Sept. 30, 1941. G. H. FROELICH 2,257,549

CAN OPENER

Filed June 3, 1938

FIG. 1.

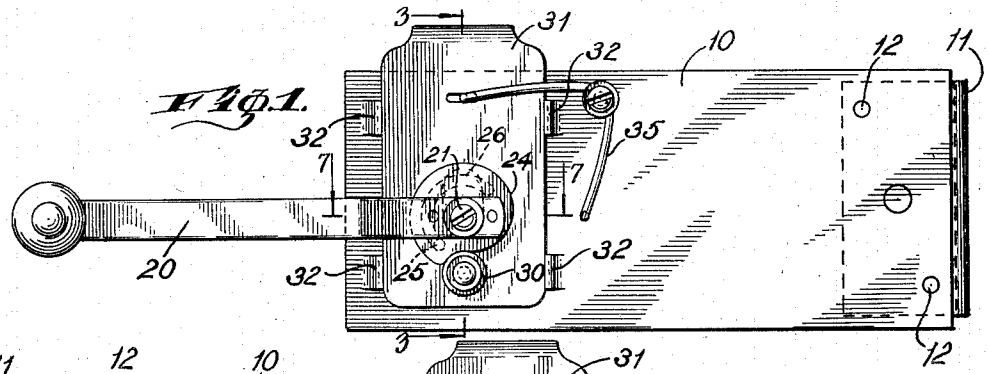


FIG. 2.

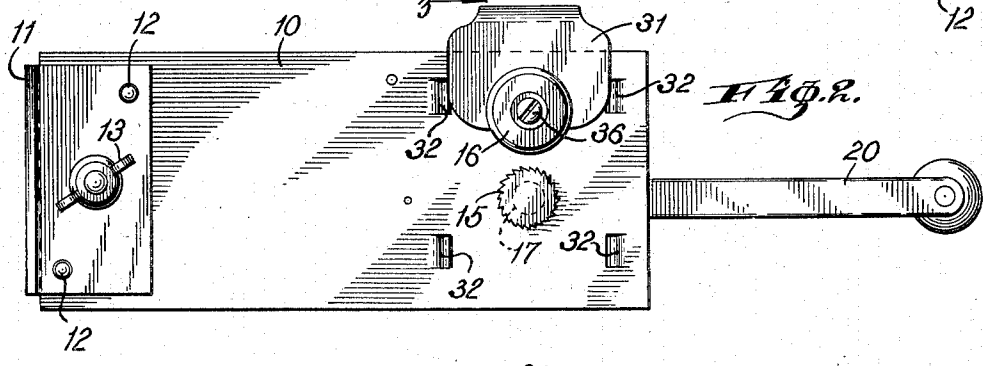


FIG. 4.

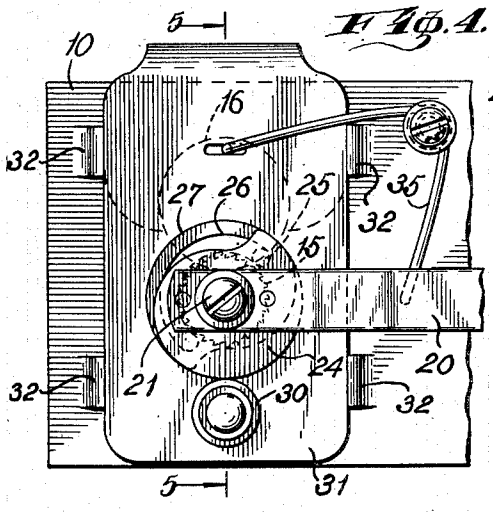


FIG. 3.

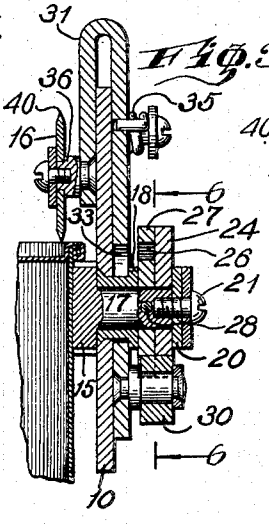


FIG. 5.

