

April 18, 1967

R. E. McLEAN
POWER OPERATED CAN OPENER WITH POWER
PIERCE AND AUTOMATIC SHUT-OFF

3,314,144

Filed Feb. 17, 1965

3 Sheets-Sheet 1

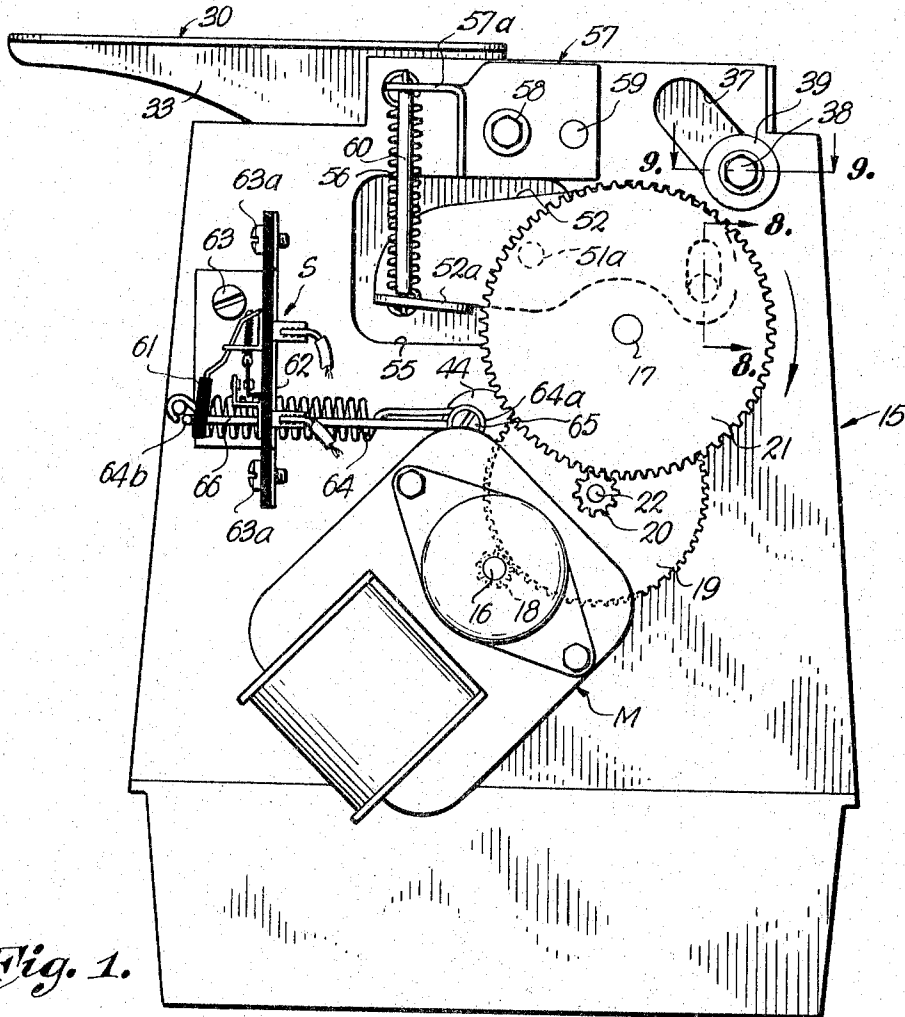


Fig. 1.

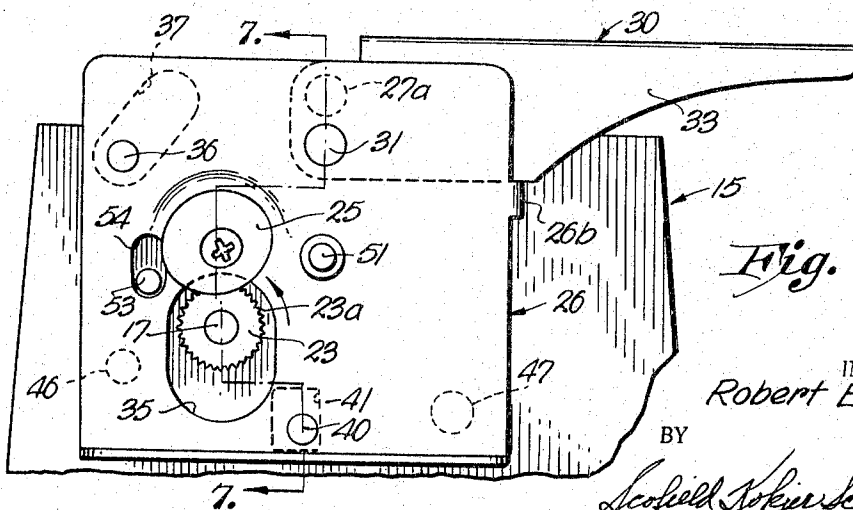


Fig. 2.

