Feb. 23, 1943. J. M. HOTHERSALL 2,311,660

CAN OPENER

Filed April 5, 1940

Fig 1

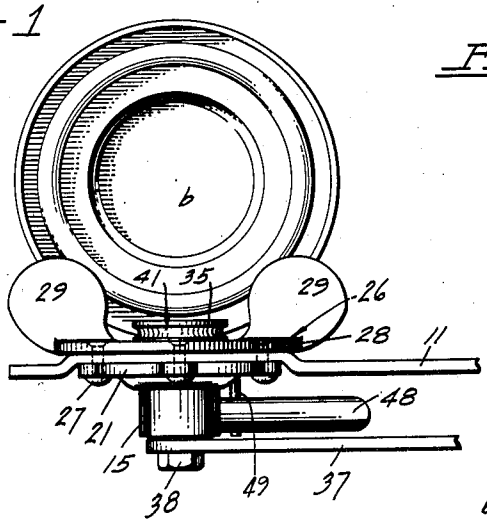


Fig 4

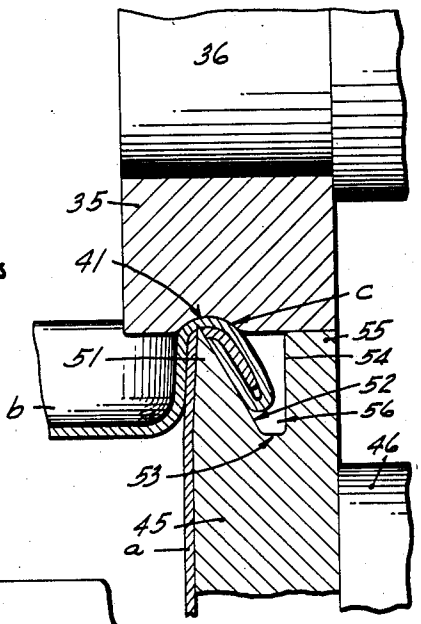


Fig 2

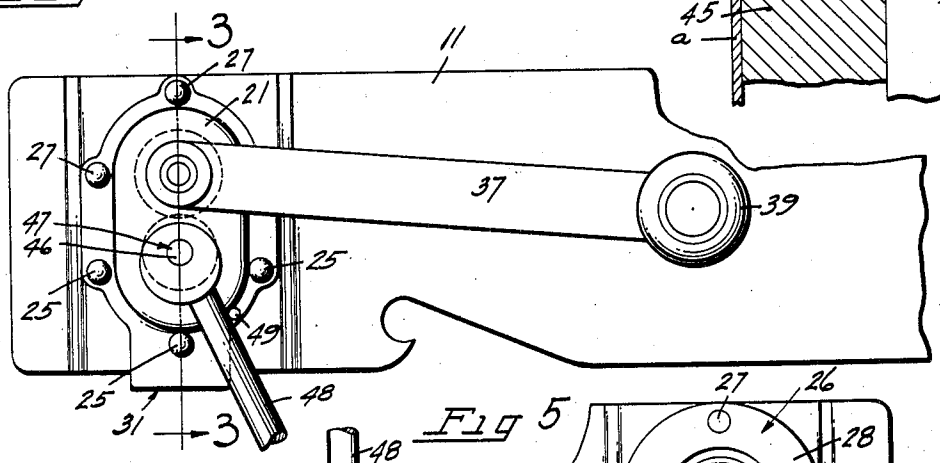


Fig 5

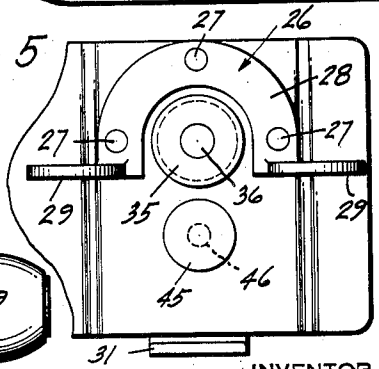
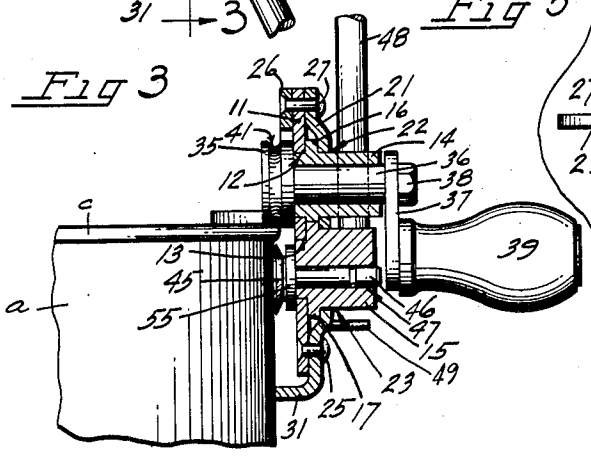


Fig 3



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CAN OPENER

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3 Claims. (Cl. 30—13)

The present invention relates to can openers of that type which use a rotary cutting disc or roller and a rotary feed roller operating on the end seam of a can and has particular reference to an opener which partially unfolds and cuts from the inside of the seam thus leaving the seam parts on the severed can end.

