Sept. 15, 1953 E. W. CURTIS 2,651,838

CAN OPENER

Filed Aug. 26, 1950

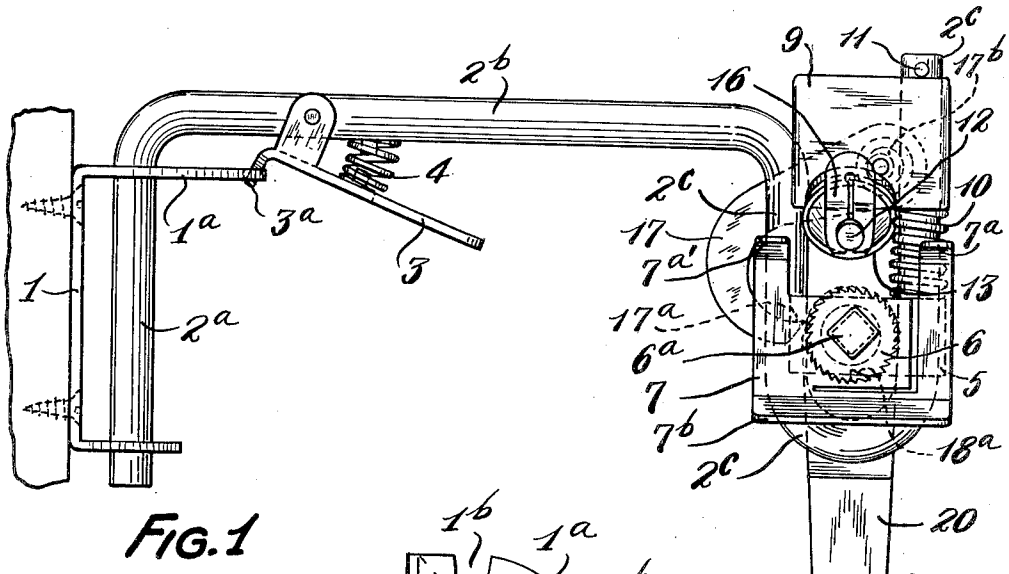


FIG. 1

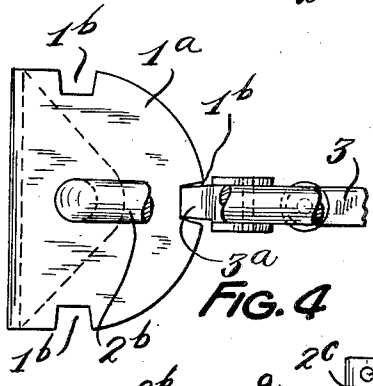


FIG. 4

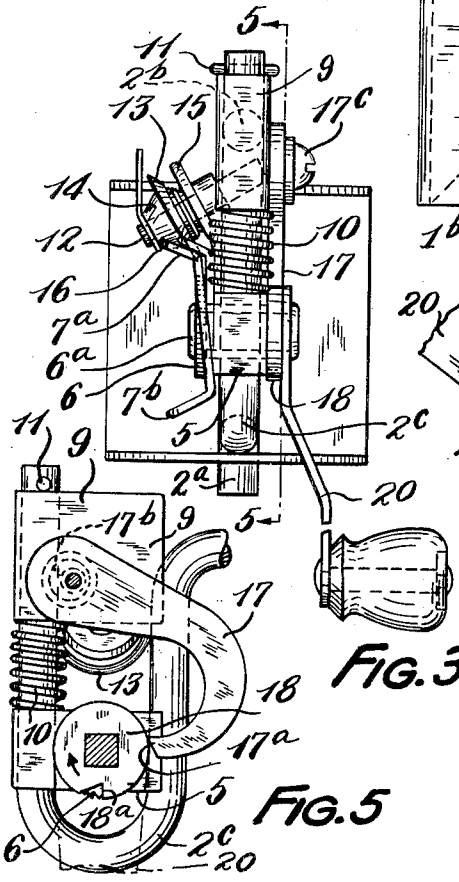


FIG. 3

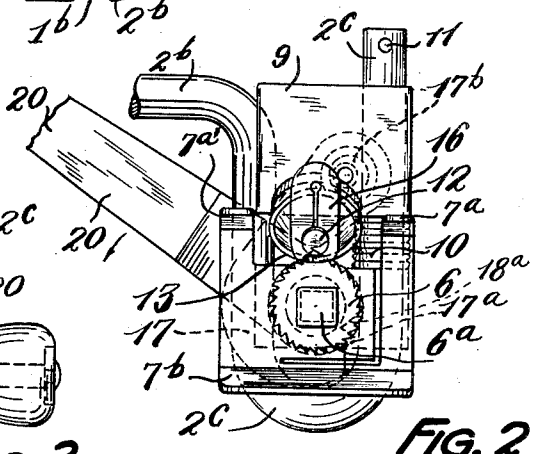


FIG. 2

FIG. 5

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CAN OPENER

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8 Claims. (Cl. 30—9)

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This invention is for an improved can opener.

My present can opener is of the type that may be mounted upon the wall or other upright support and which may be manipulated by means of a crank for cutting out the top of a can.

There are numerous prior devices of this same general type in which the cutting means is first brought into operative engagement with the can as a separate manipulation from the cutting operation that follows. That is to say, in such prior devices the preliminary positioning and the following operation of the cutting means are performed as separate and distinct steps and there is necessarily involved a delay as well as inconvenience in the process of performing the first operation in such a separate and distinct manner from the initiation of the second operation.

It is therefore the object of the present invention to devise a can opener in which the positioning and operation of the cutting means may be performed as one continuous, combined manipulation and in which there is provided a single manipulatable means for initiating and continuing this combined operation to the point of completion.

Other objects consist in the provision of the particular features of construction and operation as hereinafter more fully set forth and claimed.

Fig. 1 of the accompanying drawing is a side elevation of my present improved can opener;

Fig. 2 is a partial elevation showing the parts in operative position whereas Fig. 1 shows them in inoperative position;

Fig. 3 is an end elevation corresponding to Fig. 1;

Fig. 4 is a top plan view of a part of the device; and

Fig. 5 is a view in side elevation of a part of the device and corresponds to line 5—5 of Fig. 3.

It is to be understood that the present form of disclosure is merely for the purpose of illustration and that there might be devised various modifications thereof without departing from the spirit of my invention as herein set forth and claimed.

