Sept. 23, 1947. K. R. McENTIRE 2,427,734

CAN OPENER

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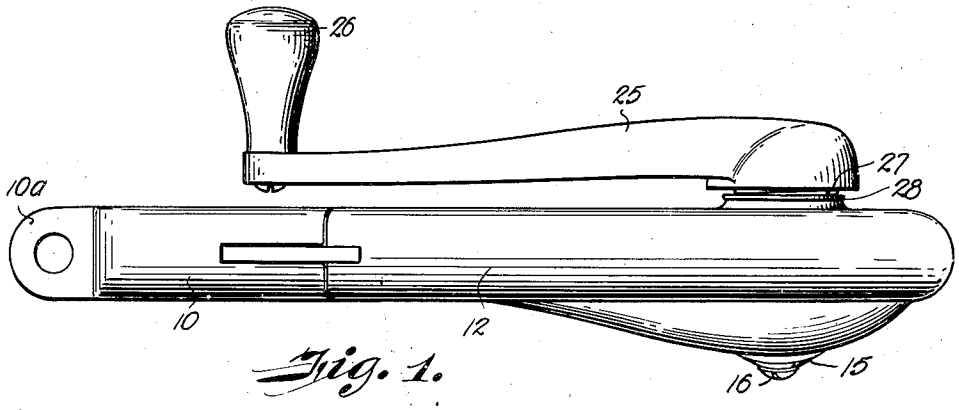


Fig. 1.

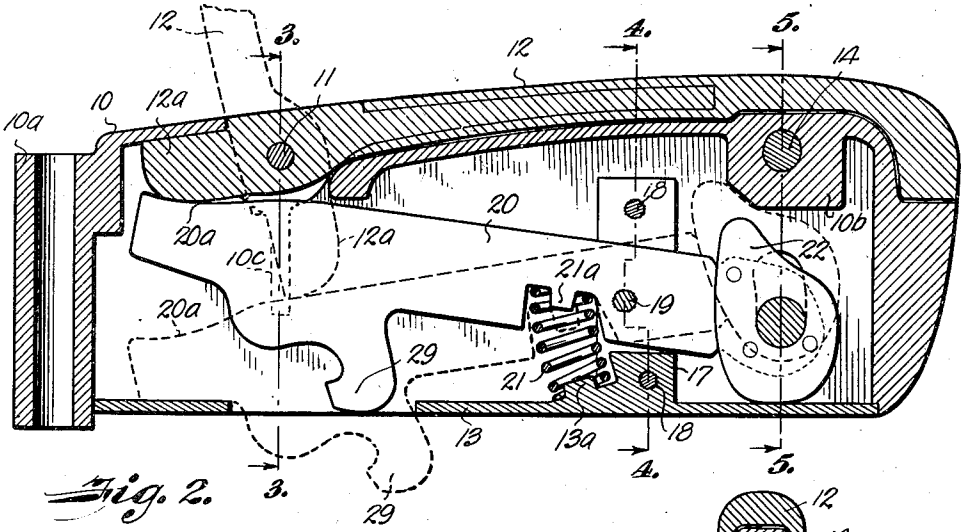


Fig. 2.

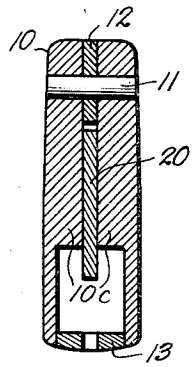


Fig. 3.

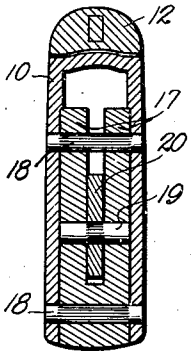


Fig. 4.

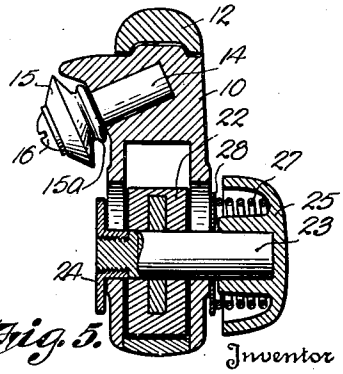


Fig. 5.

