Feb. 20, 1940. M. C. FRINS 2,190,940

CAN OPENER

Filed May 5, 1936 2 Sheets-Sheet 1

Fig. 1

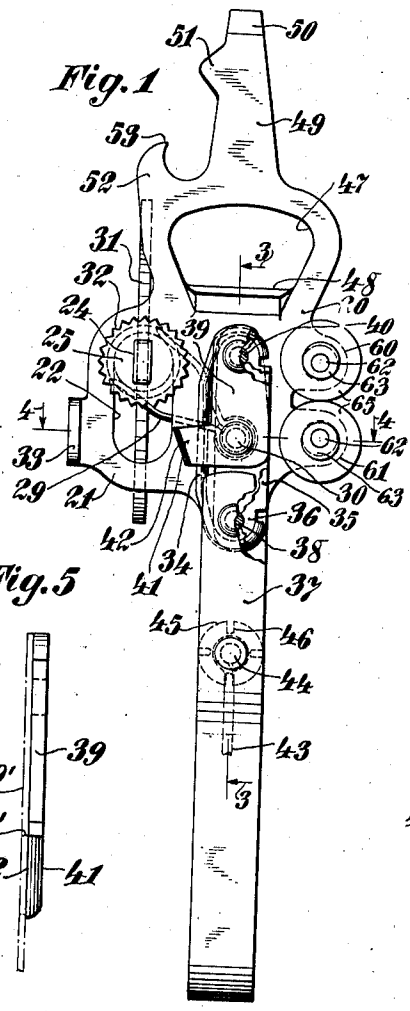


Fig. 2

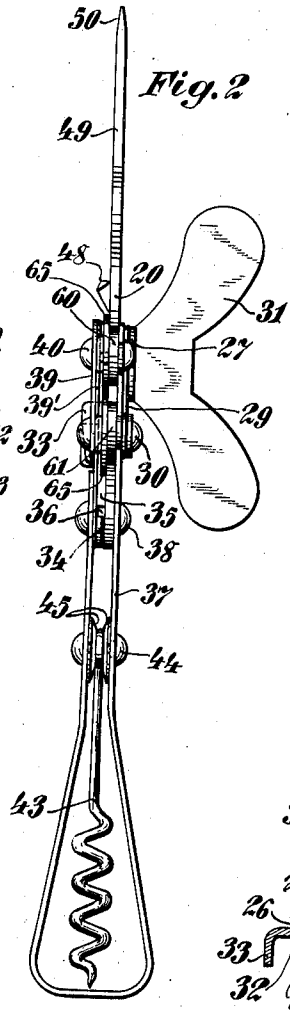


Fig. 3

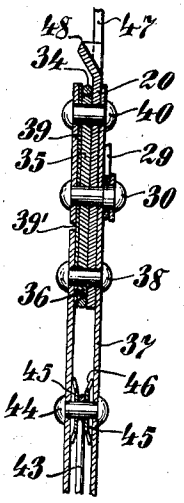


Fig. 5

Fig. 4

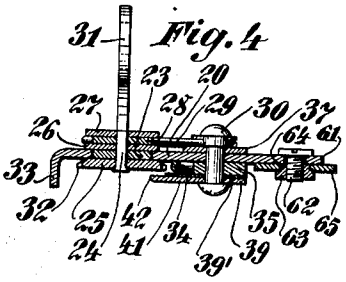


Fig. 6

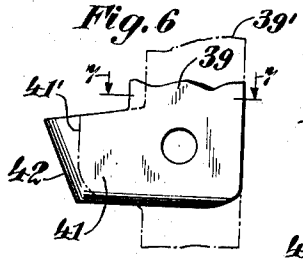


Fig. 8

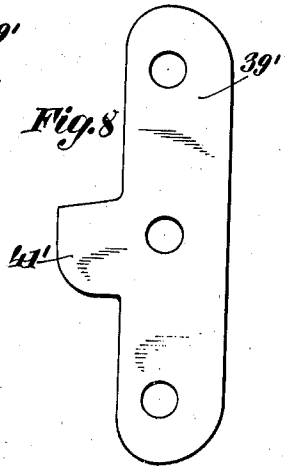


Fig. 9

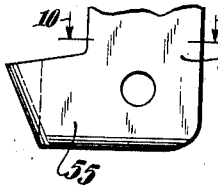


Fig. 10

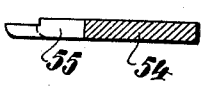
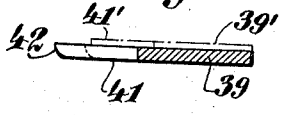


