June 14, 1932. G. W. BUNGAY 1,863,531

CAN OPENER

Filed April 1, 1932

Fig. 1.

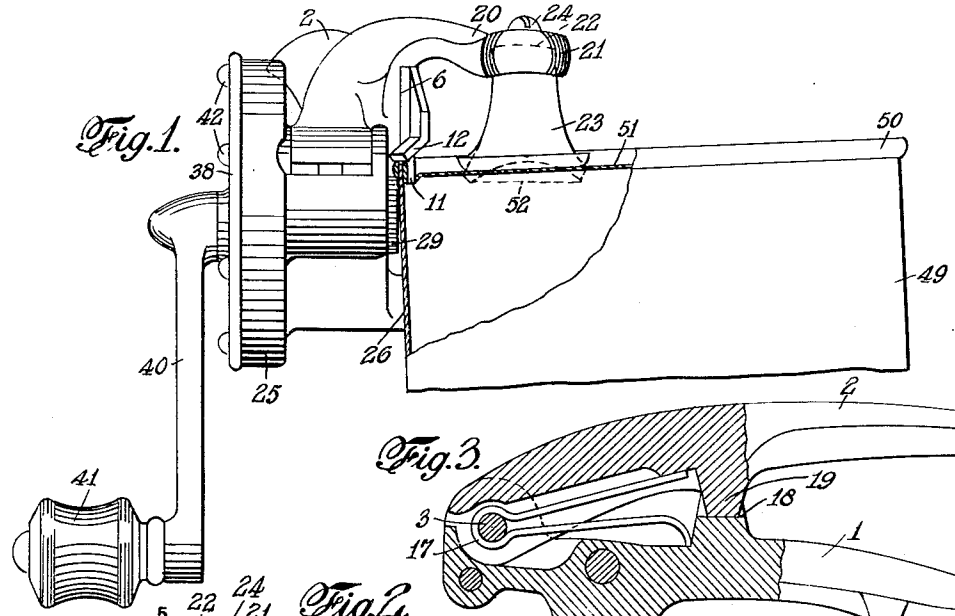


Fig. 3.

Fig. 2.

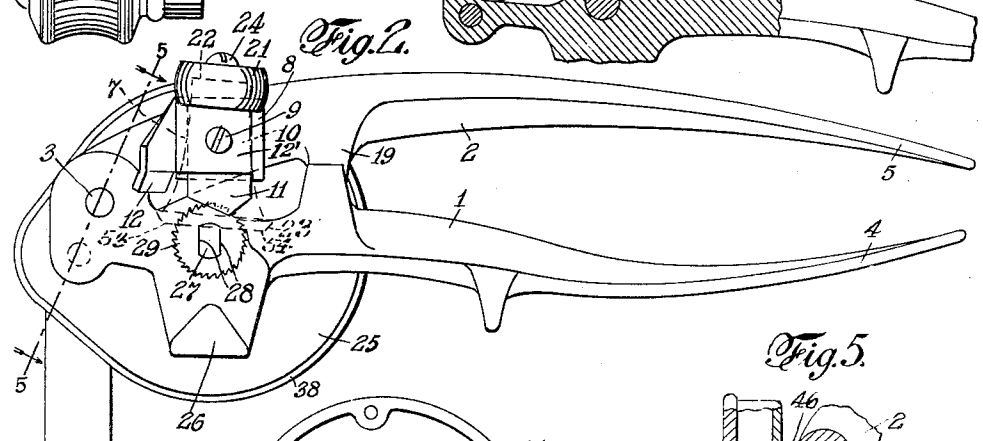


Fig. 4.

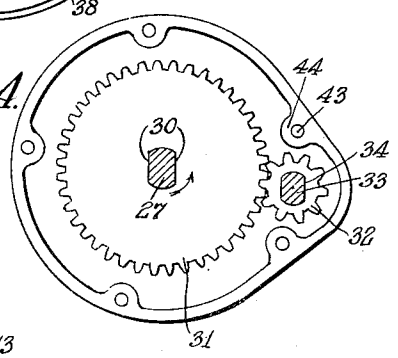


Fig. 5.

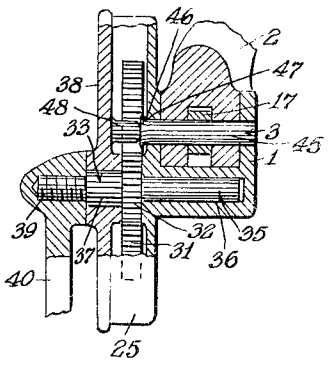
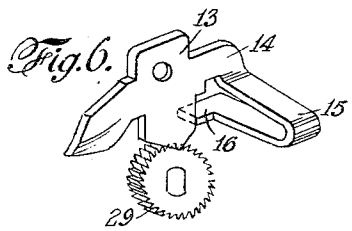


Fig. 6.