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3 Sheets-Sheet 2

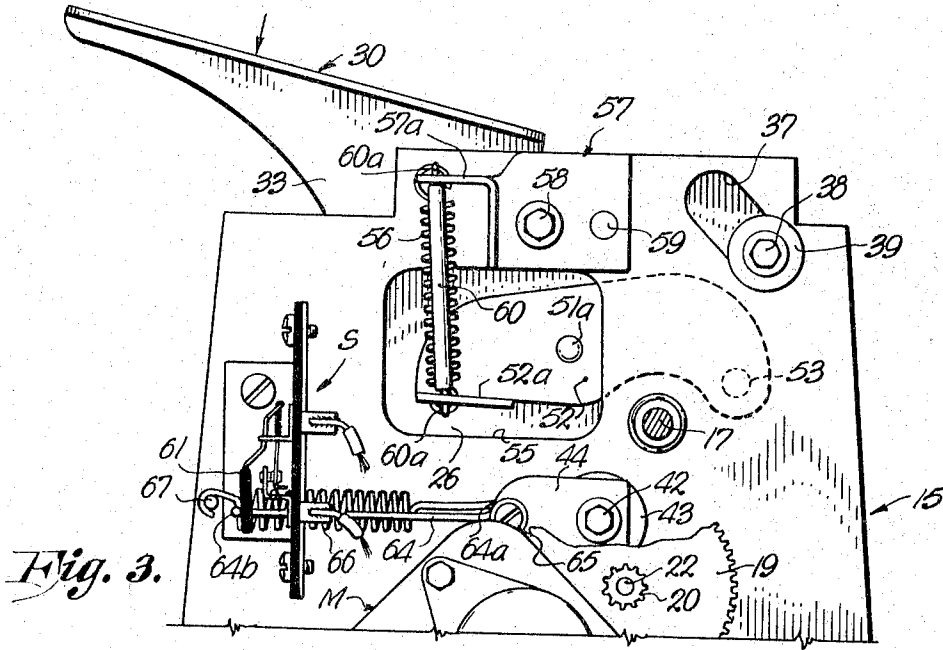


Fig. 3.

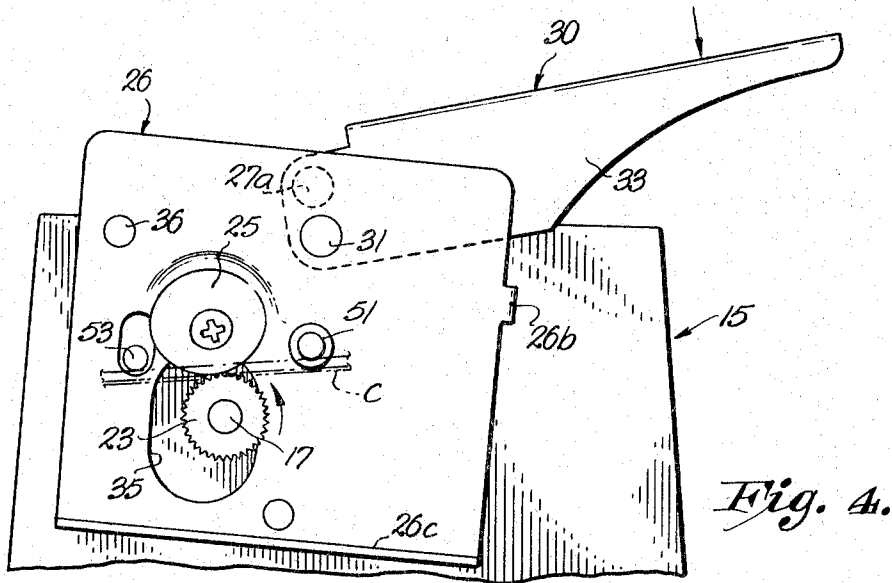


Fig. 4.

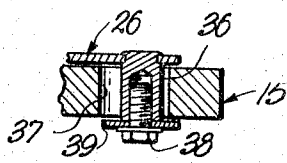


Fig. 9.

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3 Sheets-Sheet 3

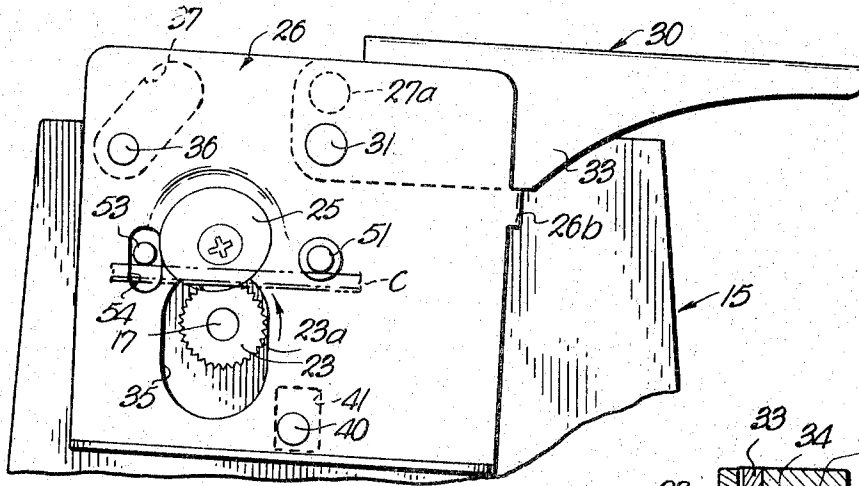


Fig. 5.

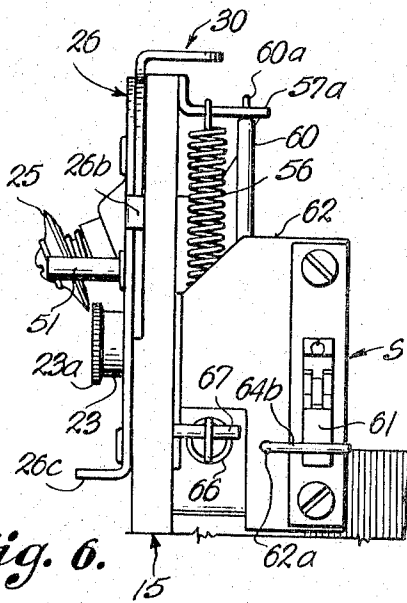


Fig. 6.

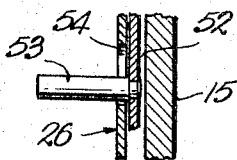


Fig. 8.

