

July 7, 1942.

C. G. FAWKES

2,288,894

CAN OPENER

Filed April 22, 1940

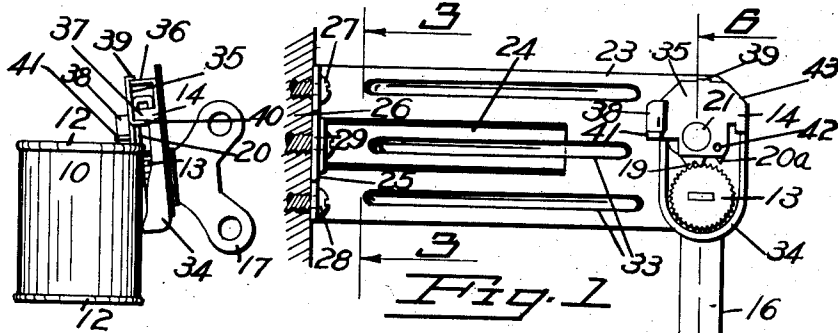


Fig. 2

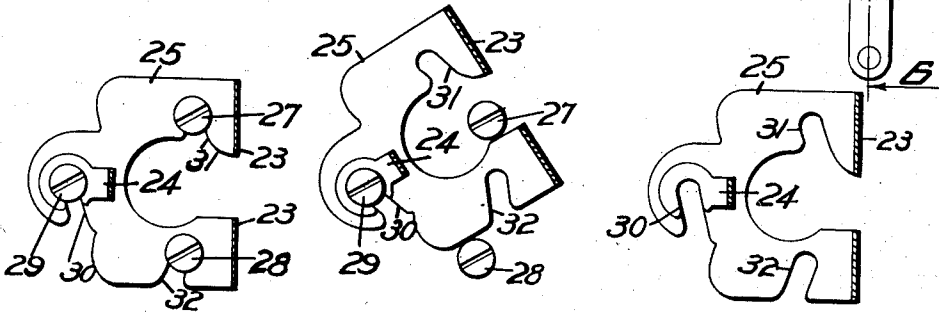


Fig. 3

Fig. 4

Fig. 5

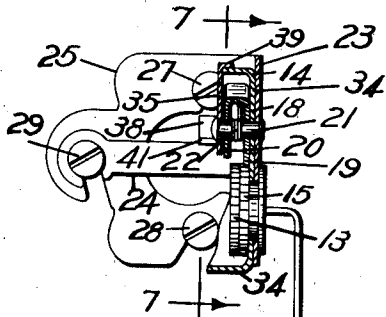


Fig. 6

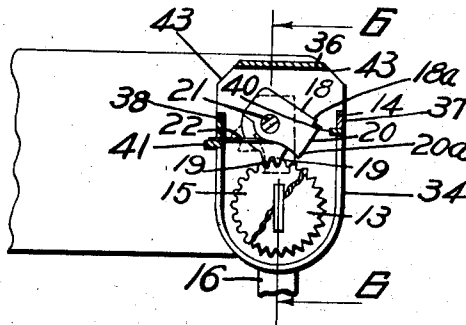


Fig. 7

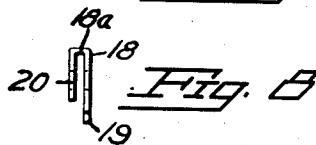


Fig. 8

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CAN OPENER

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11 Claims. (Cl. 30—15)

This invention relates to improvements in can openers.

An object of the invention is to provide a can opener of the can-rotating type, that can be readily placed in operating engagement with a can to be opened.

Another object is to provide a can opener of this type that is unusually sturdy in its construction and simple and economical in its component parts.

Other objects and advantages reside in details of design and construction which will be more fully disclosed in the following description and in the drawing wherein like parts have been similarly designated and in which:

Figure 1 is a general elevation of a can opener made according to the present inventive concept;

Figure 2 is a general elevation of a can opener embodying a slightly modified form of the present invention, as it would appear in operative relationship to a can;

Figure 3 is a sectional view taken along the line 3—3 of Figure 1;

Figure 4 is the same sectional view as that shown in Figure 3, showing the can opener in a rotated position as a step in its removal from its stationary mounting;

Figure 5 is a sectional view taken along the same line as Figure 3, as that part of the device would appear apart from its stationary mounting;

Figure 6 is a sectional view along the line 6—6 of Figure 1, and drawn to a larger scale;

Figure 7 is a fragmentary sectional view taken along the line 7—7 of Figure 6; and

Figure 8 is an illustration of an element per se, shown in combination in Figures 1, 3 and 4.