Fig. 7



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Feb. 20, 1940. M. C. FRINS 2,190,940

CAN OPENER

Filed May 5, 1936 2 Sheets-Sheet 2

Fig. 11

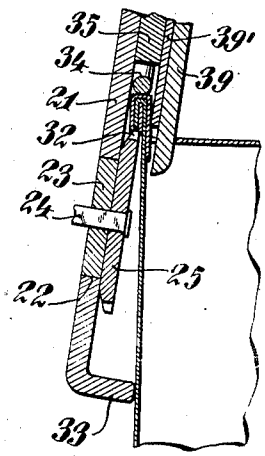


Fig. 12

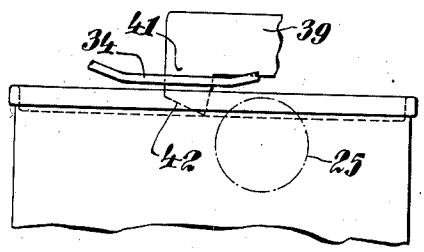


Fig. 13

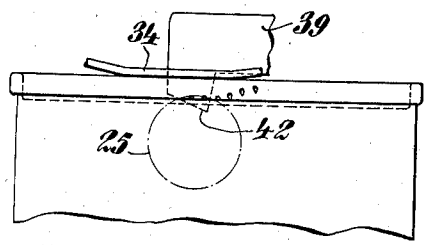


Fig. 15

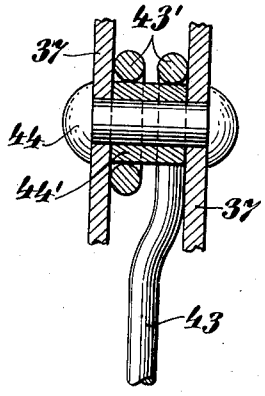


Fig. 16

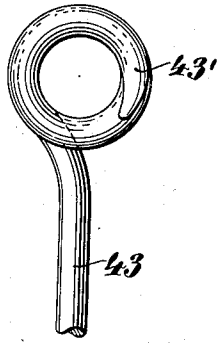
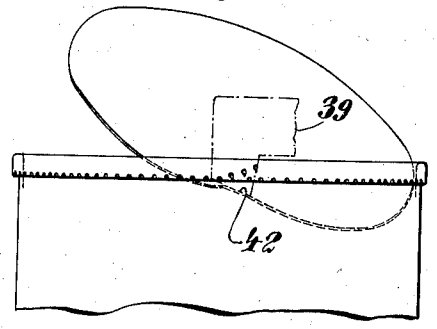


Fig. 14



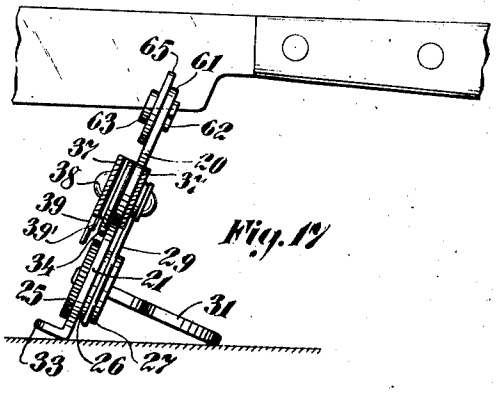


Fig. 17

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UNITED STATES PATENT OFFICE

2,190,940

CAN OPENER

Maximilian C. Frins, Plainfield, N. J.

Application May 5, 1936, Serial No. 77,966

6 Claims. (Cl. 30—15)

The present invention relates to utensils usually and particularly adapted for use in the kitchen and embodies, more specifically, a combination tool including a can opener of improved form.