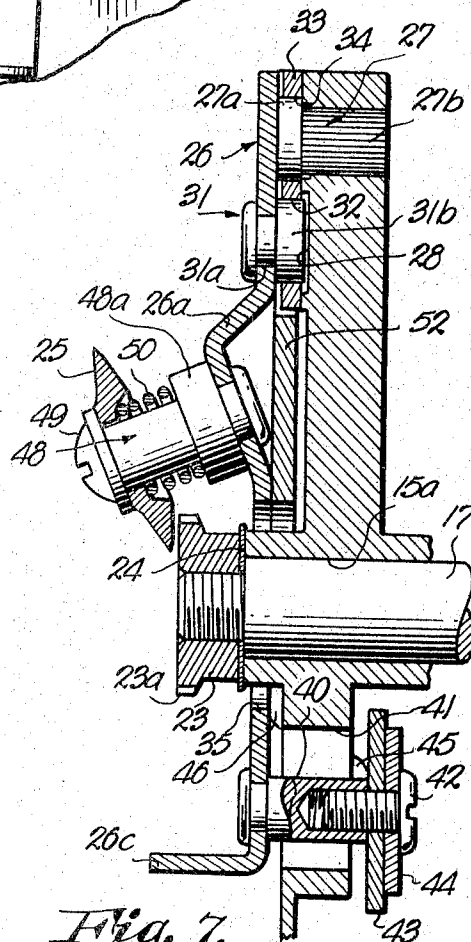


Fig. 7.

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3,314,144

POWER OPERATED CAN OPENER WITH POWER PIERCE AND AUTOMATIC SHUT-OFF

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Filed Feb. 17, 1965, Ser. No. 433,274

9 Claims. (Cl. 30-4)

This invention relates generally to can openers and refers more particularly to improvements in the construction of power operated can openers.

A principal object of the invention is to provide an efficient and reliable power operated can opener embodying mechanism through which feeding of the can relative to the cutter member is commenced prior to the piercing of the can end (ordinarily denominated "power pierce") and providing automatic shut-off at the completion of cutting and which, despite the inclusion of such features, can be produced at a relatively low cost.

Another object of the invention is to provide such a power operated can opener having a can piercing lever which is also used as the means for manipulating the single electrical switch of the unit for the purpose of starting and stopping the electric motor, thus eliminating the need for any additional switch control means for starting and stopping the electric motor for the purposes of grinding cutlery when a cutlery grinding means is incorporated with and driven by the same electric motor.

Still another object of the invention is to provide such a power operated can opener in which the aforesaid single operating lever (commonly known as the can piercing lever) is pivoted to the frame of the can opener and is also pivoted to a cutter mounting plate at a point somewhat below its pivot with the frame so that downward swinging of the lever body usually causes the cutter mounting plate to swing with the lever for the last few degrees of movement of the latter, the swinging of the cutter mounting plate causing the electric motor to start and continue in the "on" condition until the end has been completely severed from the engaged can at which time spring urging means then causes the cutter mounting plate and lever to swing back to the position in which the said electric motor will be in the "off" condition.

A still further object of the invention is to provide a power operated can opener of the character described in which the pivot points between, on the one hand, the single operating lever and the frame and, on the other, the operating lever and cutter mounting plate, are so located with respect to each other and to the cutter wheel or other cutting element that when a can is engaged in the can opener downward swinging of the lever will cause the cutter mounting plate to rotate in the direction necessary to cause starting of the electric motor and concurrent feeding of the engaged can by the can feed wheel before the end of the can has been pierced by the cutter wheel, thereby greatly facilitating piercing of the end of the can by the cutter wheel as the user continues swinging of the lever to its extreme downward position.

Yet another object of the invention is to mount the cutter mounting plate and operating lever on the frame in such fashion as to minimize friction between these parts and the frame whereby to obtain maximum differential between (1) the force required to rotate the cutter mounting plate and lever assembly while the can end is being sheared and (2) the force required to rotate them after the end has been sheared from the can. The result obtained by such arrangement assures of reliable functioning of the automatic shut-off of the motor designed to take place at the completion of cutting. A salient feature of the invention in this respect resides in the means contrived to prevent the downward forces exerted by either of the two can guides on the rim or flange

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of the engaged can from imparting any rotational force to the cutter mounting plate. This is extremely important for the reasons just stated. It will be obvious that a much greater differential can be obtained if the forces tending to rotate the cutter mounting plate against the action of its return spring can be reduced to substantially those resulting from resistance of the end of the can to shear by the cutter wheel.

Another object of the invention is to provide, in a power operated can opener with automatic shut-off, a simple and effective arrangement by which the motor can be manually deenergized in the event of failure of operation of the automatic shut-off. A particular feature of my arrangement is that the objective desired is achieved by utilizing only those parts which must be present for proper operation of the can opener; in other words, I need not incorporate anything which serves only the single function of providing manual shut-off.

Other and further objects of the invention together with the features of novelty appurtenant thereto will appear in the course of the following description.

In the accompanying drawings, which form a part of the specification and are to be read in conjunction therewith and in which like reference numerals indicate like parts in the various views:

FIG. 1 is a rear elevational view of the main frame and operating mechanism of a power operated can opener embodying the invention, the conventional case or housing and base having been eliminated;

FIG. 2 is a fragmentary front elevational view of same;

FIG. 3 is a fragmentary rear elevational view of same with the parts substantially in the positions they assume when a can is engaged in the opener and just prior to piercing of the end of the can by the cutting element;

FIG. 4 is a front elevational view with the parts in the positions corresponding to those shown and described in connection with FIG. 3;

FIG. 5 is a front elevational view similar to FIG. 4 but showing the parts in the positions assumed while the end is being cut from the can;

FIG. 6 is a fragmentary side elevational view taken from the left hand side of FIG. 1;

FIG. 7 is an enlarged fragmentary sectional view taken substantially along the line 7-7 of FIG. 2 in the direction of the arrows;

FIG. 8 is a fragmentary sectional view taken substantially along the line 8-8 of FIG. 1 in the direction of the arrows; and

FIG. 9 is a fragmentary sectional view taken substantially along the line 9-9 of FIG. 1 in the direction of the arrows.

