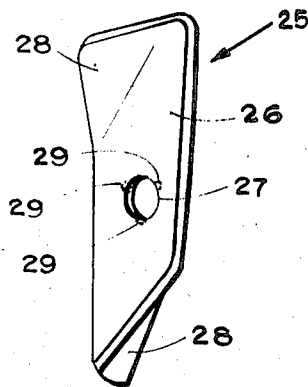


FIG. 4

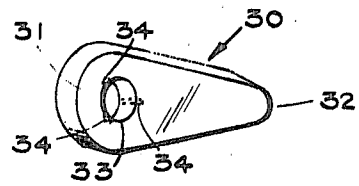


FIG. 5

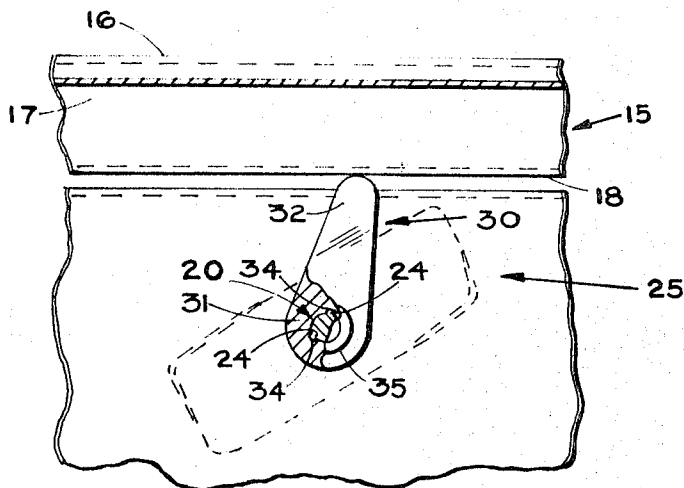


FIG. 2

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CAN WITH LID OPENER

BACKGROUND OF THE INVENTION

Cans having replaceable lids are used for many products, such as pasty compositions, paints, etc. In conventional construction, the edge of the lid may have a closely adjacent flange, which gives it strength.

Conventionally such lids are pried off at their outer edges. As to other types of cans, twistable levers, supported by rivets, have been used to apply a prying pressure. To the best of the knowledge of the Applicant, no simple lid opener apparatus has existed in which pressure to lift the lid was exerted from the interior of the can.

SUMMARY OF THE INVENTION

In the present invention, simple apparatus is provided to lift a can lid, requiring the addition of only three parts. Beneath the upper edge of the can, through a bore, passes a rivet formed of a relatively rigid metal such as stainless steel, and having a hollow end and ribs on its stem surface. The second and third added parts are an external thumb lever and an internal lifter cam lever. Each of these has a mounting bore large enough to receive the rivet except for its external ribs.

The thumb lever and lifter cam lever are in effect keyed by the ribs of the rivet so as to transmit turning torque applied by the thumb lever to the lifter cam. Each is formed of a relatively less rigid material, such as aluminum. Assuming that the head end of the rivet is external, parts are arranged in position for mounting with the thumb lever outwardly of the can and the lifter cam lever inwardly of the can. Driving the ribs of the rivet through the bores of the levers grooves these bores, thus mounting them with torque resistance. Expanding the hollow end of the rivet compresses the connection.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view partly in elevation and partly in section, showing can lid lifter apparatus embodying the present invention.

FIG. 2 is an enlarged fragmentary view as seen along line 2-2 of FIG. 1, the lid lifter apparatus being turned to raise the lid.

FIGS. 3, 4, and 5 are respectively views of the rivet, thumb lever, and lifter arm lever shown in FIG. 1, prior to the installation thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention uses a conventional can generally designated 10 and reuseable lid generally designated 15. The can has a cylindrical side wall 11 terminating in an upper edge 12 and a lower edge 13 to which a bottom 14 is seen. The lid 15 has an outer edge 16, adjacent to which is a channel-like annular groove 17 having a bottom groove surface 18.

