

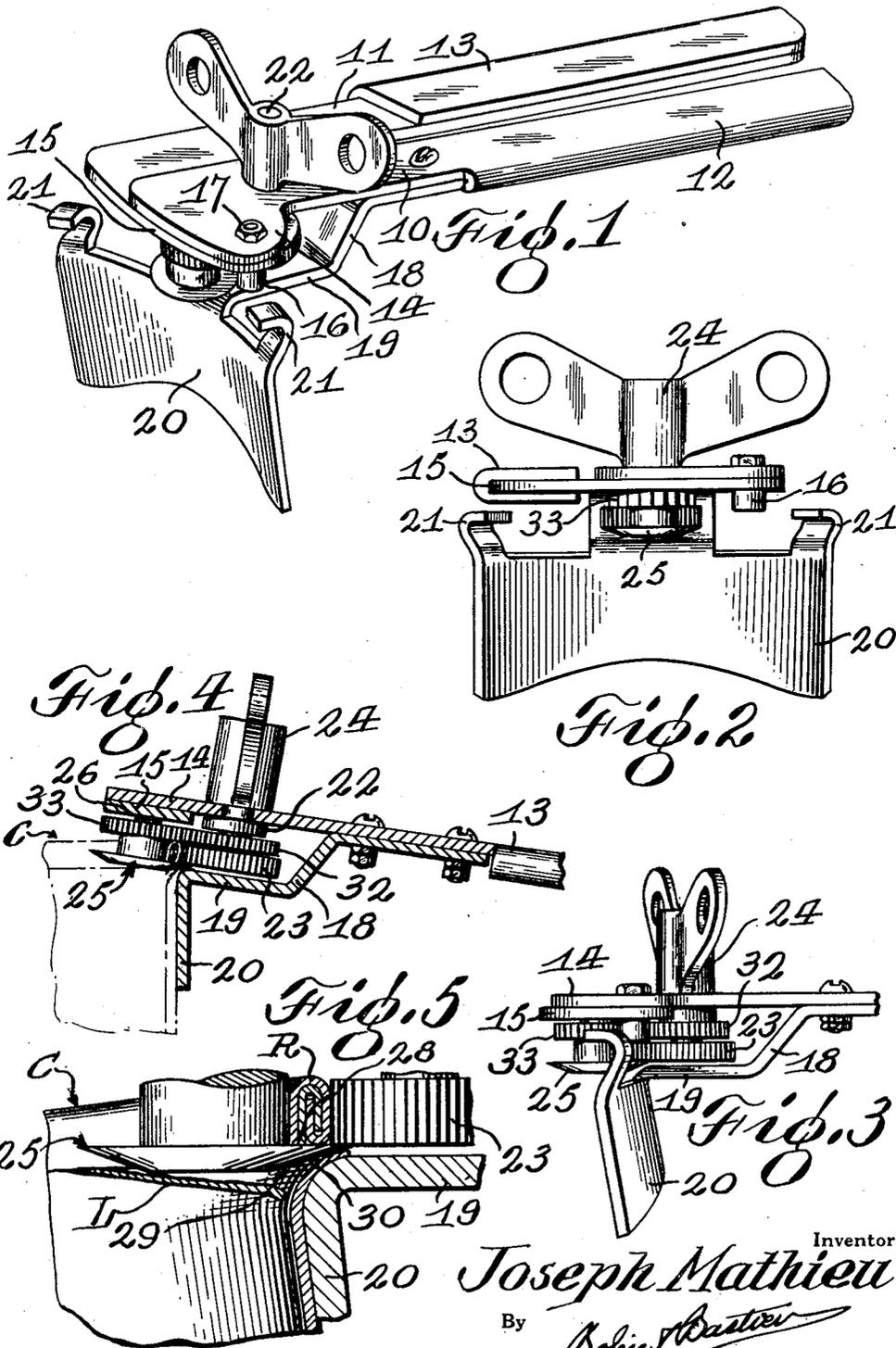
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METHOD AND APPARATUS FOR OPENING AND REFLANGING CANS

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## METHOD AND APPARATUS FOR OPENING AND REFLANGING CANS

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The present invention relates to a method and apparatus for opening and reflanging cans.