Referring now to the drawings, reference numeral 15 designates generally the upright front frame of a typical power operated can opener constructed in accordance with the invention. Normally, this frame is supported from a suitable base structure (not shown) and the entire mechanism is enclosed in a housing or casing. However, inasmuch as neither the base nor housing play any part in the present invention, no further detail as to their construction is necessary.

The frame 15 is preferably die cast of zinc but may be fabricated of steel or any other suitable material. Supported on its rear side (FIG. 1) by suitable fasteners is an electric motor M having the armature shaft 16. This shaft may carry a cutlery grinding wheel as disclosed in my copending application, Ser. No. 386,948, filed Aug. 3, 1964. The motor serves to drive the can feed wheel shaft 17 through the medium of a reduction gear train involving a pinion 18 on the shaft 16 adjacent the rear of the frame, a gear 19 having a pinion 20, and a gear 21 secured to the feed wheel drive shaft 17. The gear 19

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and pinion 20 are integral with one another and are mounted on the stationary stub axle 22 secured to the back of the frame 15. It will be understood that the particular double reduction gear train shown is for purposes of illustration only and that other appropriate drive means interconnecting the motor with the feed wheel shaft 17 may be employed.

Turning now to an inspection of the front side of the unit, as seen particularly in FIG. 2, threaded onto the forward end of the gear drive shaft 17 is a can feed wheel 23. As can be seen best in FIG. 7, the feed wheel shaft 17 is journaled in a suitable bearing aperture 15a in the frame and terminates in a threaded end portion of reduced diameter on which the feed wheel is received. A shim washer 24 of the thickness required to properly space the feed wheel 23 from the overlapping portion of the cutter wheel 25 is interposed between the feed wheel 23 and the end of the bearing surface 15a. The can feed wheel 23 is provided with suitable teeth 23a which operate to penetrate the under edge of the can rim or flange as required for proper traction for feeding of the can during operation.

The cutter wheel 25 for the unit is carried on a cutter mounting plate 26 which is positioned adjacent the front face of the frame 15. The upper rearward portion of the plate 26 rests against a bearing surface formed by the end of the enlarged portion 27a of a stud 27. The smaller diameter knurled portion 27b of this stud is press fitted into an appropriate aperture in the frame 15.

The cutter mounting plate 26 is interconnected with the operating lever for the unit, which is generally indicated by reference numeral 30. The interconnection is by means of a stud 31 anchored in the mounting plate, preferably by the hot heading process. As best shown in FIG. 7, this stud has the smaller diameter portion 31a received in an appropriate aperture in the mounting plate and the larger diameter portion 31b on the rear side of the plate. The portion 31b is rotatably received in a registering opening 32 formed in the vertical plate-like portion 33 of the operating lever 30. It will be noted that portion 33 is interposed between the front face of the frame 15 and the rear face of the cutter mounting plate 26. The inner end of stud portion 31b is disposed within a shallow recess 28 formed in the frame, the size of the recess and its shape being such as to permit undisturbed movement of the end during operation.

The lever 30 is in turn pivoted to the frame on the enlarged portion 27a of stud 27, the vertical portion 33 of the lever having a hole 34 therein which is rotatably fitted over stud portion 27a. In other words, the operating lever 30 swings about a fixed pivot axis defined by the central longitudinal axis of stud 27. As shown in FIG. 2, in the normal non-operating condition for the can opener, the central longitudinal axes of the head portion 27a of stud 27 and of the stud 31 therebelow are substantially in vertical alignment.

The thickness of vertical portion 33 of the operating lever 30, in that area of it which is located between the mounting plate 26 and the frame, is sufficiently less than the length of the larger diameter portion 27a of the stud 27 to assure that the cutter mounting plate 26 can always bear rearwardly on the end of stud 27 and will not bind against the portion 33 of the operating lever.

As will subsequently be seen, the cutter mounting plate 26 is shifted in response to pivotal movement of the operating lever 30, the movement of the plate being substantially in a vertical plane. To accommodate such movement, the mounting plate is provided with the oversize opening 35 through which the feed wheel 23 and forwardly projecting portion of the bearing 15a are received.

The plate 26 is guided in part for such movement by a rearwardly projecting stud 36 anchored in the plate at its upper left hand corner (as viewed in FIG. 2). This stud, which is preferably anchored in the plate by the

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hot heading process, extends through an oblong clearance opening 37 formed in plate 15. Secured to the outer end of the stud on the rearward side of the frame by a screw 38 is a washer 39 of sufficient diameter to bridge the sides of opening 37. The stud and washer assembly serve to maintain the rearward surface of the upper end of the cutter mounting plate adjacent the bearing surface formed by the exposed end of the stud end 27a earlier described.

The lower end of cutter mounting plate 26 is connected with frame 15 in a manner substantially similar to that just described. A rearwardly projecting stud 40 is anchored to the plate 26, again preferably by hot heading, and extends through an oversize rectangular opening 41 in the frame 15. Secured to the rearward end of stud 40 by screw 42 is a washer 43 and a link or strap 44. The purpose of the latter will be subsequently described. The washer slidably bears on two bosses located on opposite sides of the opening 41 on the rear of the frame, one of which is seen at 45 in FIG. 7. These bosses can be formed by the head portion of pins inserted into appropriate apertures in the frame. Preferably both the bosses 45 and washer 43 are case hardened to minimize frictional resistance to sliding movement of the washer on the bosses.

