Feb. 9, 1937. T. A. KILLMAN 2,070,279

CAN OPENER

Filed June 6, 1935

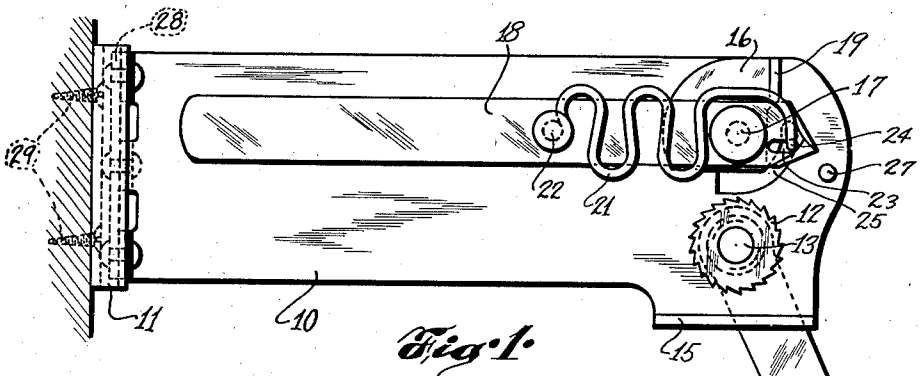


Fig. 1.

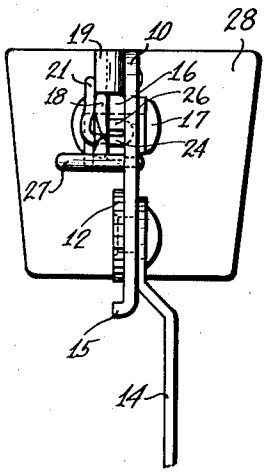


Fig. 2.

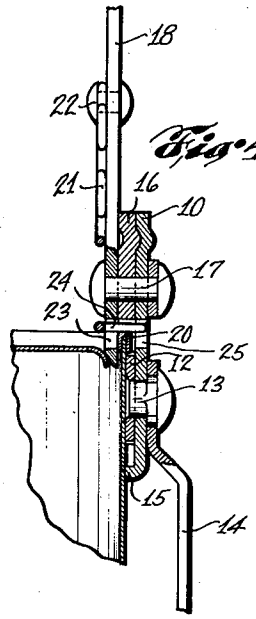


Fig. 4.

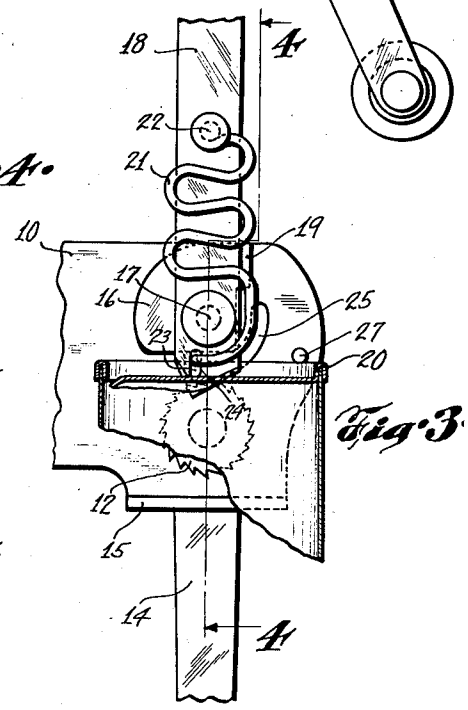


Fig. 3.

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CAN OPENER

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Application June 6, 1935, Serial No. 25,226

11 Claims. (Cl. 30—3)

This invention relates to improvements in can openers, and more particularly to improvements in can openers of the type characterized by a cutting element and a toothed wheel for moving a can relative to the cutting element.

An object of the invention is to provide an improved, yet simplified means for maintaining the can in operable engagement with the toothed driving wheel while such element in being rotated to move the can. Stated generally, the invention resides in the construction and novel arrangement of parts which makes for simplicity and economy of manufacture and provides a highly efficient can opener.