More particularly, the invention embodies a can opener having a cutter and a feed wheel by means of which the can is moved with respect to the cutter to cause the top to be properly cut.

Can openers have heretofore been provided having a cutter and a feed wheel by means of which the above actuation of the can is effected and the present invention embodies an improved construction in can openers of this character by means of which the feed wheel may be normally maintained in a position spaced away from the cutter, whereby application of the opener to the can and removal from the can is greatly facilitated. In the use of these existing forms of openers, it has been found that a positive manual actuation of the feed wheel away from the cutter is usually required before the cutter can be applied to the can or removed therefrom. These manual operations frequently give rise to confusion and inconvenience in operation and it is an object of the present invention to provide a structure by means of which the feed wheel may be maintained normally in a position spaced from the cutter after the cutter has been removed from a can.

A further object of the invention is to provide a can opener of the above character wherein the feed wheel is normally maintained in a position spaced away from the cutter by a device which affords a yielding action whereby operation of the mechanism upon application thereof to a can may be carried through in the usual manner.

A further object of the invention is to provide, in combination with a device of the above character, means for yieldingly maintaining the can opener in proper position with respect to the can, such means comprising a spring which is bowed downwardly in the plane of the feed wheel whereby the bead of the can may be gripped and held between such spring and the feed wheel.

A further object of the invention is to provide, in a device of the above character, means by which the opener may be actuated to cut the lid of the can, the cutting operation taking place regardless of the presence of a seam or other partial obstruction in the path of the opener.

A further object of the invention is to provide, in combination with an opener of the above character, an improved tool combining a plurality of highly useful functions.

Further objects, not specifically enumerated above, will be apparent as the invention is described in further detail in connection with the accompanying drawings, wherein:

Figure 1 is a plan view of a utensil constructed in accordance with the present invention;

Figure 2 is a view in side elevation of the device of Figure 1;

Figure 3 is a view in section, taken on line 3—3 of Figure 1, and looking in the direction of the arrows;

Figure 4 is a view in section, taken on line 4—4 of Figure 1, and looking in the direction of the arrows;

Figure 5 is an enlarged detail view in side elevation showing the cutter and shim or spacer constructed in accordance with the present invention;

Figure 6 is a plan view of the cutter of Figure 5;

Figure 7 is a view in section, taken on line 7—7 of Figure 6, and looking in the direction of the arrows;

Figure 8 is a plan view of the shim or spacer used in connection with the present invention;

Figures 9 and 10 are views similar to Figures 6 and 7, respectively, showing a modified form of cutter;

Figure 11 is a view in section taken through the cutter and feed wheel of the device shown in Figure 1, showing the manner in which a cutting operation is performed;

Figure 12 is a view in side elevation, showing the manner in which the device is applied to a can, prior to operation of the feed wheel;

Figure 13 is a view similar to Figure 12, showing the manner in which the feed wheel engages the rim of the can and climbs down beneath the bead thereof;

Figure 14 is a view similar to Figures 12 and 13, showing the manner in which the cutting operation is completed;

Figure 15 is a plan view of a modified form of cork screw for use in connection with the present invention;

Figure 16 is a view in side elevation of the cork screw of Figure 15; and

Figure 17 is a sectional view taken through the device and illustrating the manner in which the device is positioned when used as a knife sharpener.

Referring to the construction shown in Figures 1, 2 and 3, a frame is shown at 20 having a plate 21 formed thereon. This plate is provided with an elongated aperture or slot 22 within which a disc 23 (Figure 4) is slidably and rotat-

ably received. The disc is provided with a key 24 to which a feed wheel 25 is secured upon one side of the plate 21. The key and disc are properly positioned by means of locating discs 26 and 27 between which a friction disc 28 is provided. The friction disc 28 is adapted to be engaged by a bifurcated spring member 29, the friction disc 28 being received between the bifurcations of the member 29 and the spring member being pivoted upon a shouldered rivet or other suitable element 30. By means of the foregoing construction, the spring member 29 serves to maintain the feed wheel 25 yieldingly in the position shown in Figure 1 although, upon operation of the key 24, as by means of the wing 31, the feed wheel may be advanced toward the cutting mechanism to be described presently. In this connection, the feed wheel 25 is provided with a serrated or knurled periphery 32 to facilitate engagement thereof with the rim of the can and to afford sufficient traction to move the can into the cutter.

