Aug. 20, 1935. B. POLÁK 2,012,204

CAN OPENER

Filed Oct. 19, 1933 2 Sheets-Sheet 1

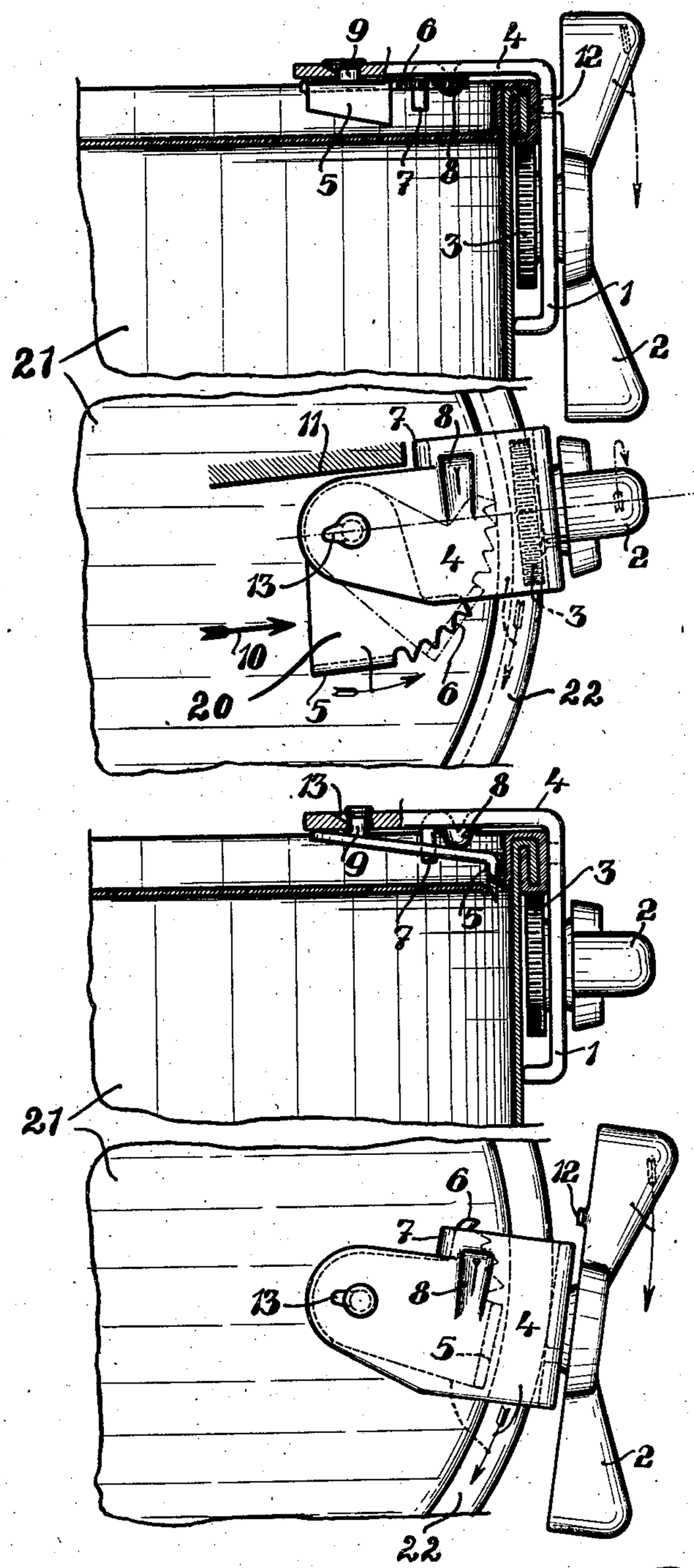

Fig. 2.

Fig. 1.

Fig. 4.

Fig. 3.

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Fig. 6.

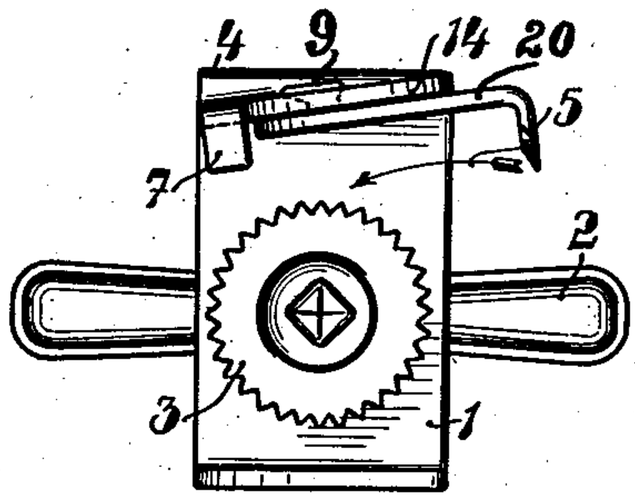


Fig. 8.