In order to disclose an operative reduction to practice of the present inventive concept, the drawing herein will be specifically described. However, the devices herein illustrated and described are merely typical examples and their specific construction is not intended to express or imply any limitation to this invention, the scope of which is, in reality, measured by the appended claims.

In the drawing, reference character 10 denotes a tin can as ordinarily used for foods and the like. A can of this type is equipped with top and bottom closures which are beaded over the side walls as illustrated at 12.

A sharp-toothed and preferably hardened wheel 13 is rotatably mounted in a supporting structure 14. Adjacent the wheel 13 is a ratchet

wheel 15 coaxially mounted for conjoint rotation with said wheel 13.

Means are provided for conjointly rotating the wheels 13 and 15, which means are a crank handle 16 in the form of the invention shown in Figure 1, and a finger key 17 in the form of the invention illustrated in Figure 2.

Carried in the supporting structure 14 is a combination pawl and cutter element 18 that is provided with two ratchet-engaging pawls 19 and a cutting edge 20 that terminates in a point 20a. This pawl and ratchet element 18 is pivotally mounted at 21 upon the structure 14 and is urged by a spring 22 in a counter-clockwise direction of rotation as viewed in Figure 7. By this construction, it is manifest that upon rotation of the ratchet wheel 15 in a counter-clockwise direction, as viewed in Figure 7, the pawls 19 will be moved slightly in a clockwise direction of rotation about their pivotal mounting 21, imparting similar movement to cutter 20.

As the pawls 19 slip off of the ratchet teeth on wheel 15, they will snap back to the next teeth in a counter-clockwise direction. This arrangement is for the purpose of keeping the cutting edge 20 up away from the ratchet wheel 15, when not in actual use, in which position it is always ready to receive the beaded edge 12 of a can 10.

When the beaded edge 12 of the can 10 is inserted between the toothed wheel 13 and the cutting edge 20, as illustrated in Figure 2, then slight rotation of the rotating means 16 or 17 will bring the cutting edge 20 down into angular contacting relationship with the top of the can near its bead, whereupon further rotation of the toothed wheel 13 will begin to rotate the can 10 against the cutting edge 20 which at the same time is urged toward the can top. The resultant of these components of force will cause the cutting edge 20 to cut into and through the can top, in which cutting position it will remain during a complete revolution of the can. One revolution of the can will serve to completely cut a disc from the can top immediately adjacent its beaded edge, thus completing the can-opening operation.

As a consequence of the particular integral construction of the parts 19 and 20 to make the element 18, and the particular mounting and relationship of these parts, a can readily may be placed in operating engagement with the opener and the component parts of the device, as a whole, are rendered especially strong, durable, simple and economical.

The form of the invention as illustrated in

Figure 2, is not mounted upon a stationary surface and it may, therefore, rotate about the can 10 instead of rotating the can as hereinbefore described. Obviously, the action is the same whether the can rotates or whether the can opener rotates.

In the form of the invention illustrated in Figure 1, a mounting bracket 23 carries the supporting structure 14 and is provided with an angular brace 24 and means 25 whereby the entire assembly may be removably mounted upon a stationary surface, such as a wall 26. The means 25 for mounting the device upon the wall 26 is illustrated in some particularity in Figures 3, 4 and 5, wherein it will be seen that three screws 27, 28 and 29 are permanently placed in the wall and each is provided with an annular groove immediately beneath its head.

Notches are provided in the means 25 in a position to engage the three screws 27, 28 and 29. The shape and arrangement of these notches are such that the notch 30 that engages the screw 29 before the other screws are engaged, provides a rotary or pivotal mounting for the bracket, after which the bracket is rotated to bring the notches 31 and 32 into contact with screws 27 and 28, respectively, these notches being positioned along arcs that would be described by radii equal to the distance from screw 29 to screw 27 and from screw 29 to screw 28, respectively. A notch is provided in the end of the angular brace 24 coinciding with the notch 30 to engage the screw 29.