Referring now to the accompanying drawing in detail, the bracket 1 is adapted to be applied in a permanent manner to a wall or other support; and the adjustable main bracket arm in the form of a bent rod has a vertical portion 2a mounted upon the fixed bracket 1 so as to be capable of swinging adjustment about a vertical axis. The latch 3 is pivotally mounted upon the horizontal part 2b of the main bracket arm and has a tooth 3a that is adapted for locking engagement in any one of several notches 1b in the arcuate-shaped part 1a of the fixed bracket 1 so as to permit the same to be swung out of the way in either direction and held there when not in use. The latch 3 has a spring 4 for normally forcing and holding the same in locking engagement in one of the notches.

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The outer end portion 2c of the adjustable main bracket arm is of substantially U-shape and is adapted to support operating parts of the present can-opening mechanism.

The block 5 is fixedly mounted upon the lower part of the U-shaped portion 2c; and upon this block 5 there is rotatably mounted the knurled disk 6 which is adapted to engage beneath the top marginal portion of a can that is to be opened. Upon this same block 5 there is mounted also the positioning means 7 which has upwardly and angularly extending spaced projections 7a and 7a' above the knurled disk 6, and a downwardly and angularly extending projecting flange 7b below the knurled disk 6. The stop edge of the positioning means 7 is cut away so as to permit the top edge of the can to be positioned between and beneath the projections 7a and 7a' and to permit the knurled disk 6 to project thereabove for operative engagement beneath the top edge of the can; and the projection 7a may be formed as the end of a spring arm integral with the guide means 7, as clearly indicated in Fig. 1 and Fig. 2, this spring arm being of proper tension for positioning a can of any diameter or even a square can with a small corner radius. The flange 7b is intended to be engaged by the body of the can so as to ensure positioning of the top edge portion of the same at the proper angle with respect to the cutting means which will now be described.