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CAN OPENER

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3 Claims. (Cl. 30—9)

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This invention relates to improvements in can openers and refers more particularly to an opener of the wall type supported on a bracket utilizing a feed gear and disk cutter for removing the top of the can.

Novelty in the device resides primarily in housing the actuating mechanism within a single piece case and resiliently mounting the feed gear by spring loading the feed gear shaft and feed gear actuating mechanism.

An object of the invention is to provide a single piece hollow housing open at the bottom and in which the mechanism can be easily assembled and disassembled.

Another object is to provide a manually operated cam arm pivoted on the housing and operable in conjunction with a compression spring to pivot the actuating lever and move the feed gear in and out of cutting relationship with the cutter disk.

A further object is to provide resilient mountings for the feed gear shaft to compensate for irregularities in the can and reduce rotative effort necessary to rotate the feed gear during the cutting operation.

Other and further objects will appear from 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 top plan view of a can opener which embodies the invention,

Fig. 2 is a central sectional view,

Fig. 3 is a view taken along the line 3—3 in Fig. 2 in the direction of the arrows,

Fig. 4 is a view taken along the line 4—4 in Fig. 2 in the direction of the arrows,

Fig. 5 is a view taken along the line 5—5 in Fig. 2 in the direction of the arrows.

Referring to the drawings and for convenience in describing the can opener, the end supported at the wall by a bracket will be designated as the rear end, and the opposite end, the forward end. At 10 is shown a housing having a hollow interior. In the top is a single opening in which is pivoted at 11 cam arm 12. A bottom opening extending substantially the length of the housing is covered by a bottom plate 13. At the rear of the housing is a bracket member 10a adapted to fit a pintle or pin carried by a wall bracket not shown. At the top of the housing and near the front is a bearing sleeve 14 in which is rotatably mounted the shaft of the disk cutter 15. The

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cutter is removably mounted from the shaft by means of screw 16.

Forming a part of the bottom plate or cover 13, or mounted upon the plate as a separate assembly, is a bifurcated column or pillar 17 shown best in Figs. 2 and 4. Strip fastening pins having a driving fit with the pillar 17 and with the walls of the housing hold the bottom plate rigidly in place in the housing. On a pin 19 carried by the bifurcated pillar and located between pins 18 is pivoted an actuating lever 20. The rear end of this lever is held normally in a raised position, shown in full lines in Fig. 2, by a coil spring 21 held between a tooth or boss 21a formed beneath the actuating lever and a similar boss 13a on the bottom plate 13. At the front end of the actuating lever is attached a diecast bearing member 22 or the bearing may be formed by enlarging the end of the lever. This bearing member and the lever are drilled to receive the feed gear shaft 23. The member 22 is also shaped to serve as a stop to limit the travel of the actuating lever. The curved upper edge of the bearing abuts against a shoulder formed in portion 10b cast in the upper front portion of the housing. The portion 10b also carries the bearing 14 in which the disk cutter shaft is mounted.

The feed gear shaft extends through the housing and at one end is threaded to receive feed gear 24. Mounted on the opposite end of the feed gear shaft is the operating handle 25 manually rotated during the cutting operation by handle knob 26. Between the handle and housing and surrounding the feed gear shaft is a coil spring 27 abutting washer 28 which lies next to the housing wall. The walls of the housing are slotted to permit passage of the feed gear shaft and free movement of the shaft with the raising and lowering of the actuating lever.

The top edge of the rear portion of the actuating lever is a cam surface 20a which is contacted by the lower end 12a of cam arm 12. Extending from opposite sides of the housing walls and within the housing are guide fins 10c shown in Figs. 2 and 3. These fins center the rear end of the actuating lever and cam arm.

Beneath the actuating lever is formed a hook shaped member 29 which may be used as a bottle opener when the lever is in lowered position shown in dotted lines in Fig. 2.