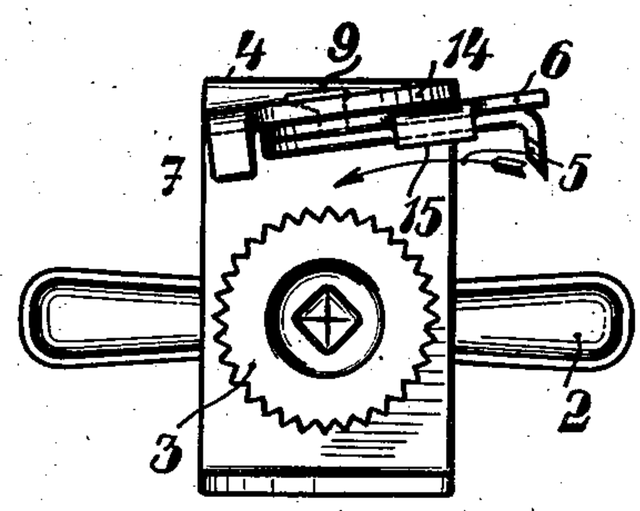


Fig. 5.

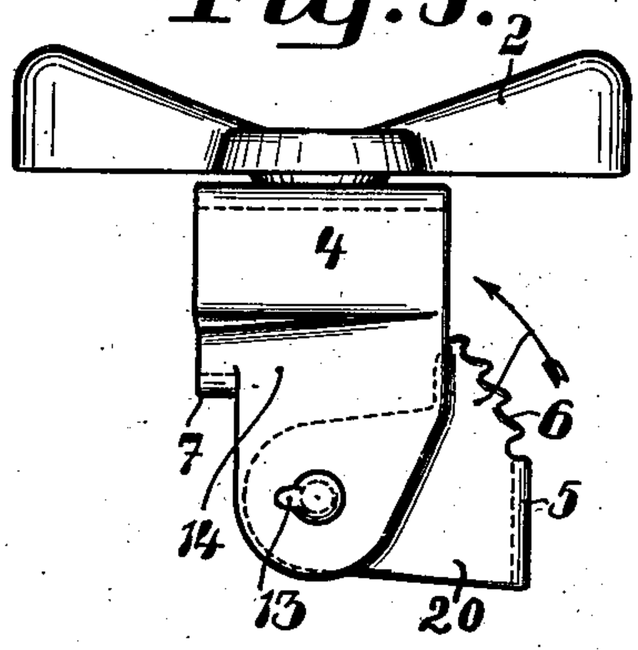


Fig. 7.

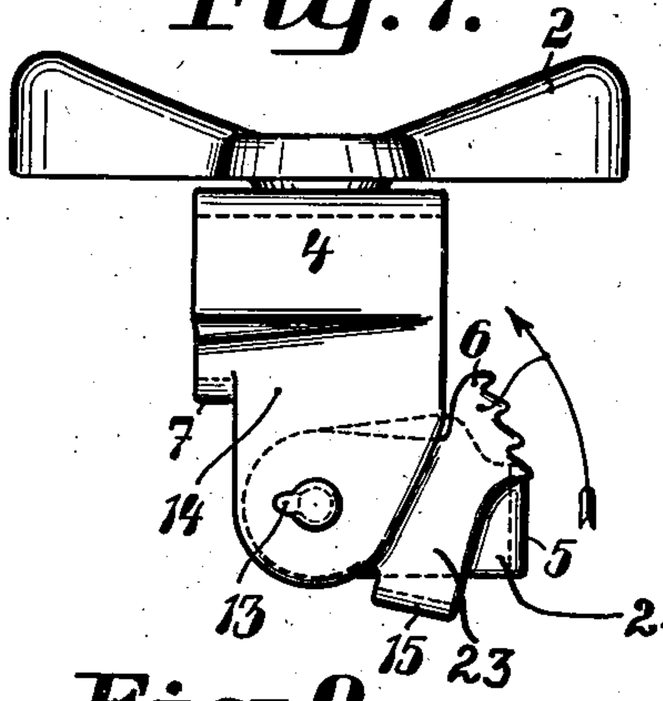


Fig. 10.