Upon the upper part of the U-shaped portion 2c of the bracket, there is mounted the carriage of upper companion bracket 9 for slidable movement therealong. A coil spring 10 normally tends to force the carriage 9 upwardly and the pin 11 acts as a stop to limit such movement. The shaft 12 is fixedly mounted upon the carriage 9 and extends downwardly at an angle of approximately 30 degrees. Rotatably mounted upon this shaft 12 there is the cutter member 13 and its collar 14 fixed upon the hub thereof, and the guide wheel 15 which may also be fixed upon the hub of the cutter member 13 or freely and separately mounted for rotation upon the fixed shaft 12. Upon the outer end of the shaft 12 there may be provided a suitable washer to hold these parts upon the same, as for instance a

split washer 16 which will permit ready removal of the cutter for cleaning and replacement of the same.

Upon the rear side of the carriage 9 there is pivotally mounted the hook member 17 whose point 17a is in the same plane with the notch 18a in the periphery of the circular member 18 fixed upon the shaft 6a of the disk 6 and is adapted for co-operative engagement with the notch 18a. The hook member 17 is so formed and is so mounted that, when hanging idly, its pointed end will bear against the periphery of the notched disk 18: and, when the notched member is rotated in clock-wise direction as viewed in Fig. 5 of the present drawing, the point 17a will be engaged by the abrunt right-hand side of the notch 18a (Fig. 5) and the hook member 17 will be turned about its pivot so as to cause the circular inner surface of the hook member to become engaged about the notched disk 18 which is of slightly less curvature than that of the inner surface of the hook member 17. The hook member 17 at the same time is pulled down and likewise the carriage 9 is lowered against the spring 10. Such rotation of the shaft 6a may be effected by means of the crank 20 which is fixed upon the shaft 6a. These parts are so constructed and arranged that such lowering of the carriage 9 will be effected by rotation of crank 20 and consequent downward pulling action of the hook member 17 when engaged by notch 18a, which serves to bring the cutter 13 into operative position with respect to the top edge of a can that is to be opened and whose top edge portion will be engaged between the knurled disk 6 and the cutter member 13; in fact, cutter member 13 will be caused by such downward or lowering movement to actually pierce the top of the can, and continued rotation of the crank 20 will cause the rotatable knurled disk 6 to rotate the can and thus effect a continued cutting of the can top about a circular path. At the same time the wheel 15 will engage and ride the top edge of the can so as to maintain the proper operative position of the cutter member 13 with respect to the can top in the region immediately within the rim or edge portion thereof.

The hook member 17 may be mounted upon the carriage 9 with an eccentric bushing 17b by means of the screw 17c so as to permit adjustment of the same for varying its effective length with respect to the notched disk 18 and thereby ensure proper interengagement between these parts.

In actual use of this device, a can may be placed with the upper part of its side bearing against the flange 7b and with its upper edge or rim portion bearing up against the projections 7a, 7a' and positioned above the knurled disk 6. At this time the hook member 17 is free of the notched disk 18, as indicated in Fig. 5. This positioning of the can affords what might be regarded as a three-point engagement between the flange 7b and the projections 7a and 7a'. Then, while holding the can in such position, the user may turn the crank 20 clockwise, as viewed in Fig. 5 or counterclockwise as viewed in Figs. 1 and 2, so as to rotate the notched disk 18 and cause its notch 18a to engage the hook point 17a of the hook member 17, whereupon continued rotative operation will cause the lower end of the hook 17 to be rolled into engagement about the disk 18 which becomes engaged within the curved inner surface of the hook 17 and at the same time cause the cutting member 13 to be lowered into cutting engagement with the top of the can just within the edge thereof. As may be observed, the engagement of the rotating disk 18 with the hook 17 will cause the same to have a combined downward and pivotal movement until it has assumed full engagement about the disk 18 which will then rotate therewithin. It will be observed also that the upper edge of the can will then be effectively engaged between the cutter member 13 and the knurled disk 6 and the can will be rotated by the disk 6 so as to effect continued cutting of the can top. At the same time, the wheel 15 has been positioned so as to ensure maintenance of the can top in proper position with respect to the cutter member 13. In fact, the can is so positioned between the projections 7a and 7a' and the flange 7b that the edge of the cutting member 13, when lowered, will bear the most effective angle with respect to the can top and will be brought into effective engagement in the corner of the can top so as to ensure complete removal of the same, and it is to be noted that the knurled disk 6, the cutter member 13 and the wheel 15 are all so positioned for their respective engagements with the can for performance of the intended operation as herein explained.