Similarly to the washer 43, the cutter mounting plate 26 is spaced from the front face of the frame 15 by means of a pair of bosses 46 and 47, which again may be formed by the head portions of pins anchored in the frame 15. These bosses 46 and 47 should likewise be case hardened to minimize friction.

The cutter wheel 25 is journaled on a stub axle or arbor 48, which is anchored, again preferably by hot heading process, to a boss 26a formed on the forward face of the mounting plate. The cutter wheel is retained on the arbor by a combination screw and washer 49 threaded into the end of the arbor. The wheel 25 is at all times urged outwardly against screw washer 49 by means of a compression spring 50 which encircles the arbor and bears at its inner end against a shoulder formed by an enlarged portion 48a of the arbor. As can best be seen in FIG. 7, the outer end of spring 50 is received in an outwardly flaring recess in the back of the cutter wheel 25. The inside diameter of the journal opening through the cutter wheel is somewhat greater than the outside diameter of the arbor 48 in order to permit the cutter wheel to wobble against the pressure of spring 50 when necessary, such as when the thick side seam portion of an engaged can is passing between the overlapping portions of the cutter wheel and the feed wheel. In the art, this particular type of cutter wheel is commonly known as a "floating cutter wheel." However, the floating cutter wheel forms no part of the present invention and either a floating or non-floating cutter wheel can be used as desired. Whatever type is used, it is preferred that the orientation of the cutter wheel in respect to the can feed wheel be that as disclosed in my U.S. Patent No. 3,165,830, issued Jan. 19, 1965, except that no portion of the cutter wheel should bear downwardly on the rim or flange of an engaged can, as more specifically disclosed in my pending application for U.S. application Ser. No. 343,642, filed Feb. 10, 1964.

Spaced laterally from the cutter wheel 25 and anchored to the cutter mounting plate is the relatively fixed can guide 51 which, for the purposes of this application, is denominated the right hand can guide. This guide has a portion 51a projecting inwardly from the mounting plate and which serves as the pivot mounting for a lever 52 which is located behind the cutter mounting plate between the latter and the frame (FIGS. 1, 3 and 7). In other words, the lever 52 is journaled on the rearward projecting portion 51a of can guide 51. The lever 52 is shaped to pass freely over the feed wheel shaft 17 and its associated bearing structure. On the opposite side of

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the feed wheel from can guide 51, a second can guide identified at 53 is secured to the lever 52. The can guide 53, which is the left hand can guide, projects forwardly through the clearance opening 54 in the mounting plate 26. With the can opener parts in the relative positions shown in FIG. 2, the longitudinal axis of right hand can guide 51 is in the same plane as the axes of the pivot elements 27a and 31 thereabove. Substantially this same condition obtains during the can cutting operation, as exemplified in FIG. 5 and as will subsequently be shown.

Located on that portion of lever 52 on the opposite side of its pivot axis (guide 51) from the can guide 53 is an ear 52a. The frame 15 is provided with a suitable clearance opening 55 through which the ear 52a extends. One end of an upright tension spring 56 is hooked into a hole in the ear; the other end of spring 56 is hooked in a hole formed in the horizontal leg 57a of a bracket 57 secured to the back of frame 15 by the screw 58. The vertical part of the bracket, which lies adjacent the frame, is held against rotation by means of a rearwardly projecting boss 59 on the frame which engages in a registering aperture in the bracket.

The clockwise movement of the lever 52 (as viewed in FIG. 3) about its pivot axis defined at 51a is limited by a limiting link 60 which is interposed between ear 52a and the bracket leg 57a. As shown, this link is in the form of a rod having a reduced diameter portion 60a at each end forming in each case an annular shoulder inset from the end respective of the rod. The small end portions of the rod extend respectively through appropriate holes in the lever ear and bracket leg, the fit being sufficiently loose as to permit movement of the portions 60a therein. The link is spaced rearwardly of the spring 56. The link is of sufficient length as to prevent the lever 52 from pivoting so far that the can guide 53 engages the lower end of the opening 54 in the cutter mounting plate through which it extends.

It will be observed that downward movement of the hand lever 30 relative to the cutter mounting plate 26 is limited by the rearwardly turned lug 26b formed on the right hand edge (as viewed in FIGS. 4 and 5) of the mounting plate. This lug lies in the path of movement of the lower edge of the vertical portion 33 of the operating lever. It will also be noted that the lower edge of the mounting plate is bent outwardly to form a flange 26c; this serves in operation as a can guard which maintains the side wall of the can at a predetermined and desired angle with respect to the end face of the can feed wheel 23.

Returning again to the rearward side of frame 15, the electric switch for controlling the operation of motor M is indicated at S. This is a conventional, normally open, snap acting switch of the over-center type having the operating arm 61 which, when displaced to the right as shown in FIG. 3, closes the contacts. The contacts of the switch are in series with the motor M; the conventional electric cord for connection with a wall outlet is not shown nor is the internal wiring interconnecting the switch, motor and cord. The switch S is mounted on a bracket 62, which in turn is fastened to the frame by one or more screws 63. The screws 63a hold the switch base to the bracket.

As can best be seen in FIGS. 1 and 3, the switch operating member 61 is interconnected with the strap or link 44 earlier described, the interconnection being by means of a rod 64. One end of the rod is connected with the strap 44 by providing it with an eye 64a which registers with a projecting stud anchored in the strap. A screw 65 holds the eye on the stud. The opposite end of rod 64 is provided with a bent over portion 64b which engages the outer surface of the switch operating member 61. The rod passes through an opening 62a in the bracket 62.