More specifically, the apparatus of this invention constitutes a can opener which is clamped in cutting position on a can and rotated therearound to remove the lid and end rim thereof, at the same time reflanging the end of the can.

Ordinarily, can openers cut through the lid or cover, the end rim being left on the can. Cans so opened may be difficult to reseal with a new lid, for most, if not all, can sealing operations require that the open end have a smooth, outwardly-flanged periphery. This is an especially serious drawback to those who do a great deal of home canning, for, in the interests of economy, it is desirable that a single can be usable many times prior to being discarded.

The main object, then, of the present invention is to provide a method of opening cans which will render same suitable for resealing.

Another important object is to provide a can opener which opens one end of a can in such a way as to facilitate resealing the latter.

Yet another important object is to provide a can opener of the type set forth which may be readily arranged in working position on a can and is easily manipulated in operation.

Another object resides in the provision of a can opener of the character described which is simple in design and foolproof in operation.

And still another object resides in the provision of a can opener as set forth above which may be easily and relatively cheaply manufactured.

Other objects and advantages will become apparent, or be further pointed out, in the description to follow.

As an example, and for purposes of illustration only, a preferred embodiment of my invention is shown in the annexed drawing, wherein:

Fig. 1 shows a perspective view of the can opener of the invention;

Fig. 2 shows an end elevation view;

Fig. 3 shows a detail side elevation view of the operating end;

Fig. 4 shows a longitudinal sectional elevation view of the opener as applied to a can for working purposes, and

Fig. 5 shows a detail sectional elevation of the cutting and driving members of the can opener in operative position relative to a can.

Referring now to the drawing, wherein the same reference characters denote corresponding parts throughout, the tool of the invention will be applied to a can indicated at C and consists

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generally of a pair of pivotally-connected levers 10 and 11, a can-engaging apron and a tool-manipulating means carried by one of these levers, and cutting means carried by the other lever.

In order that the cutting means referred to may be forced into a position penetrating the end of the can, levers 10 and 11 are each formed with a grasping handle, respectively, 12 and 13, on one end and a laterally-projecting plate, respectively, 14 and 15, on the other end thereof. The outer portions of the plates overlap and are pivotally connected as by bolt 16 and nut 17.

Bolted, or otherwise secured, to lever 10 and extending downwardly and forwardly from the handle thereof, is a bracket 18. This bracket is bent into a member 19, parallel to and spaced from plates 14 and 15, which has an integral depending apron 20. The apron 20 is arcuately curved laterally so as to co-operate with and about the surface of a can C, and depends at an acute angle to bracket member 19 for a purpose hereinafter described. In addition an upstanding, hooked lug 21 is provided at each upper end of the apron in order to engage the end flange of a can.

The manipulating means for the tool consists of a shaft 22 journaled upright in lever 10 and having keyed thereto, on opposite sides of the lever, a lower pinion 23 and an upper, winged, actuating-knob 24. The pinion 23 is adapted to engage the outer surface of a can when the tool is in operative position relative thereto. Manual rotation of knob 24 will thus cause corresponding rotation of pinion 23 which, owing to the frictional engagement of the pinion with the can, will cause displacement of the tool around the latter.

The cutting means of the invention preferably consist of a circular cutter 25, the peripheral cutting edge of which is tapered, or bevelled, downwardly. This cutter will be rotatably journaled on a pin 26 depending rigidly from plate 15 of lever 11, and the pin will be so located that, as the grasping handles of the levers are squeezed together, the cutter will be drawn towards the downwardly-bent end-portion of bracket member 19. Since it is at this point that the can-engaging apron depends, the cutter will, when the tool is in operative position, pierce simultaneously the lid L and the wall of can C at 28 just below the flanged rim R while the bevelled face 29 of the cutter will bend the new uppermost portion 30 of the can's periphery back over the top of the apron (see Fig. 5).

This apron, by contacting the wall of the can C will also serve to maintain the tool in proper angular position relative to the can.

In describing the operation of the tool of this invention, it is assumed that it will be utilized with cans constructed along the general lines indicated in Fig. 5. Thus the lid L of the can is sealed into an upstanding, flanged rim R. Such sealing is usually obtained by placing a flat lid over an outwardly-curved, flanged rim and rolling the two together in a special machine. Thus, to open a can in such a way as to facilitate re-sealing thereof, it is necessary to remove both lid L and rim R, and to form a new, outwardly-curved, flanged, periphery below rim R.