The collar 14 may be made of slightly smaller diameter than the cutter member 13 so as to have a tendency to press down the edge of the severed part of the can top; and the point of the cutting action by the cutting member 13 may be slightly in advance of the point of tangency of the collar 14 with the can top; with the result that, when the cutter member 13 nears completion of the cutting operation in any given case, downward pressure of the collar 14 upon the can top will cause the edge of the same in advance of the cutter member 13 to rise; and, by interrupting the operation temporarily, the user may grasp the can top and easily remove the same upon completion of the cutting operation.

When the can top has been completely severed from the can, and upon reverse rotation of the crank 20, the hook 17 will be moved slightly counter-clockwise (Fig. 5) by the friction created by the spring 10 acting upon the carriage so that the hook point 17a will engage the inclined left-hand side of the notch 18a (Fig. 5), and the hook member 17 will be turned about its pivot point out of engagement with the notched disk 18 so as to again occupy idle position indicated in Fig. 5. Such disengagement of the hook 17 permits the spring 10 to return the cariage 9 to its upper position and thus the cutter member 13 is raised out of operative position and the can may be removed.

The principal feature of novelty in this device resides in the fact that there is a unitary means capable of continuous manipulation for effecting the operative position of the cutter member with respect to the can top and for performing the cutting operation. That is, both of these operations may be performed as one combined or continuous manipulation without any interruption. This, of course, means a saving in time and also a decided convenience. Also, the entire device may be readily removed for cleaning or storage by merely lifting the vertical portion 2a of the main bracket from the wall bracket 1. The same bent rod serves as a bracket for mounting upon the wall bracket and also for supporting the mechanism at its other end; and this same principle of dual-purpose bracket and support may be embodied in other modified forms of construction. Also, the wall bracket 1 may be provided with any desired number of notches for engagement by the end of the latch member 3.

Other practical advantages and possible modifications of my present invention will readily suggest themselves to those who are familiar with the art to which it relates.

What I claim is:

1. A can opener comprising rotatable means adapted to be brought into operative engagement with one side of the edge portion of a can for cutting the same, rotatable means adapted for operative engagement with the opposite side of the same edge portion of the can for effecting rotation thereof, said last-named rotatable means having a shaft, and a unitary manipulatable means for effecting operative engagement of said rotatable means with the opposite sides, respectively, of the same edge portion of a can so as to effectively position the same therebetween for the cutting operation and for effecting the rotation and simultaneous cutting operation thereupon, said last-named means including a rotatable disk means on the shaft of said second-named means and a companion means associated with said cutting means for co-operative releasable engagement with said disk means, said companion means and cutting means being bodily movable towards and from said second-named means so as to position said cutting means with respect to the can, and said companion means being adapted to be moved into engagement with said disk means for effecting said movement of said cutting means and being adapted also to accommodate said disk means in continued rotation in operative direction for the cutting operation.

2. A can opener comprising rotatable means adapted to be brought into operative engagement with the one side of the edge portion of a can for cutting the same, rotatable means adapted for operative engagement with the other side of the same edge portion of the can for effecting rotation thereof, and means manipulatable by a single continuous operation for initiating operative engagement of said rotatable means with the inner and outer sides, respectively, of the same edge portion of a can so as to effectively position the same therebetween for the cutting operation and for effecting the rotation and simultaneous cutting operation thereupon, said last-named means including a single rotatable disk on the shaft of said second-named means and a single companion member associated with said cutting means for co-operative engagement with said disk, said companion member and cutting means being bodily movable towards and from said second-named means so as to position said cutting means with respect to the can, and said companion member having a circular recessed portion adapted to be moved into engagement with said disk for effecting said movement of said cutting means and within which said disk may be continued in its rotation in operative direction for the cutting operation.

3. A can opener comprising rotatable means adapted to be brought into operative engagement with one side of the edge portion of a can for cutting the same, rotatable means adapted to be brought into operative engagement with the opposite side of the same edge portion of the can for effecting rotation thereof, and a unitary manipulatable means for effecting operative engagement of said rotatable means with the opposite sides, respectively, of the same edge portion of a can so as to effectively position the same therebetween for the cutting operation and for effecting the rotation and simultaneous

cutting operation thereupon, said last-named means including a pivotally mounted hook member associated with said cutting means, said hook member and cutting means being bodily movable towards and from said second-named means so as to position said cutting means with respect to the can, and a disk on the shaft of said second-named means, said hook member having a recess with a circular inner surface of slightly greater curvature than that of said disk so that said disk may be received within said hook member and continued in its rotation in operative direction for the cutting operation.