A biasing force is applied to strap 44 by means of the

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tension spring 66. One end of this spring is hooked around the stud which provides the connection for the rod 64 with the strap. The other end is hooked to a pin 67 which is anchored in and projects rearwardly from the frame 15.

Operation

As earlier noted, the power operated can opener is provided with a conventional electrical cord (not shown) which can be connected to any suitable wall outlet. To prepare the can opener for reception of a can, the operating lever 30 is raised upwardly from the position of FIGS. 1 and 2 as far as it will go. Since the operating lever pivots about the pivot point 27a, the cutter mounting plate 26 is displaced upwardly and generally to the right (viewed in FIG. 2). A limiting position for upward swing of the lever 30 is determined by engagement of the stud 40 with the upper end of the frame opening 41 in which it is received. Preferably, this limiting position occurs when the operating lever reaches approximately 60° counterclockwise from the illustrated horizontal position of FIG. 2. When the operating lever is swung to this position, the mounting plate 26 will have been shifted upwardly far enough to separate the cutter wheel 25 from the feed wheel 23, and the cutter wheel and can guides 51, 53 will be sufficiently elevated as to permit positioning of a can in the can opener. Due to the action of the lever 52 as controlled by the limiting link or rod 60, the left can guide 53 will be near the upper end of the opening 54 when the operating lever 30 is in its fully raised position just described. During the upward pivoting of the operating lever 30 about its pivot 27a, the plate 26 is guided in part by the engagement of stud 40 with the right hand edge (as viewed in FIG. 2) of the frame opening 41. Spring 66 at this time holds the stud against the edge of the opening.

The user then inserts the can into the can opener with the rim or flange of the can back of the cutter wheel 25 and the upper end of the can seating upwardly against the periphery of the cutter wheel. The operating lever 30 is then swung downwardly, returning the cutter mounting plate 26 toward its FIG. 4 position.

As the operating lever 30 is depressed from the raised position, the cutter mounting plate descends also until the periphery of the cutter wheel 25 seats firmly downwardly on the end of the can, at which time the under edge of the rim or flange of the can will also seat firmly on the top of the feed wheel 23. As can be seen in FIG. 4, once this point is reached further downward pressure on the lever and the resistance of the can end to penetration by the cutter wheel combine to impose a clockwise torque on the cutter mounting plate tending to rotate it about the pivot 31. As the plate rotates, it rotates against the tension of spring 66, which is exerted against the stud 40, and rotation continues until the stud 40 engages the left hand edge of the opening 41. During this movement, the switch actuating rod 64 closes the contacts of the switch S, thus energizing the motor M. This starts the feed wheel and initiates feeding of the can under the cutter wheel. Continued downward pressure on the operating lever causes further descent of the cutter mounting plate and cutter wheel, driving the cutter wheel through the can end. The starting of the motor prior to piercing reduces considerably the downward hand pressure required to pierce the can end.

The relative position of the upper end of the can and the components of the can opener immediately following piercing is illustrated in FIG. 5. The lever 30 has been pressed on down until further movement is stopped by engagement of the lower edge of the lever with the lug 26b.

The resistance offered by the can end to shearing thereof by the cutter wheel serves to hold the mounting plate in its motor energizing position relative to the switch S after piercing has been completed. In this position, spring 66 continually attempts to return the plate back

to its normal position (as represented in FIGS. 1 and 2), in which the switch S is again opened. Once the end has been severed completely around the rim, thus removing the resistance to cutting, the spring 66 pulls the mounting plate and the switch actuating rod back to the FIG. 1 position, thus opening the switch and shutting off the motor. This is, of course, accomplished without any activity on the part of the operator being required. In other words, once the operator has depressed the lever 30 to the full down position he can remove his hand and the unit itself monitors the condition of the can end and shuts off when the end has been completely severed from the can.

The spring 66 must be provided with adequate strength to insure that the mounting plate will be rotated back to the normal position therefor once the end has been completely severed from the can. On the other hand, it must not be so strong as to prevent the mounting plate from occupying the displaced condition (stud 40 against the left hand edge of opening 41) during the piercing and cutting operation. For most satisfactory performance, it is necessary to create as much differential as possible between (1) the force required to move stud 40 from the left hand edge of opening 41 to the right edge thereof after the end has been completely severed and (2) the maximum force than can be applied to the stud 40 without resulting in unseating it from the left side of the opening during the cutting operation. The spring tension should preferably produce a force which lies substantially centrally between the two forces noted above. The greater the differential between the two limiting conditions, the greater the tolerance that can be given the tension in the spring 66; also the greater the differential between these two limits, the better the assurance that the automatic shut-off will function as intended.

One factor bearing rather strongly on the value for the limiting conditions is the rotational forces exerted on the cutter mounting plate other than the spring tension and the resistance to cutting. It is important to reduce these as much as possible. In order to achieve this, it will be noted that the cutter mounting plate is supported for movement parallel to the frame at three points only, namely at its point of bearing against the end of upper stud portion 27a and at the lower left hand and right hand corners against the rivet heads 46 and 47 (FIG. 2). Since these pins are hardened, friction is greatly reduced; moreover, exceptionally good alignment between the cutter mounting plate and the frame is preserved at all times. Of course, the hardened washer 43 on the inside end of stud 40 is supported in similar fashion by the hardened heads of the pins 45, as earlier explained. So far as the washer 39 at the upper left hand corner of the unit is concerned—the washer supported on the inside end of pin 36—when a can is engaged in the can opener, the top portion of the cutting mounting plate will normally seat against the end of the stud 27a, the washer 39 will not actually bear against the frame 15. Accordingly, any friction between this washer 39 and the frame is negligible.