An object of the present invention is the provision of a can opener having a feed roller adapted for operation on top of the end seam of a can and having a cutting disc or roller operable inside and under the end seam so that the cutting of the seam walls is not complete but an uncut wall of such a seam maintains connection between the cut seam section and the severed can end.

Another object of the invention is the provision of a can opener of the character described in which the cutting roller or disc is tapered to partially unfold the seam and is also provided with a depth gauge for limiting the depth of cut.

Still another object is the provision of such a can opener which is formed with a guide for locating the cutting and feeding rollers relative to the seam and which is clamped in operating position on the can prior to manual rotation of the feed roller to effect the opening operation.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a plan view of a can showing a can opener embodying the present invention in can severing or cutting position;

Fig. 2 is a front face view of the opener shown in Fig. 1, partly broken away;

Fig. 3 is a sectional view taken through the can opener and viewed along the section line 3—3 in Fig. 2 and showing the opener in position on a can, parts of which are broken away;

Fig. 4 is an enlarged sectional detail taken through the can end seam and illustrating fragments of the cutting roller disc and the feed roller in cutting position; and

Fig. 5 is a rear view of one end of the can opener showing the feeding and cutting rollers in can receiving position.

The present embodiment of the invention comprises an opener frame 11 for carrying the various operating parts of the opening device. Such a frame is preferably formed as a flat plate and is provided with an upper opening 12 and a lower opening 13. A bushing 14 is held in the opening 12 and an eccentric sleeve 15 is mounted for oscillation in the lower opening 13. The bushing is formed with a projecting circular flange 16 and the sleeve is likewise formed with a flange part 17. An auxiliary clamp plate 21 having upper and lower openings 22, 23 is used to confine the bushing 14 and the sleeve 15 in position. The respective flanges 16, 17 permit tight and loose holding between the main frame 11 and the frame plate 21.

Plate 21 is permanently secured to the main support frame by rivets, the lower set of which is designated by the numeral 25. A top seam guide member 26 is secured to the inner or rear face of the frame 11 and longer rivets 27 that hold the upper part of the auxiliary plate 21 on the frame 11, also secure the member 26 in place. Such a seam guide member is formed with a semi-circular central section 28 and top seam guide engaging lugs 29.

At the bottom the plate 21 is formed with an inwardly projecting lug 31 which constitutes a guide member for engagement with the side wall of the can to be opened. Such a guide 31 together with the lugs 29 of the top seam guide member definitely locate the opening device in proper opening position relative to the can seam, as in Figs. 1 and 3.

A feeding roller 35 is formed with a shaft section 36 which is journaled for rotation in the bushing 14. A handle 37 is secured by a cap screw 38 to the outer end of the shaft 36. This handle 37 at its free end carries a knob 39 which forms a hand engaging part for the handle member.

The can to be opened is designated by the letter *a* and such a can is closed by a can end *b* being secured on the can in a double seam *c*. The feed roller 35 is located inside of the semi-circular central part 28 of the top seam guide and when the opening device is applied to the can, roller 35 rests on top of the seam *c*. This feed roller 35 (Fig. 4) is grooved at 41 and the top of the seam *c*, which is to be cut through and which is partially bent outwardly in the opening operation, extends into the groove.

The cutter roller or disc (marked 45 in the drawing) is provided with a stem 46 which extends into an opening 47 eccentrically disposed in the eccentric sleeve 15. Sleeve 15 is also provided with a laterally extending handle part (shown as a rod 48) by means of which the eccentric sleeve may be rotated in the aligned openings 13, 23 formed respectively in the frame parts 11, 21.

When the opening device is first placed upon the can, the position of the sleeve 15 in its seat is such as to hold the cutting disc 45 in lowered position, it then being spaced from the feed roller 35. This position is illustrated in Fig. 3 and it will be noted that the handle rod 48 is up. As an incident to cutting open the seam and in order to lock the can *a* in the opener, the handle rod 48 is swung down into the position illustrated in Fig. 2. A pin 49 projecting out from the plate 21 limits further swinging of the handle rod 48

which strikes the pin. The results of such shifting of the sleeve **15** in its bearings will now be noted.