In the drawing which illustrates a can opener embodying the features of my invention, Fig. 1 is a side view showing the parts in can-receiving position; Fig. 2 is an end view of the device with its parts positioned as illustrated in Fig. 1; Fig. 3 is a fragmentary side view showing the parts in cutting position relative to a can, and Fig. 4 is a sectional view taken at line 4—4 of Fig. 3.

The can opening device herein shown and described is intended to have its position fixed while in operation, and is provided with a detachable mounting bracket which enables the device to be secured to and removed from a wall or other suitable support as desired. For this purpose the base or frame member 10, a sheet metal plate of generally rectangular shape, is provided at one end with a wedge plate 28, the vertical edges of which converge toward the lower horizontal edge. A mounting bracket or plate 11, secured to a wall or other support by the screws 29 has its opposite vertical edge portions bent to form grooves for receiving the edges of the wedge plate, and the base 10 is applied to and removed from the bracket 28 by sliding the wedge plate in to and out of the grooves formed in bracket 28. When properly mounted, the frame piece 10 lies in a vertical plane with its longer axis extending horizontally as best appears from Fig. 1. Near the outer or unsecured end of the frame piece 10 and disposed flatly in contact with one side surface thereof, for convenience of description designated the front side, is provided toothed disc or feed wheel 12 fixedly secured to one end of a shaft 13 which extends transversely through and is journalled for rotation in the frame piece. The shaft 13 is adapted to be rotated by a crank 14, suitably secured thereto and located at the opposite or rear side of the frame piece. Projecting outwardly from the plane of the frame piece at a lower marginal portion thereof which underlies the feed wheel is a flange 15, such flange extending forwardly substantially to the plane of the outer face of the feed wheel.

A small plate 16 of thickness somewhat greater than that of the feed wheel 12 is fixedly secured flatwise on the frame piece in overlying relation to said feed wheel, and projecting from the outer face of plate 10, substantially in vertical alignment with the axis of the feed wheel is a pivot pin 17 having journalled thereon a cutting lever 18. The lever 18 preferably comprises a flat rigid strip of metal, one end of which is formed to provide a cutting edge of desired shape. The pivot pin 17 extends through the lever at a point near its cutting end, the longer arm thereof serving as a handle for rocking the shorter blade arm into and out of cutting position as will be hereinafter described.

The lever 18, which is disposed flatwise in contacting adjacency on the outer face of plate 16, is adapted to be swung from a horizontal position as shown in Fig. 1, to a vertical, operating position as shown in Fig. 3. Both horizontal and vertical positions of the lever are determined by a projecting lug or finger 19 formed on the plate 16, the lever contacting the finger when disposed in either of the recited positions and being limited thereby to a substantially ninety degree range of pivotal movement. When disposed horizontally, the blade arm is spaced above the upper periphery of the feed wheel so that the rim or bead 20 at the upper end of a can may be readily applied and seated on the feed wheel. By swinging the lever to its vertical or operating position, the blade arm is caused to penetrate the upper wall of the can at a point adjacent the inner margin of the bead. It will now appear that by turning the crank 14 to rotate the feed wheel 12 which engages the under surface of the can bead 20, the can will be caused to move, or in the case of a cylindrical can, turn about its vertical axis, so that the upper can wall will be severed from the side wall by the blade.

In can openers of the instant type, it has been found desirable to provide means for insuring positive or non-slipping engagement of the can bead by the feed wheel. Such means may consist in a lug or other projection formed on or rigidly connected to the cutting lever, which lug engages the upper edge of the can bead when the lever is disposed in cutting position, constraining the bead against the periphery of the feed wheel for movement thereby. When operating on a can having a seam or bead which is not uniform, an enlarged portion of the bead is likely to become wedged between this so-called hold

down lug and the feed wheel causing the device to become stalled. To overcome this condition I provide an extremely simple device for holding the cam bead in pressure engagement with the feed wheel, which includes a spring-biased pressure foot engageable with the can bead, such element serving to exert a constant pressure on the bead of the can while the device is in operation, and being yieldable to compensate for irregularities in the can bead and to enable the device to operate with equal facility on cans having bead portions of different height.