It is manifest that by engaging the screw 29 with the notch 30 and then rotating the entire device to engage the screws 27 and 28, that a secure three-point anchorage for the can opener of the type shown in Figure 1 is provided. Conversely, by rotating the device in the opposite direction or counter-clockwise, as shown in Figure 4, the can opener may be quickly removed from its stationary mounting and thus put out of the way when not in actual use.

A particular feature of the bracket 23 is that it is made entirely of one piece, the angular brace 24 being cut from the original metal blank in a single stamping operation. At the same time, grooves 33 are struck in the metal to provide reinforcing ridges therein. The second operation bends the bracket to provide the footing 25 which engages the wall mounting. A bracket such as the one herein illustrated and described, obviously could be used for mounting devices other than the can opener.

Certain specific advantages and improvements reside in the structure designated as a whole by reference character 14, in which is mounted the hereinbefore described operating mechanism. The supporting or housing structure 14 is composed of only two pieces, a back plate 34 and a front plate 35. The back plate 34 is provided with forwardly bent parts 36, 37 and 38, the latter of which extends further forward than the other two, and terminates in an extremity that is bent laterally at substantially a right angle. The front piece 35 is provided with inwardly bent tabs 39 and 40 and an outwardly extending piece 41.

As a consequence of the particular design and shape of the parts 34 and 35, they may be securely fastened together by the one pivot-rivet 21, as illustrated. A particular feature of this union is the cooperative relationship of the part 38 on the back piece 34, and the forwardly extending part 41 on the front piece 35.

Since these parts extend well out from the assembly 14, an advantageous leverage is provided whereby the parts 34 and 35 are held in their original relative positions and are not liable to move with reference to each other due to forces exerted thereon by the use of the can-opening mechanism.

Heretofore can openers of this general type have been inclined to loosen in their structural members, rendering the operative mechanism inefficient or eventually inoperative due to general loosening of the members providing bearings for the cutting element pivot. Structure made according to this disclosure will retain its strength and rigidity throughout the life of the device.

Another feature is the dent 42 struck in the front piece 35 adjacent the cutting element 20. This dent 42 projects inwardly to provide a sliding guide or bearing for the cutting element, thus holding it in its proper cutting position. Without such a guide, the cutter would be much less efficient.

The cutting element 20 preferably does not have a sharp, hardened cutting edge, but rather it is made of ordinary unhardened steel which is not particularly sharpened because it has been discovered that the soft metal of a can top readily can be cut by a cutter so constructed.

In reality, according to this invention the exact operation of opening a can is not so much a cutting operation, but rather a breaking or tearing action, which has the advantage of not producing sharp shavings which might become detached and get into the food in the can or else might remain connected with the metal of the can or its top, representing an injury hazard to the hands of the user.

Referring particularly to Figure 8, it will be seen that the combination pawl and cutting element designated as a whole by 18, will bear upon the upstanding rim or bead of the can being opened at 18a, where the two component parts of the element are connected in U-shaped formation. Thus the element 18 will in effect, ride along the upstanding rim or bead 12 of the can being opened, positioning the cutting member 20 well down through the metal of the can top and permitting said cutting member to follow the contour of the can even though it might be dented or otherwise deformed.

The upper corners of the assembly 14 are diagonally cut off as at 43, leaving the assembly open to facilitate thorough cleansing within. The single pivot-rivet 21 may be used to attach the mechanism to the bracket 23 in the wall-mounted form of this invention.

The tooth propeller wheel 13 and the ratchet wheel 15 are positioned immediately adjacent each other for conjoint rotation about a common axis, and both are within the housing or supporting structure 14, in contradistinction from being positioned at opposite sides of a supporting member which has been practiced in the prior art.

A structural advantage is gained in having wheels 13 and 15 immediately adjacent because the assembly is thus rendered more rigid and the entire cooperative function of the various components is definitely improved.

What I claim is:

1. In a device of the character disclosed, the improvement which comprises a cutter element, a back plate having forwardly extending projections, a front plate having projections positioned to cooperate with the projections on said

back plate, and a rivet-pivot holding the plates together in spaced relationship and providing a pivotal mounting for the cutter element therebetween.