The tension spring 56 does not exert any rotational forces on the cutter mounting plate during the time that a can is engaged in the can opener. This can be understood by referring to FIG. 5 from which it will be noted that the axis of the right hand can guide 51 (which is also the pivot for the lever 52) is substantially directly below the axis of the pivot stud 27a. Inasmuch as the spring 56 exerts its force in a line substantially paralleling a straight line through the axes of the stud 27a and can guide 51, the force of the spring does not tend to urge the can guide 51 either to the right or to the left. Hence, no rotational force is imparted by the spring to the cutter mounting plate, notwithstanding the adequate downward pressure is afforded by the can guides 51 and 53 to assure efficient feeding of the engaged can by the can feed wheel. Furthermore, it should be understood

that, due to the arrangement of the tension spring 56 and the limiting link 60, as well as that of the lever 52, free swinging of the operating lever 30 (at any time a can is not engaged in the can opener) is not impeded or affected by force of the said spring 56.

One further point should be noted. The can guides 51 and 53 are preferably so located with respect to one another that when the mounting plate and operating lever are in the respective positions shown in FIG. 5, the can guides cause an engaged cylindrical can to assume a position in which its axis is inclined approximately one degree clockwise from true vertical (as viewed in FIG. 5). Consequently, the axis of the engaged can will be approximately 2° counterclockwise from the normal vertical axis of the cutter mounting plate 26, the normally vertical axis paralleling the left and right sides of the plate. (In this connection, it is pertinent to point out that as the cutter mounting plate 26 and operating lever 30 swing on pivot 27a from their respective positions as shown in FIGS. 1 and 2, to the positions shown in FIG. 5, they actually rotate clockwise, as viewed in FIG. 5, on said pivot 27a approximately 3°.) Inasmuch as I have previously found this degree of divergence in the stated direction between the true vertical of a cutter mounting plate and the axis of an engaged can to give most satisfactory results, it should be noted that I have retained this advantage in the present invention. Moreover, manufacture of the can opener is facilitated for the reason that it is not necessary to rotate the compound angled boss 26a from the normal position (which is a position in relation to the true vertical of the cutter mounting plate) that would be used were such cutter mounting plate to remain in a true vertical position while an engaged can is being opened.

It will also be observed that if the automatic shut-off feature of the can opener should ever fail to function as intended, the motor M can be stopped by merely swinging the operating lever 30 upwardly. This has the effect of shifting the cutter mounting plate in a direction to permit the switch operating arm 61 to return to its normal position illustrated in FIG. 1.

Should it be desired to start the motor at any time when a can is not in the can opener, such as when utilizing the motor to drive a cutlery grinding wheel, it is necessary only to push the operating lever 30 downwardly to its extreme downward position. Acting against the tension of spring 66, the stud 40 is seated against the left hand side of the opening 41 and causes the rod 64 to exert a pull on the operating member 61 sufficient to close the switch contacts.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In an electrically powered can opener, the combination of
 - an upright frame having a front and a back,
 - a feed wheel supported in front of said frame for rotation about a substantially fixed, horizontal axis,
 - a cutter carrier member positioned adjacent the front of said frame,
 - an operating lever,
 - first pivot means connecting said operating lever to said frame for swinging movement of the operating lever about a substantially horizontal axis offset from

said feed wheel axis, said lever having a downwardly swung limit position,
 second pivot means connecting said lever with said carrier member, the axis of said second pivot means being offset both from said feed wheel axis and said first pivot axis,
 a cutter element mounted on said carrier member and disposed in overlapping cutting relationship with said feed wheel when said operating lever is in said limit position, said element operable to impose a moment on said carrier member about said second axis when a can lid is being cut and hold said carrier member in one position with respect thereto,
 resilient means connected with said carrier member and imposing a weaker counter moment on said carrier member, said resilient means operable to displace said carrier member from said first position to a second position upon completion of the cutting,
 an electric motor drivingly connected with said feed wheel,
 motor control means actuated by movement of said carrier member between said first and second positions therefor, said control means energizing the motor when the cutter carrier member is in said first position therefor and deenergizing it when the carrier member is in said second position therefor, and
 can guide means carried by said carrier member and arranged to resiliently thrust the can into feeding engagement with said feed wheel, said guide means so mounted and biased that when said lever is in said limit position the reaction forces imposed by the can on said guide means do not impart a moment on said carrier member about said second axis.

2. In an electrically powered can opener, the combination of
 an upright frame having a front and a back,
 a feed wheel supported in front of said frame for rotation about a substantially fixed, horizontal axis,
 a plate-like cutter carrier member positioned adjacent the front of said frame and cut away around said feed wheel as to avoid interference therewith during movement of the carrier member,
 an operating lever having a portion positioned between said frame and said carrier member above and to one side of said feed wheel,
 first pivot means connecting said portion of said lever to said frame for swinging movement of the lever about a substantially horizontal axis offset upwardly and to said one side of the feed wheel, said lever having a downwardly swung limit position,
 second pivot means connecting said portion of said lever with said carrier member, the axis of said second pivot means being normally substantially directly below said first pivot axis when said operating lever is in its downwardly swung limit position,
 a cutter element mounted on said carrier member and positioned in overlapping cutting relationship with said feed wheel when said operating lever is in said downwardly swung limit position, said element operable to impose a moment on said carrier member about said second pivot axis when a can lid is being cut and urge said carrier member toward one position therefor,
 resilient means connected with said carrier member and imposing a weaker counter moment on said carrier member, said resilient means operable to displace said carrier member to a second position therefor upon completion of the cutting,
 an electric motor drivingly connected with said feed wheel, and
 motor control means actuated by movement of said cutter member between said first and second positions therefor, said control means energizing the motor when the cutter carrier member is in said first position therefor and deenergizing it when the carrier member is in said second position therefor, and

can guide means carried by said carrier member and arranged to resiliently press the can into feeding engagement with said feed wheel, said guide means so mounted and biased relative to said second pivot axis that when said lever is in said limit position the reaction forces imposed by the can on said guide means do not impart a moment to said carrier member about said second pivot axis.