Extending through the can side wall 11 spacedly beneath the upper edge 12 is a bore 19 through which extends a rivet generally designated 20, best shown in FIG. 3.

The rivet 20 is formed of relatively rigid metal such as stainless steel. Its head end 21 is rounded; its opposite end is a hollow tip 22. On the surface of its stem 23 are formed three shallow ribs 24 which commence adjacent to the head end 21 and extend along the surface 23 toward but stop short of the hollow tip 22. In the drawings, the radial extent of the ribs 24 is somewhat exaggerated.

A thumb lever generally designated 25 is shown in FIG. 4. It is formed to an elongated rectangular shape, as by stamping aluminum. It includes a flat central portion 26 having a mounting bore 27. Two opposite corner portions 28 are bent toward each other, out of the plane of the flat central portion

26, for easier grasping.

An aluminum lifter cam lever generally designated 30 is shown in FIG. 5. It is short and thick, tapering from a larger mounting end 31 to a narrowed camming end 32. The mounting end 31 has a mounting bore 33 slightly larger than the outer diameter of the hollow end 22 of the rivet 20.

The mounting bore 27 of the thumb lever 25 and the mounting bore 33 of the lifter cam are preferably of the same diameter as the rivet tip end 22. The ribs 24 on the stem surface 23 make it impossible to mount the parts except by a driving or force fit.

On assembly, the parts are positioned preliminarily. On driving of the rivet 20, its unribbed hollow end 22 will pass into the thumb lever mounting bore 27; further movement will cause the ribs 24 to pierce grooves 29 in the mounting bore 27; and, as the rivet 20 passes through the lifter cam 30, the ribs will pierce similar grooves 34 in its mounting bore 33. The hollow end 22 is expanded outward, as shown in FIGS. 1 and 2, to form the set rivet end 35 which locks the parts in place.

Referring now to FIG. 2, when the thumb lever 25 is turned from the position shown in FIG. 1 to that of FIG. 2, torque will be transmitted, through the tight connection afforded by the ribs 24, to the lifter lever cam 30, its camming end 32 pressing upwardly against the bottom groove surface 18 of the groove 17 of the reuseable lid 15. In this manner, the present invention lifts the reuseable lid 15 from inside the can. It is believed that this result, achieved by the deformable connection described, surpasses in simplicity and effectiveness any prior art device.

In the construction described, the bore 19 in the wall of the can 10 may be of a size sufficient to provide clearance about the rivet ribs 24. However, where this clearance might permit leakage of some fluid product packed in the can 10, it can be reduced by piercing the bore 19 as small as the diameter of the hollow end 22 of the rivet 20. If the bore 19 is so pierced to a radius less than the radial extent of the rivet at its ribs, driving the rivet 20 will groove the wall sealedly about the ribs 24; and such seal will be retained until the rivet 20 is first turned when the user first opens the can 20.

I claim:

1. A can and lid having a lid-lifting provision, comprising a can having a wall terminating in an upper edge and having a bore through the wall spacedly below the upper edge, a rivet through the bore, the rivet being formed of a relatively rigid metal and having

a headed end,

a stem surface including a longitudinal rib, and

a hollow tip,

a thumb lever having a mounting bore mounted on the rivet stem surface adjacent to one end and exteriorly of the can, and

a lifter cam lever having a mounting bore mounted on the rivet stem surface adjacent to its other end and interiorly of the can,

both the said levers being formed of materials relatively less rigid than the rivet, the mounting bores of both the said levers having radii less than the radial extent of the rivet at its rib, said mounting bores being grooves about the rib of the rivet, whereby to provide connections characterized by torque resistance, together with

a can lid having an under surface portion presented superjacent to the cam lever, wherein

the bore in the can wall has a radius less than the radial extent of the rivet at its rib, and is grooved by said rib,

whereby to seal about the rivet rib until the rivet is first turned to open and lift the lid, and

the thickness of the can wall is sufficiently small to deform and thereby relieve such seal on such turning of the rivet.

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