The roller disc **45** is formed with a tapered cutting edge **51** (Fig. 4), an inclined wall **52** of which provides a conical section and extends down and connects with a short flat base wall section **53**. The base wall part **53** merges into a vertical wall **54** which constitutes one side of a cylindrical depth gauge section **55**. The outer diameter of the cylindrical gauge part **55** is slightly less than the outside diameter of the tapered cutting edge **51** and the position of the eccentric bearing for the cutter shaft **46** is such as to have the part **55** engage the roller **35** when the rod **43** engages its pin **49**. This construction of roller provides a pocket **56** into which the seam *c* is forced when the cutting disc roller **45** moves up into cutting position.

During this forcing of the roller into raised position its cutting edge **51** passes along the side wall of the can and wedges in under the seam. This causes the three hook thicknesses of seam to be partially crowded back and the seam is thus partially opened. The sharp cutting edge **51** of the cutting disc thereupon passes through the inner bend of the seam but before cutting through the outer seam fold is stopped when the disc gauge section **55** of the cutting roller engages the outer peripheral wall of the feed roller **35**.

The handle knob **39** is then grasped by the hand and the handle lever is rotated. This effects rotation of the feed roller **35** and thence a rotation of the can on its own axis so that the seam *c* is caused to pass around and over the cutting and bending roller **45**. When this rotative movement of the seam has been completed the connection between the can body and the seam parts is fully severed, but the cut seam remains with the can end *b*.

The opener is then detached from the can or vice versa by again actuating the handle rod **48** this time in the opposite direction. This lowers the cutting roller and thus separates opener and can. Since the can end *b* is now completely severed from the body it is merely necessary to grasp the end and lift it from its place on the can body. The seam part being carried by the can end provides for a smooth hold for the fingers. Such a can end may also be conveniently used as a reclosure for the can.

Where the opener frame **11** is located against the wall or is otherwise held in its vertical position, such a can when put into the opener remains held during the opening operation. However, when the can end has been completely severed, it is necessary to support the can while it is being detached from the opener.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A can opener comprising a frame having a bushing mounted therein, a rotatable sleeve mounted in said frame in substantially parallel relation to said bushing, a rotary feed roller having a shaft journaled in said bushing and engageable with the top surface of the can end seam, a cutting and seam bending roller rotatably mounted eccentrically in said sleeve and having a tapered cutting edge disposed to rest in substantial flush engagement with the can body side wall, means for rotating said sleeve to move said cutting roller vertically along the can body side wall to engage said cutting edge with the under surface of said seam to penetrate the same, and means on said feed roller shaft for cooperatively rotating said cutting and feed rollers to obtain relative movement between the opener and can to bend the entire end seam parts outwardly by means of said tapered cutting edge while simultaneously cutting through said seam, whereby to sever the can end from the can body to open the can.

2. A can opener comprising a frame having a bushing mounted therein, a rotatable sleeve mounted in said frame in substantially parallel relation to said bushing, a rotary feed roller having a shaft journaled in said bushing and engageable with the top surface of the can end seam, a cutting and seam bending roller rotatably mounted eccentrically in said sleeve and having a tapered cutting edge disposed to rest in substantial flush engagement with the can body side wall, means for rotating said sleeve to move said cutting roller vertically along the can body side wall to engage said cutting edge with the under surface of said seam to penetrate the same, said cutting roller having a peripheral portion engageable with a peripheral portion of said feed roller outwardly of the can end seam for limiting the depth of seam penetration by said cutting edge, and means on said feed roller shaft for cooperatively rotating said cutting and feed rollers to obtain relative movement between the opener and can to bend the entire end seam parts outwardly by means of said tapered cutting edge while simultaneously cutting through said seam, whereby to sever the can end from the can body to open the can.

3. A can opener comprising a frame having a pair of laterally projecting top seam guide members and an inwardly projecting can body side wall guide member for locating the opener in position on a can to be opened, a bushing mounted in said frame, a rotatable sleeve mounted in said frame in substantially parallel relation to said bushing, a feed roller having a shaft journaled for rotary movement in said bushing, said feed roller being disposed between said top seam guide members for engaging the top surface of an interlocked can end seam, a cutting and seam bending roller rotatably mounted in and eccentrically of said sleeve and having a tapered cutting edge arranged to rest in substantial flush engagement with the can body side wall, means on said sleeve for rotating the same to move said cutting roller vertically along the can body side wall to engage said cutting edge with the under surface of said seam to penetrate the same, said cutting roller having a peripheral portion engageable with a peripheral portion of said feed roller outwardly of the can end seam for limiting the depth of seam penetration by said cutting edge, and means on said feed roller shaft for cooperatively rotating said cutting and feed rollers to obtain relative movement between the opener and can to bend the entire interlocked end seam parts outwardly by means of said tapered cutting edge while simultaneously cutting through said seam, whereby to sever the can end from the can body to open the can.

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