4. A can opener comprising a bracket, rotatable means adapted to be brought into operative engagement with the one side of the edge portion of a can for cutting the same, rotatable means adapted to engage the other side of the same edge portion of the can for effecting rotation thereof, said rotatable means being mounted upon said bracket and said rotatable means being relatively movable the one with respect to the other along a straight line upon said bracket so as to bring the same into operative relation to said can, and unitary manipulatable means for effecting such relative straight-line movement of said means towards each other for operative engagement of said rotatable means with the inner and outer sides, respectively, of the same edge portion of the can so as to position the same therebetween and for effecting the rotation and simultaneous cutting operation thereupon, said unitary means including a pivoted hook member associated with said first-named rotatable means, and a circular disk with a peripheral notch mounted upon the axis of said second-named rotatable means, said hook member having a recess adapted to receive said disk for rotation of the same therewithin, and the notch of said disk being adapted to engage the point of said hook so as to constitute a fulcrum for bringing said recessed hook member into engagement about said disk so as to permit rotation of said disk therewithin.

5. A can opener comprising a main bracket, an upper companion bracket adapted for straight-line movement along said main bracket, rotatable cutting means mounted upon said companion bracket and adapted to be lowered into operative engagement with the one side of the edge portion of a can, the axis of the shaft of said cutting means being at an angle of approximately thirty (30) degrees, a rotatable knurled disk mounted upon said main bracket and adapted to engage the other side of the same edge portion of the can for effecting rotation thereof, in the performance of the cutting operation, a crank member fixedly mounted upon the shaft of said rotatable disk and having a peripherally notched circular member rotatable therewith, an arm pivotally depending from said movable bracket and having its lower free end formed as a hook with a point adapted to be engaged by the notch of said notched member for lowering said upper bracket so as to bring said cutting means into position for the cutting operation, upon continued operation of said crank member, and having its hook formed with a circular inner surface to receive said notched member bodily for bearing engagement and continued rotation therewithin, and spring means for effecting upward movement of said upper companion bracket so as to disengage said cutting means from the can upon release of the end portion of said hook from engagement with said

notched member upon reverse rotation of said notched member by said crank member.

6. A can opener comprising rotatable means adapted to be brought into operative engagement with one side of the edge portion of a can for cutting the same, rotatable means adapted for operative engagement with the opposite side of the same edge portion of the can for effecting rotation thereof, said last-named rotatable means having a shaft, and a unitary manipulatable means for effecting operative engagement of said rotatable means with the opposite sides, respectively, of the same edge portion of a can so as to effectively position the same therebetween for the cutting operation and for effecting the rotation and simultaneous cutting operation thereupon, and means located to the rear of the point of cutting engagement of said cutting means with the top of the can for there depressing the can top as it is severed from the can and thereby causing the can top in advance of the point of cutting engagement to be raised so as to facilitate removal of the same upon being completely severed from the can.

7. A can opener comprising a bracket, rotatable means adapted to be brought into operative engagement with the one side of the edge portion of a can for cutting the same, rotatable means adapted to engage the other side of the same edge portion of the can for effecting rotation thereof, said rotatable means being mounted upon said bracket and said rotatable means being relatively movable the one with respect to the other along a straight line upon said bracket so as to bring the same into operative relation to

said can, and unitary manipulatable means for effecting such relative straight-line movement of said means towards each other for operative engagement of said rotatable means with the inner and outer sides, respectively, of the same edge portion of the can so as to position the same therebetween and for effecting the rotation and simultaneous cutting operation thereupon, said unitary means including a pivoted hook member associated with said first-named rotatable means, and a circular disk with a peripheral notch mounted upon the axis of said second-named rotatable means, said hook member having a recess adapted to receive said disk for rotation of the same therewithin, and the notch of said disk being adapted to engage the point of said hook so as to constitute a fulcrum for bringing said recessed hook member into engagement about said disk member so as to permit rotation of said disk therewithin.

8. The same structure as recited in claim 7 hereof and in which said pivoted hook member has a rotatably adjustable eccentric mounting so as to permit variation of the effective length thereof with respect to said notched disk so as to ensure proper interengagement therebetween.

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