To this end there is provided on the outer side of the cutting lever 18 a compression spring 21 which is preferably of flat, serpentine shape, the spring being anchored at one end to a stud 22 located on the handle portion a suitable distance from pivotal axis of the lever. The spring extends along the lever toward the blade end thereof which is provided with an opening 23 therethrough, in the form of a longitudinally extending slot, for receiving an inwardly bent end portion of the spring. Such bent end portion, which constitutes the pressure foot 24, projects through the slot 23, continues inwardly across the space between the blade and frame-piece and into an arcuate recess 25 formed in the frame piece. The recess 25 follows the arcuate path described by the pressure foot when the blade element is shifted from horizontal to vertical position, and that portion of recess 25 adjacent the feed wheel is of sufficient width so as not to restrict vertical movement of the pressure foot, such movement being opposed only by the action of the spring. That portion of the spring constituting the pressure foot may be doubled back upon itself as indicated at 26, (Fig. 2), for purposes of augmenting its can contacting area.

It will now appear that when the lever is swung to vertical position to penetrate the upper wall of a can, the pressure foot engages the can bead above the feed wheel and by exerting a downward force on the bead maintains the same in pressure engagement with the toothed periphery of the wheel. It will appear further that the foot is adapted to yield upwardly, in opposition to the action of the spring, to permit an enlarged portion of the bead to be passed between the foot and wheel. An additional element which coacts with the pressure foot 24 for holding the can in proper position for actuation by the feed wheel is provided in the stud 27 which projects laterally near the outer end of the frame piece for engagement with the upper edge of the can bead at a point spaced from the point at which the yieldable pressure foot engages the bead. The projecting flange 15 is disposed to contact the side of the can and steady the same as it is being moved by the feed wheel.

The pressure foot 24 is advantageously located on the blade so that when the latter is shifted from its inoperative position (Fig. 1) to its cutting position (Fig. 3), the pressure foot is moved across an imaginary (preferably perpendicular) line which intersects the pivotal centers of the feed wheel and cutting lever, and bears upon the bead of the can at a point lying on the side of this imaginary line opposite to the side thereof at which is located the point of contact between the stud 27 and the can bead. This constructional feature is clearly shown in Fig. 3 and results in a two-fold advantage. Thus, the can is supported in a condition of equilibrium, since the forces acting downwardly on the can bead are located on opposite sides of the point at which the feed wheel engages the can bead and, in effect, produces an upwardly acting force thereon. A second advantage resulting from the described arrangement is that when the cutting lever is shifted to its operating position (Fig. 3), the force acting on the lever through the pressure foot 24 and associated spring 21 tends to maintain the lever in operating position, whereas if the pressure foot engaged the can bead at a point located to the right (Fig. 3) of the perpendicular through the pivotal axis, the moment of force set up in the cutting lever would tend to return the same to its inoperating position and additional means to counteract this tendency would be required.

Having set forth a presently preferred embodiment of the invention, I claim:

1. A can opener comprising a substantially flat frame member, a blade disposed for operation in a vertical position in a plane spaced from and parallel to the frame member, a feed wheel journalled on the frame member below the blade and disposed between the blade and frame member, a slot in said blade, means projecting through and movable in said slot toward and from said feed wheel, said means including a can-engaging portion overlying the feed wheel, and a spring adapted to urge said portion toward the feed wheel.

2. In a can opener including a frame member and feed wheel journalled in the frame member and having a crank for rotating the same, a lever pivotally mounted on said frame member, said lever terminating at one end in a blade adapted to be shifted from an inoperative position into cutting position adjacent the feed wheel, a movable spring-biased arm carried by said lever and adapted to be shifted therewith from a point at one side of a perpendicular through the pivotal axis of the blade when the blade is in an inoperative position, to engage the bead of a can at a point at the opposite side of said perpendicular when the blade is moved to cutting position, a spring operatively connected to said arm and to said blade tending to hold the blade in cutting position.