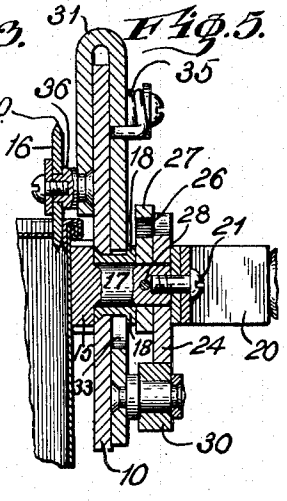


FIG. 6.

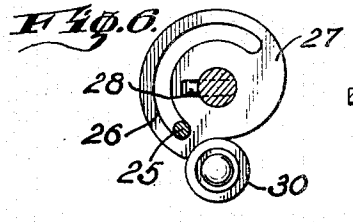
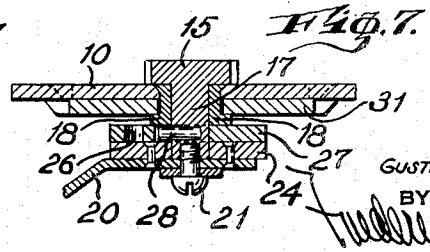


FIG. 7.



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2,257,549

CAN OPENER

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Application June 3, 1938, Serial No. 211,482

8 Claims. (Cl. 30—9)

This invention relates to an improved can opener of the type adapted to cut out the top of a can and has been shown in connection with a wall type can opener including a rotatable cutting disk and a feeding disk and means for moving the cutting disk toward the feeding disk to pierce the top of the can.

One of the main objects of this invention is the provision of improved means for effecting piercing of the can top and for bringing the cutting disk and feeding disk into proper cutting relation so as to provide sufficient pressure of the can wall and flange against the feeding disk to effectively feed the can to effect a continuous cutting operation.

Another more specific object of this invention is the provision of improved means for effecting such puncturing, clamping and cutting operation by a continuous forward movement of a single manipulatable handle and for releasing the can by a simple reverse movement of the handle.

Another object of this invention is the provision of improved means for moving a rotatable cutting disk toward and away from a feeding disk to effect the puncturing operation before either disk is rotated whereby the puncturing operations may be effected at a minimum of pressure and with substantial uniformity.

Still another object of this invention consists in an improved construction of the cutting disk to prevent the disk from cutting into the flange of the can, to cause the disk to force the flange of the can against the periphery of the feeding disk and also to force the wall of the can against the lateral face of the feeding disk.

Other objects of the invention will appear from the following description taken in connection with the drawing, in which—

Fig. 1 is an elevational view of a can opener support as viewed from the right showing the operating mechanism in normal position;

Fig. 2 is an elevational view of the can opener support as viewed from the left showing the cutting disk and feeding disk in normal position;

Fig. 3 is a vertical transverse section taken on the line 3—3 of Fig. 1;

Fig. 4 is an elevational view on an enlarged scale of the operating mechanism shown in Fig. 1 showing the cutting disk carrier in operated position;

Fig. 5 is a vertical transverse section taken on the line 5—5 of Fig. 4;

Fig. 6 is a detailed view of one of the cutting disk carrier controlling cams; and

Fig. 7 is a horizontal section taken on the line 7—7 of Fig. 1.

I have shown the can opener mechanism of my invention as being mounted on a support 10 connected to a wall bracket 11 by any suitable means, the means here disclosed, merely for purposes of illustration, comprising pins 12 projecting from one face of the support 10 entering apertures in a forward extension of the bracket 11, the support 10 being clamped against the side of said extension by means of a winged-nut 13 on a bolt projecting from the support whereby the can opener support is readily attachable and detachable from said bracket.

The can opener mechanism includes a knurled feeding disk 15 and a cutting disk 16 which are adapted to be moved relatively to each other from the position shown in Fig. 3 to that shown in Fig. 5 to puncture the top of the can and cause the can flange to bear on the periphery of the knurled feeding disk 15.

As disclosed I prefer to move the cutting disk relatively to the feeding disk. The feeding disk 15 is provided with a shaft 17 journalled in a bearing 18 secured in the support 10 in any suitable manner as indicated. For the purpose of rotating the feeding disk 15, I provide a crank handle 20 of any suitable construction held rotatably against the end of the shaft 17 by a screw bolt 21.