To assemble the can opener, cam arm 12 is pivoted in the housing and the disk cutter 15 mounted in its bearing 14. Coil spring 21 is placed between the bosses on the actuating lever and bottom plate and the lever is pivoted be-

tween the bifurcated portions of pillar 17. Bearing 22 has been mounted at one end of the actuating lever prior to pivoting the lever on its support. The actuating lever assembly now mounted on the bottom plate is inserted into the bottom opening of the housing and fastening pins inserted. The ends of the bottom plate may be secured by screws if desired. The feed gear shaft is then inserted through the slots in the housing wall, the feed gear 24 screwed to one end, and the operating handle to the other after insertion of the washer 28 and coil spring 27. Fastening of the handle to the shaft is such that the handle is rigidly mounted thereon so that the handle, shaft and feed gear rotate together.

To open a can, the can rim or flange is inserted between the top edge of the feed gear and the annular shoulder 15*a* formed in the cutter behind the cutting edge. Cam arm 12 is now raised to the dotted line position shown in Fig. 2 during which movement the lower portion 12*a* of the arm engages the top edge 20*a* of actuating lever 20 and lowers it to the dotted line position against the force of coil spring 21. Lowering of the rear end of the actuating lever raises the forward end upon which the feed gear shaft is mounted, causing the cutter to pierce the top of the can. Rotation of handle 25 feeds the top outside edge of the can to the cutter due to frictional engagement of the can flange with the serrated edge of the feed gear and the shoulder portion 15a of the cutter. During the cutting operation irregularities in the can or flange are compensated for by the off-center spring loading of the drive gear or actuating lever. Axial end play of the feed gear shaft is taken up by spring 27.

After the top of the can has been cut out, cam arm 12 is lowered permitting the compression spring to raise the actuating lever and move the feed gear away from the cutter. The can may then readily be removed from the cutting position. To limit the upward travel of the actuating lever the bearing member 22 is shaped to engage as a stop abutting member 10*b*.

Thus it will be seen that there has been provided a can opener having a one piece hollow housing enclosed on all sides with the exception of the small opening at the top and a larger bottom opening. The mechanism for moving the feed gear in and out of cutting relationship with the cutter is mounted on a bottom plate insertable into the housing from below and rigidly affixed to the housing by two strip fastening or drive pins. The feed gear is raised by manual operation of the cam arm which moves the feed gear into cutting relationship with the cutter and pierces the can. During the piercing and cutting operations the feed gear is resiliently transported both vertically and axially.

From the foregoing it will be seen that this invention is one well adapted to attain all 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 subcombinations are of utility and may be employed without reference to other features and subcombinations. 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 drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In a can opener the combination with a hollow housing, of a disk cutter rotatable in a fixed bearing carried by the housing, a cam arm with a cam portion at one end and a handle at the other pivoted adjacent the top of the housing said cam portion movable through an arc within the housing and the handle through an arc outside the housing, an actuating lever pivoted intermediate its ends and enclosed within the housing said lever having a cam surface at one end offering engagement with the cam portion of the cam arm and a feed gear shaft bearing at the opposite end, an operating handle at one end of the feed gear shaft and a feed gear at the opposite end whereby functioning of the cam arm moves the feed gear into proximity with the cutter thereby engaging the cam rim placed therebetween and piercing the top of the can while rotation of the operating handle advances the can rim along the cutter, cutting out the top of the can.

2. A can opener as in claim 1 with a compression spring beneath the actuating lever adapted to urge said lever against the action of the cam arm, said spring located rearwardly of the actuating lever pivot and between the pivot and camming surface.

3. In a can opener the combination with a hollow housing having a bottom opening, of a disk cutter rotatable in a fixed bearing carried by the housing, a cam arm with a cam portion at one end and a handle at the other pivoted adjacent the top of the housing, said cam portion movable through an arc within the housing and the handle portion through an arc outside the housing, a bottom plate insertable into the bottom opening of the housing, a support on said plate, an actuating lever pivoted within the housing and upon said support, a cam surface at one end of the lever offering engagement with the cam portion of the arm and a feed gear shaft bearing at the opposite end, an operating handle at one end of the feed gear shaft and a feed gear at the opposite end whereby functioning of the cam arm moves the feed gear into proximity with the cutter thereby engaging the cam rim placed therebetween and piercing the top of the can while rotation of the operating handle advances the can rim along the cutter to cut the top of the can.

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