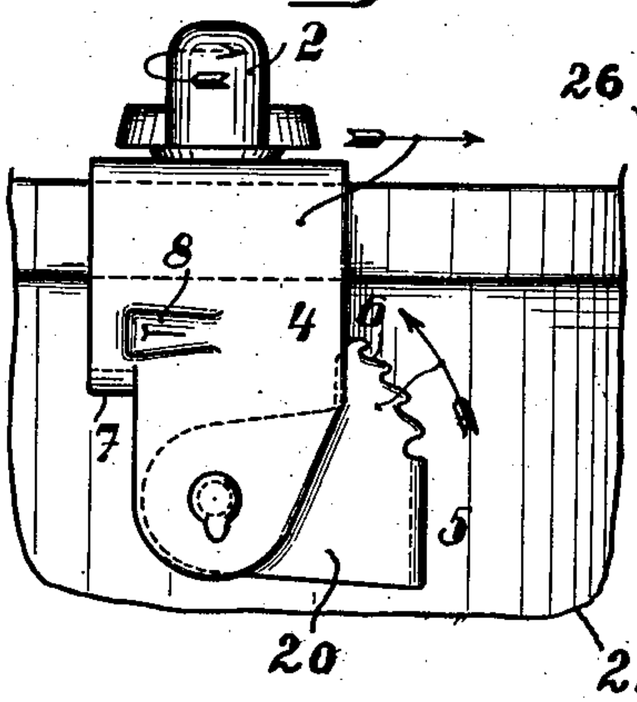
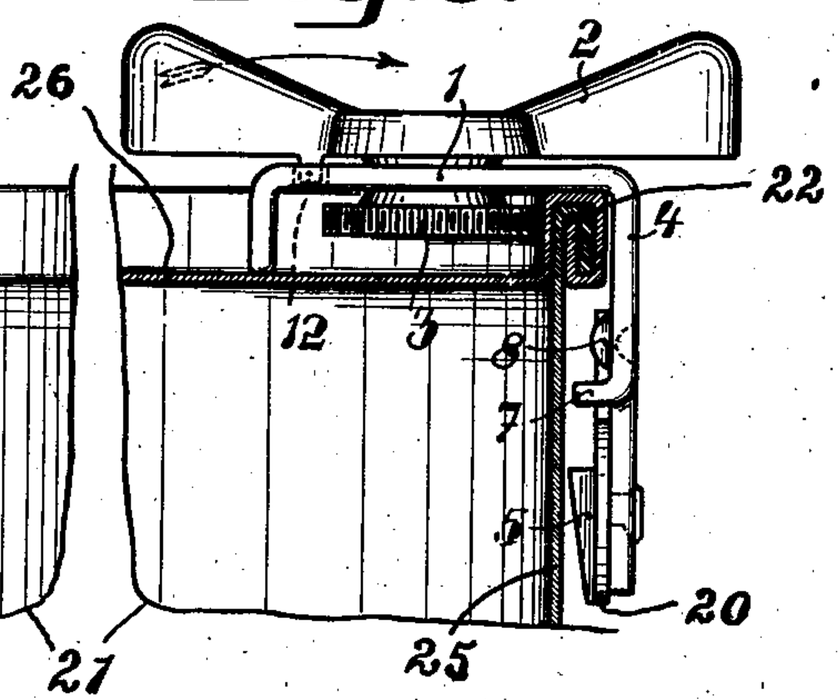


Fig. 9.



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UNITED STATES PATENT OFFICE

2,012,204

CAN OPENER

Bohumil Polák, Prague, Czechoslovakia, assignor to Grodetzky & Polák, Prague, Czechoslovakia

Application October 19, 1933, Serial No. 694,330
In Czechoslovakia and Germany September 1, 1933

11 Claims. (Cl. 30—3)

The present invention relates to a device for cutting open so-called tin cans, particularly those used for conserving foods, in which a swinging segment forming a knife is adapted to follow one side of the rim edge of the can driven by a toothed wheel so that the knife, when swung into position, will cut the top out of or away from the can.

Can openers of this type heretofore were arranged in such a way that they were exclusively held to the can in the cutting position of the knife, wherein the rim is clamped during operation between the knife and the operating wheel by means of the swinging segment or knife.

The object of the present invention is to construct the device in such a way that it is held on the can before use thereof, that is before the knife actually cuts the top. In this manner, the device may be used on any can by applying the device on the can and merely rotating the toothed wheel, which results in the knife cutting into the top, and, upon further rotation, in cutting out the top of the can.