In order that a desired result be accomplished, it is necessary that the upper cutting-edge of cutter 25 pierce the can just below rim R when the tool is in operative position. To this end, lugs 21, bracket member 19 and cutter 25 are all spaced at appropriate levels below the plates 14 and 15 of the levers. Pinion 23 is also spaced below lever 13 at a distance which, when the tool is applied to a can, renders the pinion co-operable with, and abutting against, the outer surface of rim R just above the cutter. As the pinion is rotated to drive the tool around the can, the rim and lid are removed by the cutter and the new uppermost periphery of the can is formed into a smooth, outwardly-curved flange 30.

As a further feature of the invention, it may be considered desirable to positively rotate cutter 25 as the tool is displaced around the can. For this purpose, a pinion 32 may be keyed to shaft 22 just below lever 13, and another pinion 33 may be formed integral with the upper portion of cutter 25 in order to co-operate with the former. Thus manual rotation of shaft 22 will drive the cutter through pinions 32 and 33.

Clearly the present invention fulfills the objectives hereinbefore set forth and hence represents an advance in can-opening devices. In the course of removing the lid of the can, it also cuts away the flange in which the former was sealed and forms a new, outwardly-curved rim particularly required for most can sealing machinery. In spite of this multiple-function operation, the opener is both simple in design and easily constructed. To be applied to a can, the opener need only have the apron thereof placed in position before the grasping handles 12 and 13 are squeezed together. This squeezing of the handles gives sufficient leverage to enable the cutter to pierce the can below rim R and to separate the lid from the rim. The manipulation of the device is obtained simply by manual rotation of knob 24.

Being of simple construction, the can opener will not readily get out of order or fail in its functions. And, since none of the parts require accurate machining or special manufacturing technique, the device may be easily and cheaply produced in large quantities.

Examination of the particular embodiment of my can-opening tool herein shown and described will reveal that a great many changes might be incorporated therein without departing from the spirit of the invention. The description of the operation and function of the tool serves to show that the main working elements thereof are the cutter 25 and the curved junction of bracket

member 19 and apron 20. Whilst the incorporation of the can-engaging members into an apron would appear to be a most economical arrangement, nonetheless it is seen that the curved junction noted above actually constitutes a form of anvil with which the cutting member co-operates to bend back and flange the end of a can. Obviously this anvil might be made independent from the can-engaging members which only serve to adjust the tool in place. Thus an equivalent anvil might adopt the form of a rotatable roller having a rounded periphery extending forward from bracket member 19. In such a case the lugs 21 and apron 20 might be replaced by any equivalent means depending from lever 10.

Therefore, it may be emphasized that various changes may be made in the size, shape and arrangement of parts, and that equivalents of the latter may be substituted, without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A can opening tool of the character described comprising: a pair of pivotally connected levers, a bracket secured rigidly to and having a member parallel to and spaced from the first of said levers, a can engaging apron depending at an acute angle from the free end of said bracket member, said apron laterally curved to correspond to the surface of a can and having upstanding lugs engageable with the end periphery of a can, a shaft journaled upright in the first lever and having keyed thereto, respectively, a manipulating pinion below and an actuating knob above said lever, said pinion frictionally engageable with the outer surface of the end periphery of the can and rotatable with said knob to drive the tool around the can, a pin depending from the second lever, and a circular cutter having a downwardly tapered surface and rotatably mounted on said pin and located in co-operative relationship with the apron at the point where the latter depends from the bracket member whereby said cutter is adapted to pierce the can below the end periphery thereof and said tapered surface adapted to fold a portion of the can over the top of the apron when said levers are squeezed together in operative position.

2. In a can opening tool as claimed in claim 1, a gear wheel formed on said cutter above the cutting portion thereof and a second gear wheel keyed to said shaft above said pinion, and said gear wheels co-operable so that rotation of the shaft causes corresponding rotation of the cutter.

3. In a can opening tool as claimed in claim 1, means connecting said shaft and said cutter whereby rotation of the former causes corresponding rotation of the latter.

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