2. In a device of the character disclosed, the improvement which comprises a cutter element, a back plate having forwardly extending projections, a front plate having rearwardly extending projections and having a forwardly extending projection positioned to cooperate with the projections on said back plate, and a rivet-pivot holding the plates together in spaced relationship and providing a pivotal mounting for the cutter element therebetween.

3. In a device of the character disclosed, the improvement which comprises a cutter element, a back plate having a forwardly extending projection terminating in an angular portion, a front plate having a forwardly extending projection positioned to bear against said projection on the back plate, and a rivet-pivot holding the plates together in spaced relationship and providing a pivotal mounting for the cutter element therebetween, the projections providing a stabilizing factor for the joined plates.

4. In a device of the character disclosed, the improvement which comprises a cutter element, a back plate having forwardly extending projections, a front plate having projections positioned to cooperate with the projections on said back plate, a rivet-pivot holding the plates together in spaced relationship and providing a pivotal mounting for the cutter element therebetween, and a dent struck in the face of the front plate in a position to provide a raised boss on the other side of said plate to contact and to guide the cutter element.

5. In a can opener inclusive of a cutter and a pivot for the cutter, the improvement which comprises a back plate having a projection, and a front plate having a projection positioned to bear against the projection on said back plate, the plates providing spaced bearings for the pivot and being held in spaced relationship by said pivot, the contacting projections providing a factor of stabilizing leverage to resist relative movement of the plates.

6. In a can opener, the combination of a frame forming an open-faced enclosure, a cutter pivotally mounted within the enclosure and terminating at one end in a pawl, a toothed wheel mounted within the enclosure in a position to engage the under surface of a can rim when the can is inserted through the open face of the enclosure, a ratchet wheel mounted for conjoint relation with the toothed wheel in intermittent engagement with the pawl, and means within the enclosure urging the cutter in a direction opposite to its movement by the ratchet between successive engagements of the pawl.

7. In a can opener, the combination of a frame forming an open-faced enclosure, a cutter pivot-

ally mounted within the enclosure and terminating at one end in a pawl, a toothed wheel mounted within the enclosure in a position to engage the under surface of a can rim when the can is inserted through the open face of the enclosure, a ratchet wheel mounted for conjoint rotation with the toothed wheel in intermittent engagement with the pawl, and a spring within the enclosure urging the cutter in a direction opposite to its movement by the ratchet between successive engagements of the pawl.

8. In a can opener, the combination of a frame forming an open-faced enclosure, a cutter pivotally mounted within the upper portion of the enclosure and terminating at one end in a depending pawl, a toothed wheel mounted within the enclosure below the cutter in a position to engage the under surface of a can rim when the can is inserted through the open face of the enclosure, a ratchet wheel mounted for conjoint rotation with the toothed wheel in intermittent engagement with the pawl, and means within the enclosure urging the cutter in a direction opposite to its movement by the ratchet between successive engagements of the pawl.

9. In a can opener, the combination of a frame forming an open-faced enclosure, a U-shaped cutter pivotally mounted within the enclosure and terminating at one depending end in a pawl, a toothed wheel mounted within the enclosure in a position to engage the under surface of a can rim when the can is inserted through the open face of the enclosure, a ratchet member mounted for conjoint rotation with the toothed wheel and in mesh with the pawl, and means within the enclosure imparting a return movement to the cutter between successive engagements of the pawl.

10. In a can opener, the combination of a frame forming an open faced enclosure, a cutter pivotally mounted within the enclosure and terminating at one end in a pawl, a toothed wheel mounted within the enclosure in a position to engage the under surface of a can rim when the can is inserted through the open face of the enclosure, a ratchet member mounted for conjoint rotation with the toothed wheel and in mesh with the pawl, means within the enclosure imparting a return movement to the cutter between successive engagements of the pawl, and means outside the frame for rotating the toothed wheel.

11. In a can opener, a cutter element, a back plate having forwardly-extending projections, a front plate having projections positioned to cooperate with the projections on said back plate, a rivet-pivot holding the plates together in spaced relationship and providing a pivotal mounting for the cutter element therebetween, and guide means inside the front plate acting on the cutter throughout its pivotal movement.

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CERTIFICATE OF CORRECTION.

Patent No. 2,288,894.

July 7, 1942.

CHARLES G. FAWKES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: page 3, first column, line 10, claim 10, for "position" read --positioned--; and line 55-56, claim 6, for "relation" read --rotation--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of August, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)