3. In an electrically powered can opener as in claim 2, anti-friction bearing means disposed between said carrier member and frame above and below said feed wheel operating to maintain substantially the entire carrier member from frictional engagement with the frame and said operating lever.

4. In an electrically powered can opener, an upright frame structure having a front and back, a substantially horizontal feed wheel shaft supported in said frame structure,
 an operating lever pivoted to said frame structure for swinging movement of the lever about a first horizontal axis substantially parallel with and upwardly and laterally offset from the feed wheel shaft axis, said lever having an upper limit position and a lower limit position,
 a cutter carrier member positioned in front of said frame member and pivotally connected to said operating lever on an axis downwardly offset from and parallel with said first axis,
 a cutting element mounted on said carrier member and movable therewith into and out of overlapping cutting relationship with said feed wheel in response to movement of said lever between said down and up limit positions,
 cooperating stop means on said carrier member and frame operable to confine the permissible pivotal movement of said carrier member about said second axis to a predetermined increment for any position of said second axis relative said first axis,
 resiliently yieldable means biasing said carrier member in one direction about said axis,
 an electric motor drivingly connected with said feed wheel shaft,
 means connected with said carrier member and operable in response to pivotal displacement of said carrier against the bias of said yieldable means to energize said motor,
 a first can guide secured to and projecting forwardly of said carrier member on one side of said cutting element, said first guide so located that its point of attachment to the carrier member is aligned with said first and second axes when said cutting element is in said cutting relationship with said feed wheel,
 a second can guide on the opposite side of said cutter element from said first can guide,
 an arm paralleling said cutter member and pivotally anchored to said carrier member for movement about an axis through said point of attachment substantially parallel with the feed wheel axis, said arm traversing across said feed wheel shaft and connected with and supporting said second can guide, and
 resilient means connecting said frame and arm and operable to yieldably resist upward movement of said second can guide relative to said carrier member.

5. In an electrically powered can opener as in claim 4, said arm located between said carrier member and said frame,
 said second can guide extending from said arm through an opening in said carrier member, and
 motion limiting means interposed between said frame and arm and preventing contact between said second can guide and the lower edge of said opening.

6. In an electrically powered can opener as in claim 4, said motion limiting means comprising
 a horizontal ear on said arm having an opening therein,

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a horizontal bracket member on said frame having an opening therein, and
 a rod extending between said ear and bracket member with its ends loosely received in said openings, said rod having shoulders spaced inwardly of the ends which limit the degree of permissible entry of the rod ends into the openings. 5

7. In an electrically powered can opener as in claim 4, said lever means having a portion thereof positioned to engage said carrier member and effect said pivotal displacement for the purposes of energizing said motor when no can is engaged in said can opener. 10

8. In an electrically powered can opener, the combination of
 an upright frame having a front and a back, 15
 a feed wheel supported in front of said frame for rotation about a substantially fixed, horizontal axis,
 a cutter carrier member positioned adjacent the front of said frame,
 an operating lever, 20
 first pivot means connecting said operating lever to said frame for swinging movement of the operating lever about a substantially horizontal axis offset from said feed wheel axis, said lever having a downwardly swung limit position, 25
 second pivot means connecting said lever with said carrier member, the axis of said second pivot means being offset both from said feed wheel axis and said first pivot axis,
 a cutter element mounted on said carrier member and disposed in overlapping cutting relationship with said feed wheel when said operating lever is in said limit position, 30
 an electric motor drivingly connected with said feed wheel, 35
 motor control means actuated by movement of said carrier member to a motor starting position, and
 a lug member extending from said carrier member and engaged by said lever by which movement of said carrier member to said motor starting position is effected by displacement of said lever to said limit position. 40

9. In an electrically powered can opener, the combination of
 an upright frame having a front and a back, 45
 a feed wheel supported in front of said frame for rotation about a substantially fixed horizontal axis,
 a cutter carrier member positioned adjacent the front of said frame,
 an operating lever,

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first pivot means connecting said operating lever to said frame for swinging movement of the operating lever about a substantially horizontal axis upwardly offset from said feed wheel axis, said lever having a downwardly swung limit position,
 second pivot means connecting said lever with said carrier member, the axis of said second pivot means being offset both from said feed wheel axis and said first pivot axis,
 a cutter element mounted on said carrier member and disposed in overlapping cutting relationship with said feed wheel when said operating lever is in said limit position, said element operable to impose a moment on said carrier member about said second axis when a can lid is being cut and hold said carrier member in one position with respect thereto,
 resilient means connected with said carrier member and imposing a weaker counter moment on said carrier member, said resilient means operable to displace said carrier member from said first position to a second position upon completing of the cutting,
 an electric motor drivingly connected with said feed wheel,
 motor control means actuated by movement of said carrier member between said first and second positions therefor, said control means energizing the motor when the carrier member is in said first position therefor, and deenergizing it when the carrier member is in said second position therefor,
 first anti-friction bearing means disposed between said carrier member and the frame above said feed wheel,
 a stud connected with said frame below said feed wheel and extending rearwardly through an opening in the frame,
 washer means connected with said stud on the rearward side of said frame and bridging said opening, and
 second anti-friction bearing means between said washer and frame to reduce sliding friction therebetween during displacement of said carrier member between said first and second positions therefor.

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