Secured to the hub of the handle 20 by any suitable means as indicated is a cam 24 rotatably mounted on the end of the shaft 17 of the feeding disk. The cam 24 is shown as provided with a pin 25 which operates in a slot 26 of a similarly shaped cam 27 non-rotatably secured to the shaft 17 of the feeding disk 15 by means of a pin or key 28. When the handle is given a rotation of approximately 180° from the position shown in Figs. 1, 2 and 7 into the position shown in Figs. 4 and 5, the pin 25, Figs. 1 and 6, will engage the end of the slot 26, Figs. 4 and 6, in the cam 27 and further rotation of the handle will rotate the feeding disk 15.

The cams 24 and 27 cooperate with a roller 30 supported on the sliding cutting disk carrier 31. The carrier 31 may be guided by lugs 32 struck up on the support 10 as indicated. The carrier is slotted as indicated at 33, Figs. 3 and 5, to receive the bearing 18 of the shaft 17. The carrier is normally held in its raised position so as to hold the roller 30 against the faces of the cams by means of a spring 35 secured on the support 10 and having one of its ends anchored thereto as indicated and its other end bearing in a slot in the carrier. The cutting disk 16 may

be rotatably supported on a stud 36 mounted in the portion of the carrier 31 which is located on the left-hand side of the support 10, the carrier 31 being bent into U-shape form as indicated with the legs of the U slidably bearing against the side faces of the support.

When the handle is in the position shown in Figs. 1 and 2 the spring 35 holds the carrier in its raised position in which position the cutting disk 16 is raised and spaced from the feeding disk 15 to receive the flange of a can as shown in Fig. 3. Upon the first movement of the handle which is effected without rotating the feeding disk 15, the cam 24 operating against the roller 30 moves the carrier 31 downward causing the cutting disk to move from the position shown in Fig. 3 to that shown in Fig. 5 thereby effecting the puncturing operation of the top of the can without feeding the can. At this point the pin 25 in the cam 24 engages the end of the slot 26 in the cam 27 picking up this cam and through this cam rotating the feeding disk after the puncturing operation has been completed. The high portions of the cams 24 and 27 form in effect a continuous circular disk holding the cutting disk depressed during the continued forward operation of the handle. When the can top has been severed, the handle is given a reverse rotation which rotates the cam 24 counter-clockwise, for example, from the position shown in Fig. 4 to that shown in Fig. 1 without communicating any rotation to the feeding disk 15. As the cams are rotated into the position shown in Fig. 1, the spring 35 will raise the carrier 31 and move the cutting disk from the position shown in Fig. 5 to that shown in Fig. 3 thereby releasing the can for removal from the can opener.

The cam 27 may be made slightly larger than the cam 24 in order that when the rotation of the handle is reversed the roller 30 may be supported free or the cam 24, thus preventing the rotational movement of the cam 24 from being transferred to the cam 27 and to the feeding disk 15 thereby permitting the feeding disk to remain stationary during this movement of the handle.

If desired the handle 20 and cam 24 may be connected together in such manner that the handle 20 will extend toward the bracket 11 when the can opener is not in use and the cutting disk is raised. This as is obvious may be done by changing the relative angular relation of the cam and handle by 180°. In that case then if the handle is stopped in the position shown in Fig. 1 and reversely rotated through an angle of 180° the cam will be released, the parts having been moved into position shown in Fig. 3.

As disclosed in Figs. 3 and 5, I prefer to provide the cutting disk 16 with a double beveled cutting edge 40, the bevel on the right-hand side of the disk being of such inclination as to prevent the cutting edge of the disk from cutting into the flange of cans of the smallest diameter for which the can opener is designed. The cutting disk, because of the inherent resiliency of the carrier 31, may move away from the support 10 during the puncturing and cutting operations to accommodate flanges of different thicknesses and of varying thickness due to seams. The right-hand face of the cutting disk lies in a plane normal to the axis of the cutting disk and the parts are so proportioned that as the cutting disk is moved into cutting relation, for example, with the top of a cylindrical can the cutting disk will tend to straighten the flange and wall of the can and force the can wall with increased pressure against the knurled periphery and the knurled and plane sections of the end face of the feeding disk 15 thereby increasing the effectiveness of the feeding disk in feeding the can to effect the cutting operation and also effectively preventing tilting of the can in a plane normal to the plane of the support as well as preventing rocking of the can about an axis normal to the plane of the support.

While I have described a single modification embodying the principles of my invention, it is to be understood, of course, that various changes may be made within the spirit of this invention and that I intend to reserve the right to make all changes that fall within the spirit of the invention and scope of the appended claims.