Further objects will be apparent from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a top view of the can opener on a portion of a can in the starting position,

Fig. 2 is a cross-sectional view of Fig. 1 with certain parts of the opener in side view,

Fig. 3 is a view similar to Fig. 1 showing the opener advanced in its travel where the knife has just cut into the top of the can,

Fig. 4 is a view similar to Fig. 2 showing the parts in the position of Fig. 3,

Fig. 5 is a front view of a modified form of opener,

Fig. 6 is an inside front view of the form of opener of Fig. 5,

Fig. 7 is a front view of a further modified form of opener,

Fig. 8 is an inside front view of the form of opener of Fig. 7,

Fig. 9 is a cross-sectional view of a can showing another way of applying the opener thereto, and

Fig. 10 is a side view of the can and opener of Fig. 9.

The can opener is preferably formed of a frame member of two integral side portions 1 and 4 bent at right angles to each other, in which a manual operator 2 and its toothed wheel 3 are mounted on opposite sides of side 1. The other side 4 carries the swinging or pivoted segment 20 with its knife 5. The segment 20 is pivotally mounted on a rivet 9 with considerable play so that the segment will not only be capable of rotary motions but also lateral movements away from and toward the side portion 4. The segment is further provided with a preferably toothed and eccentric wedging cheek or section 6 arranged adjacent the knife 5. Figs. 1 to 4 show the application of the opener to the can 21 in which in Fig. 1 the cheek or section 6 (dotted lines) wedges against the top rim 22 of the can in starting the opening operation, whereby upon rotating the operator 2 in the direction of the arrow the cheek 6 will wedge against the rim 22 to press the knife 5 into and through the top of the can, as seen in Figs. 3 and 4. In Fig. 1 the dotted line position of the segment 20 shows the teeth of the cheek or clamping jaw 6 gripping or wedging against the inner side of the rim 22 and in this position the opener is held on the can by means of the wheel 3.

As shown by the dotted line position of the segment 20, Fig. 1, the knife 5 will be forced through the top of the can merely by turning the operator 2, whereby the parts will be in the position shown in Figs. 3 and 4. Upon further rotation of the operator 2 of Fig. 3 in the direction of the arrow, the opener will travel around the can in the direction of the arrow to cut the top from the can. The knife 5 is forced into the top of the can upon movement of the opener, Fig. 1, due to a punched-out cam 8 in the side 4 which forces the segment 20 down on the top of the can. A lip 7 preferably punched out from the edge of the side 4 forms an end stop for the segment 20, Fig. 3, and the loose rivet 9 holding the segment, Fig. 4, permits the lateral movement of the segment 20.

It will be noted that the means for fastening the opener on the can and for puncturing and cutting the top of the can is operated in an entirely mechanical manner. In order to facilitate the application of the opener on the can, a straight score, ridge, or line 11 may be applied on the top of the can and an arrow 10 printed or stamped thereon so that the opener may be applied adjacent the ridge 11, the arrow 10 indicating where the segment is to be pressed by the finger to start the wedging action of the opener. Also, the opener may be applied on the can and sold with it, in which case, in order to lock the opener on the can, a projection knob 12 is provided on the operator 2 which fits into a corresponding perforation in the side 1 and a small eyelet 13 is provided adjacent to or as a part of the rivet 9 in the side 4 so that the segment 20 will be held parallel or against the side portion 4 until the eyelet is forced out of its perforation upon movement of the opener. All of these elements just described have other possibilities and may be operated in various ways and combinations.

The modification according to Figs. 5 and 6 is similar to Figs. 1 to 4 except that the side portion 4 has an angularly bent end 14 so that when the segment 20 with knife 5 moves in the direction of the arrow in starting the opening operation of the can, the segment will not only have a rotary motion but also a partly vertical motion

downwards of the knife, Fig. 6, due to the bent angular end 14.

In the form of invention of Figs. 7 and 8, the various parts are similar to the construction of Figs. 5 and 6 with the only exception that the segment is made in two superposed parts, the wedge part 23 and the knife part 24. These parts are both loosely mounted on the common rivet 9 and the part 23 is provided with a bent lug 15 adapted to contact the edge of the part 24 to carry said part 24 along when the cheek 6 wedges against the rim of the can on starting the opening operation. The parts 23 and 24 move in the direction of the arrow when the opener is starting its operation.