Extending inwardly toward the can and mounted upon the plate 21, is an arm 33 which is adapted to engage the side of the can, as shown in Figure 11, and position the opener properly with respect thereto during the cutting operation. In this connection, and to further facilitate locating the cutter, a spring 34 is provided, being mounted upon a spring plate 35 which is secured to the frame 20. The ends of the plate are rounded as at 36 in order that the rounded ends of the spring 34 may be received thereon, the spring 34 being mounted in the plane of the feed wheel 25 and being bent downwardly with respect to the spring plate 35 and having a straight bottom portion to engage the can. In this fashion, the bottom of spring 34 engages the top of the bead of the can and causes the cutter to be positioned properly during the cutting operation.

In order that the frame 20 and cutting mechanism carried thereby may be handled with facility, a handle 37 is provided, this handle being secured upon opposite sides of the frame 20 and spring plate 35, as clearly shown in Figure 2. Rivets 38 or other suitable devices may be used to assemble the elements in the manner above described and, in order that the cutting operation may be accomplished, a cutter 39 is secured to the spring plate 35 preferably by means of rivets 40 or the like. This cutter 39 is provided with a downwardly extending blade portion 41 upon which an angularly formed cutting edge 42 is provided. In order that the cutter may be spaced from the rim of the can to facilitate its movement past the bead, a shim or spacer 39' is provided having a downwardly extending portion 41' which is adapted to space the cutting edge 42 from the rim of the can. This portion 41' bears against the inside of the rim of the can, this preventing the cut portion of the can near the rim from being deformed or bent. As a result, a positive and clear cut is provided, eliminating any possibility of slivers or pieces of metal from falling into the can. The shim is preferably of soft steel in order that the foregoing advantage may be more effectively secured. In the form of cutter shown in Figures 9 and 10, the cutter 54 is formed with a shoulder 55 which serves in place of the shim 39'.

To render the device more useful, a cork screw 43 is pivoted upon a shaft or rivet 44, spring washers 45 being provided between the cork screw and the sides of the handle 37. These washers are preferably slotted at 46 in order that the friction effect thereof may be increased and, as a result, the cork screw 43 is always effectively maintained in the position shown in Figure 2, in a yielding manner. In Figures 15 and 16 a modified form of cork screw is shown, the end of the screw 43 being formed with a spring eye 43' which is adapted to be inserted over the rivet 44, a spacer 44' being provided to enable the rivet 44 to be effectively upset without bringing the convolutions of the eye 43' into engagement and forming a solid column thereof.

The frame 20, in order that the utensil may have still greater utility, is formed with an opening 47 which is adapted to receive a cap of a bottle, one edge 48 of the opening 47 being of reduced thickness and offset in order that it may engage effectively beneath a bottle cap and clear the rim of capped cans. Extending axially of the plate 20 is an extension 49 having an extremity 50 which serves as a pryer for the removal of covers from cans of the pressed-in cover type and may also serve as a screw driver.

Another extension 52 is formed on the plate 20, terminating in a hook-shaped portion 53, which is adapted to engage beneath the edge of a cap or the lid of a jar, thus enabling the device, in conjunction with projection 51, to be used as a jar opener.

In operation, the device is applied to the can as indicated in Figure 12, with the shim or spacer on the inside of the rim of the can and the feed wheel on the outside thereof. Upon rotation of the feed wheel 25 in the proper direction and engagement thereof with the rim of the can, the feed wheel engages first the side of the rim, as illustrated in Figure 13, and then climbs down beneath the rim and assumes the position shown in Figure 11. Continued rotation of the wheel results in complete severance of the top of the can, as shown in Figure 14. Just before the end of the cut, the cover or top of the can tips into the angular position shown in Figure 14, in which position it may be grasped and readily removed.