3. A can opener comprising a frame plate, a feed wheel journalled on the frame plate, a lever pivotally mounted on the frame plate, said lever terminating in a longitudinally slotted blade adapted to be shifted into cutting position adjacent the outer face of the feed wheel, a spring carried by and exending along said outer face of said lever, said spring having an end portion extending through the blade slot for yielding engagement with the bead of a can.

4. In a can opener, the combination of a frame plate, can opening members mounted on the frame plate including a slotted blade pivoted for movement in a plane spaced from, and parallel to the frame plate, a handle for moving said blade, a feed wheel between the blade and frame plate, a crank for rotating the feed wheel, a spring carried by the blade having a presser foot extending through and movable in the blade slot, said foot being adapted to engage the rim of a can and force the same against the feed wheel.

5. In a can opener including a frame member and feed wheel journalled in the frame and having a crank for rotating the same, a lever pivotally mounted on the frame member, said lever terminating in a longitudinally slotted blade adapted to be shifted into cutting position adjacent the feed wheel; an element movable in the blade

slot, projecting from one side of the blade for engagement with the rim of a can, and a spring connected with said element mounted on the opposite side of said blade, said spring forcing said element toward the blade end of the lever.

6. In a can opener, the combination of a base plate, a feed wheel journalled on one side of the base plate, a crank for actuating the feed wheel, a cutting lever pivotally mounted on said plate and having its pivotal axis located substantially vertically above said wheel, one arm of said lever constituting a blade and the other arm thereof constituting a handle for shifting the blade to cause it to penetrate the top of a can, and means engageable with the can for holding the same in operative engagement with the feed wheel, comprising a stud on the base plate spaced laterally from the axis of the feed wheel, and a spring-biased pressure foot carried by and movable along the blade arm, said pressure foot projecting inwardly from the blade arm and being shiftable with the blade from a point on the said stud side of the feed wheel axis to the opposite side thereof for pressure engagement with the can bead.

7. In a can opener, the combination of a flat base, a feed wheel journalled on one side of said base, a crank for actuating the feed wheel, a lever pivotally mounted on the said base above the feed wheel, said lever including a longitudinally slotted blade arm adapted to be swung to a vertical position overlapping the outer face of the feed wheel, a recess formed in the base plate adjacent said blade arm, a pressure element movable in the blade slot, projecting into said recess from the inner face of said blade arm, and a spring on the outer face of said lever for forcing the pressure element toward the cutting end of said blade arm, said pressure element being adapted to bear upon a bead portion of a can disposed between the blade arm and base plate.

8. A can opener comprising a frame member, a feed wheel journalled thereon and having means for turning the same, a blade pivotally mounted on the frame above the feed wheel, means for moving the blade from an inoperative position to a cutting position adjacent the feed wheel, said blade and feed wheel having their pivotal axes lying in a common plane, a yieldable pressure element on the blade adapted to be moved thereby through said plane, when the blade is moved to cutting position, to engage the rim of a can and urge the same into frictional engagement with said feed wheel, and a spring operatively connecting said blade and pressure element, tending to hold said blade in its cutting position.

9. In a can opener including a frame member and a feed wheel rotatably mounted thereon, a blade pivotally mounted on the frame member, means for moving said blade from an inoperative position to a cutting position adjacent the feed wheel, an element adapted to engage and hold the rim of a can in pressure engagement with the feed wheel, said element being movable relative to the blade, and a spring operatively connected to said element and said blade, tending to hold said blade in its cutting position.

10. In a can opener including a frame member and a feed wheel rotatably mounted thereon, a blade pivotally mounted on the frame member, means to move said blade from an inoperative position to a cutting position adjacent the feed wheel, a spring-biased can-engageable pressure element movable with the blade toward and from the feed wheel, and also movable relative to the blade toward and from the feed wheel when the blade is disposed in cutting position, and a spring tending to hold the blade in its cutting position.

11. In a can opener including a frame member and a feed wheel rotatably mounted thereon, a blade pivotally mounted on the frame member, means to move the blade from an inoperative position to a cutting position adjacent the feed wheel, a spring-biased, can engageable pressure element carried by the blade and movable relative thereto toward and from the feed wheel when the blade is disposed in cutting position, and a spring tending to hold said blade in its cutting position.

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