In Figs. 9 and 10 the form of opener shown in Figs. 1 to 4 is applied on a can 21 in such a way that the side 25 of the can is cut and not the top 26. The operation is the same but the opener is so applied that the side portion 1 with operator 2 and wheel 3 adjacent the top 26, that is the wheel 3 contacts the inner side of the rim 22, and the side portion 4 with its segment 20 is adjacent the side 25 of the can. The opener makes the cut into the side of the can just below the rim thereof.

I claim as my invention:

1. A can opener comprising a frame having two integral side portions bent at right angles to each other; means for moving the frame around the can consisting of a manual operator and a toothed wheel rotatably connected together on opposite sides of one side portion of the frame, the toothed wheel being adapted to contact and roll on a rim of the can; and a segment pivotally and loosely mounted on the other side portion of the frame and having a knife and a toothed cheek to contact against the rim of the can to move the segment and knife toward and through the can while the frame is rotated by the operator and toothed wheel upon starting the opening operation.

2. A can opener comprising a frame having two integral side portions bent at right angles to each other; means for moving the operator around the can consisting of a manual operator and a toothed wheel rotatably connected together on opposite sides of one side portion of the frame, the toothed wheel being adapted to contact and roll on a rim of the can; a cam on the other side portion of the frame; and a segment pivotally and loosely mounted on the last-mentioned side portion of the frame and having a knife and means to contact against the rim of the can to move the segment and knife toward and through the can with the aid of the cam while the frame is rotated by the operator and toothed wheel upon starting the opening operation.

3. A can opener comprising a frame; a manual operator and a toothed wheel rotatably mounted in the frame for moving the frame around the can; and a cutting blade and clamping jaw loosely and pivotally mounted on the frame, said clamping jaw being arranged behind the blade relative to the direction of the cutting movement so that when the clamping function is carried out the jaw will engage the head of the can and upon movement of the frame by the travel of the toothed wheel on the rim of the can the jaw will be released from the rim of the can after the blade has been swung into the cutting position and pierced the can.

4. A can opener according to claim 3, in which the frame is provided with a lip on one side thereof acting as an end stop for the clamping jaw and when the clamping jaw contacts with the lip in its end stop position the jaw will be out of contact with the rim of the can.

5. A can opener according to claim 3, in which the frame is provided with a lip acting as an end stop for the clamping jaw and when the clamping jaw contacts with the lip the jaw will be out of contact with the rim of the can, and in which the frame is further provided with means to positively force the cutting blade toward and into the can due to the loose mounting of the cutting blade.

6. A can opener according to claim 3, in which the cutting blade and clamping jaw are integrally connected together and are in one piece.

7. A can opener according to claim 3, in which the cutting blade and the clamping jaw form two separate parts having a common pivot mounted on the frame and the clamping jaw being provided with a bent lug to contact with and pull the cutting blade along with the clamping jaw in a rotary motion.

8. A can opener according to claim 3, in which the cutting blade and the clamping jaw form two separate parts having a common pivot mounted on the frame and the clamping jaw being provided with a bent lug to contact with and pull the cutting blade along with the clamping jaw in a rotary motion, and in which the frame is provided with a wedge-like projection along which the clamping jaw slides to force the cutting blade into the can.

9. A can opener according to claim 3, in which the cutting blade and the clamping jaw form two separate parts having a common pivot mounted on the frame and the clamping jaw being provided with a bent lug to contact with and pull the cutting blade along with the clamping jaw in a rotary motion, and in which the pivot is provided with a lateral projection and a corresponding depression in the frame and means are further provided so that the clamping jaw will be forced laterally relative to its movement around the pivot until this projection is forced out of the depression.

10. A can opener according to claim 3, in which the manual operator is provided with a projection and the frame with a corresponding depression whereby the can opener may be locked on a can with the knife spaced from the cutting zone whereby a turning force on the operator is necessary, to start the opening operation, of an additional sufficiency to force the projection to bend out of the depression.

11. A can opener comprising a frame having two integral side portions bent at right angles to each other; means for moving the frame around the can consisting of a manual operator and a toothed wheel rotatably connected together on opposite sides of one side portion of the frame, the toothed wheel being adapted to contact and roll on a rim of the can; a segment pivotally and loosely mounted on the other side portion of the frame, said segment being provided with an edge partially acting as a clamping jaw to contact against the rim and to hold the frame secured onto the can with the toothed wheel in the starting position; a knife pivotally mounted on the same side portion of the frame as the segment and adapted to rest spaced a short distance from the cutting zone of the can; and means to move the segment out of contact and to pierce the knife in the can by starting the operator.

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