By providing adequate space between the feed wheel and the cutter, the opener is readily applied to the can, sufficient space being provided to receive the rim between the cutter and the wheel.

It will be observed that the spring 34 serves to exert a pressure on the top of the can through the cutting edge 42 and causes the feed wheel to bite into the side and bottom of the rim upon initial engagement thereof with such element. In practice it is preferred to form the plate 35 slightly thicker than the spring 34 in order to allow the spring to deflect freely during operation. Inasmuch as the spring 34 may deflect, variations in the width of the rims of different cans are accommodated.

In order that the operating mechanism of the can opener may serve as a support by means of which a knife sharpener may be properly positioned, the plate 20 is formed with spaced extensions 60 and 61 through which screws 62 are received. The screws are provided with nuts 63. The nuts 63 are provided with shoulders 64, Figure 4, having tap holes eccentric with these shoulders which are received within circular cutters 65. Cutters 65 are thus adapted to be mounted upon the plate 20 in order that they may lie in a common plane and touch each other at their peripheries. The discs or cutters 65 should be made of suitable material, such as tool or hardened steel, and, by means of the nuts 63 and

screws 62 they may be adjusted so that different portions of the peripheries thereof may be in contact. In this connection, it is highly desirable that the faces of the discs 65 be flush and, in use, it is necessary that the discs be held at a proper angle with respect to the edge drawn therethrough in the sharpening operation. Figure 17 illustrates the manner in which the manually operated handle 31 and the extension 33 serve as a means for supporting these discs in proper position so that they may be used most effectively. It has been found that the nuts 63 may be used without the eccentric tap holes thereof, reliance being made upon the threads of the screws 62 to give sufficiently to permit the discs to be adjusted. To effect this the center distance between the holes in the extensions 60 and 61 should be less than the center distance between the cutting discs when they touch each other.

While the invention has been described with specific reference to the construction shown in the accompanying drawings, it is not to be limited, save as defined in the appended claims.

I claim:

1. A can opener comprising a frame, a cutter on the frame, a feed wheel rotatably mounted on the frame with provision for movement of the wheel toward and away from the cutter means on the wheel forming a braking surface, and a pivoted bifurcated spring member to maintain the wheel in a position away from the cutter, the spring member receiving the said means on the wheel between the bifurcations thereof.

2. A can opener comprising a frame, an elongated slot in the frame, a feed wheel journaled in the slot, a spacer bar on the frame, a cutter mounted beside the bar, and a spring mounted on the bar and adapted to engage the upper edge of the periphery of the can, said spring lying in the plane of the wheel.

3. A can opener comprising a frame, an elongated slot in the frame, a feed wheel journaled in the slot, a spacer bar on the frame, a cutter mounted beside the bar, and a spring having ends adapted to receive the ends of the bar and having a downwardly extending bent flat portion adapted to engage the upper edge of the periphery of the can, said spring lying in the plane of the wheel.

4. A can opener comprising a frame, an elongated slot in the frame, a feed wheel journaled in the slot, a spacer bar on the frame, a cutter mounted beside the bar, a friction brake comprising a spring member and a friction disk adapted to be engaged thereby to maintain the wheel in a position away from the cutter, and a spring mounted on the bar and adapted to engage the upper edge of the periphery of the can, said spring lying in the plane of the wheel.

5. A can opener comprising a frame, an elongated slot in the frame, a feed wheel journaled in the slot, a spacer bar on the frame, a cutter mounted beside the bar, a pivoted bifurcated spring member to maintain the wheel in a position away from the cutter, the spring member receiving the wheel between the bifurcations thereof, and a spring having ends adapted to receive the ends of the bar and having a downwardly extending bent flat portion adapted to engage the upper edge of the periphery of the can, said spring lying in the plane of the wheel.

6. A can opener comprising a frame, a cutter having a cutting edge, a shim immovably fixed with respect to the cutter to engage the rim of a can and space the cutting edge away from the inside margin of the rim of a can, and a feed wheel rotatably mounted on the frame with provision for movement of the wheel toward and away from the cutter.

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