I claim:

1. In a can opener, a support, a feeding disk journalled in said support, a movable knife carrier mounted on said support, a knife carried by said carrier, an operating handle secured for rotation with respect to said feeding disk, means on said handle for operating said knife carrier for causing said knife to pierce the top of a can and for pressing the flange of the can against the periphery of said feeding disk during the initial forward movement of said handle, and means for operatively connecting said handle to said feeding disk after the piercing of the can top has been effected for rotating said feeding disk upon continued forward movement of said handle.

2. In a can opener, a support, a feeding disk journalled in said support, a movable knife carrier mounted on said support, a knife carried by said carrier, an operating handle secured for rotation with respect to said feeding disk, means carried on said handle for operating said knife carrier for causing said knife to pierce the top of the can and to move the flange of the can into feeding relation with said feeding disk, and means for connecting said handle to said feeding disk after the piercing of the can top has been effected, said means cooperating with said first mentioned means to maintain said carrier in operated position during the continued forward movement of said handle.

3. A can opener including a support, a feeding disk journalled in said support, a knife carrier slidably mounted on said support, a knife carried by said carrier, an operating handle rotatably secured with respect to said feeding disk, a cam secured to said handle and operable upon initial forward movement of said handle to move said carrier to cause said knife to pierce the top of a can and to move the flange of the can into operative engagement with the feeding disk, a second rotatable cam, means securing said cam to said feeding disk, and a lost-motion driving connection between said cams whereby said second mentioned cam will be operated after said operation of said first mentioned cam, said cams cooperating to form in effect a continuous disk to hold said carrier and knife in operated position during the continued forward movement of said handle.

4. A can opener including a support, a feeding disk journalled in said support, a knife carrier slidably mounted on said support, a knife carried by said carrier, an operating handle rotatably secured with respect to said feeding disk, a cam secured to said handle and operable upon the first forward movement of said handle to move said

carrier to cause said knife to pierce the top of a can and to move the flange of the can into operative engagement with the feeding disk, a second rotatable cam, means securing said cam to said feeding disk, a driving connection between said cams effective to operate said second cam after said first movement of said handle, said cams cooperating to form in effect a continuous disk to hold said carrier and knife in operated position during the continued forward movement of said handle, and a spring operating to move said carrier and knife into normal position, said cams adapted upon reverse movement of said handle to be moved into transverse alinement to permit said spring to move said knife out of operative relation to said feeding disk.

5. In a can opener comprising a plate support, a feeding disk journalled in said plate, a U-shaped knife carrier embracing one edge of said plate, a cutting disk carried by one leg of said carrier, said carrier being mounted for movement on said plate to move said cutting disk into operative relation with respect to said feeding disk, a handle for operating said feeding disk and said carrier, and a connection between said handle and said feeding disk and carrier operating to move said carrier and cause said cutting disk to puncture the top of the can during the initial movement of said handle and upon further movement of the handle to connect said handle to said feeding disk to cause the rotation of the can and severing of the can top during continued movement of said handle.

6. In a can opener comprising a plate support, a feeding disk journalled in said plate, a U-shaped knife carrier embracing one edge of said plate, a cutting disk carried by one leg of said carrier, said carrier being mounted for movement on said plate to move said cutting disk into operative relation with respect to said feeding disk, a handle for operating said feeding disk and said carrier, and a connection between said handle and said feeding disk and operable upon initial movement of said handle to move said carrier and cause said cutting disk to puncture the top of the can and upon further movement of the handle to connect said handle to said feeding disk to rotate the can and sever the can top, said connecting means including a cam rotatable with the handle, a second cam secured to said feeding disk, and a pick-up driving connection between said cams whereby said first mentioned cam may be rotated with respect to said second cam to cause the can top to be punctured before the feeding disk is operated.

7. In a can opener, a support, a feeding disk and cutting disk mounted for straight line movement toward and away from each other, an operating means, means operated by said operating means during the first part of a continuous movement thereof to move said disks toward each other, and delayed action means operated by said operating means after such movement of said disks for initiating and continuing the operation of said feeding disk.

8. In a can opener, a support, a feeding disk and cutting disk mounted for straight line movement toward and away from each other, an operating means, means operated by said operating means during the first part of a continuous movement thereof to move said disks toward each other, delayed action means operated by said operating means after such movement of said disks for initiating and continuing the operation of said feeding disk, and means also operated by said operating means for holding said disks in moved position.

GUSTAVE HARRY FROELICH.