George W. Bungay INVENTOR

BY

W. V. Cuteland ATTORNEY

Patented June 14, 1932

1,863,531

UNITED STATES PATENT OFFICE

GEORGE W. BUNGAY, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO BUNGAY-WOLF CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

CAN OPENER

Application filed April 1, 1932. Serial No. 602,473.

This invention relates to a can opener and more particularly to a can opener in which a cutter and a traction wheel cooperate to cut the end out of a can.

One object of this invention is to provide a can opener having means to efficiently hold the severed can top to prevent it from falling into the can.

Another object of this invention is to provide a can opener adapted to be operated with minimum effort and having a compact arrangement of parts.

Another object of this invention is to provide an improved guide to aid in maintaining the cutting member in proper cutting position.

The above and other objects will appear from the following description, appended claims and accompanying drawing forming a part of this specification and in which:

Figure 1 is an end elevation of a can opener shown in cutting relation with a can.

Figure 2 is a side elevation of the can opener from the right of Figure 1 with the suction cup shown in dotted lines.

Figure 3 is a longitudinal partial section showing the spring member which maintains the arms of the can opener normally separated.

Figure 4 is an elevation of the gear box from the left of Figure 1 with the cover removed, with certain parts in section.

Figure 5 is a sectional view on line 5—5 of Figure 2.

Figure 6 is a perspective view of the cutter provided with a modified form of guide, shown in relation with the traction wheel.

Referring to the drawing wherein like reference numerals designate like parts, the levers or arms 1 and 2 are pivoted together at 3 and respectively have hand grip portions 4 and 5. The arm 2 is provided with a seat 6, preferably having marginal portions 7 and 8. Secured to the seat 6 by means of a screw 9 is a blade body 10 having a downwardly extending cutter 11. A laterally and downwardly extending guide 12 has its body portion 12′ secured over the top of the blade body 10 by the screw 9, or it may be formed as an extension of the blade body 10.

Figure 6 illustrates a modified form of cutting member and guide 13 here shown as integral with a laterally extending portion 14 having a resilient portion in the form of a U-shaped spring member 15 provided with a lower bearing portion 16. The arms 1 and 2 are normally held apart by means of a spring 17 (Figure 3) and are limited in their movement toward each other by means of a seat 18 on the arm 1 and a cooperating lug 19 on the arm 2.

Extending from the arm 2 is a support or arm 20 having a hollow cap-shaped end 21 with a bottom surface or seat 22 against which is seated a vacuum or suction cup 23, preferably of rubber or other suitable material, and held against the seat 22 by means of a screw 24.

The arm 1 is preferably formed integral with a gear housing 25 as shown in Figure 5 and has a lower guide 26 adapted to engage against the side of the can.

Mounted in the arm 1 and extending into the gear housing is a shaft 27 having one end preferably provided with one or more flattened portions 28 to non-rotatably secure thereon a toothed traction wheel 29. The end of the shaft 27 which extends into the gear housing also preferably has one or more flattened portions 30 by means of which a large gear 31 is non-rotatably secured to the shaft 27. In the same plane with the gear 31 and in driving engagement therewith is a pinion 32 non-rotatably secured on a shaft 33, preferably by means of one or more flattened portions 34 (Figures 4 and 5). The shaft 33 has one end 35 mounted in a bearing 36 in the arm 1 and the other end 37 mounted in a gear-housing cover 38. Secured on the extreme threaded end 39 of the shaft 33 is a crank 40 having a hand grip 41. The gear-housing cover 38 may be secured in position in any desired way, such as by means of drive screws 42 extending through the cover and engaging in holes 43 in lugs 44 formed on the inside of the gear housing.

The pivot 3 of the arms 1 and 2 is preferably formed by means of a pin 45 having a countersunk head 46 held in a countersunk

seat 47 in the gear housing by means of a lug 48 carried by the gear-housing cover 38.

The operation of the device is as follows:

The hand grips 4 and 5 of the arms 1 and 2 are grasped in one hand, with the arms 1 and 2 held in open position by the spring 17 and placed in position on a can 49 with the rim 50 of the can between the cutter 11 and the traction wheel 29. The arms 1 and 2 are then pressed together to force the cutter 11 down into the top of the can, with the guide 12 engaging the top outer portion of the rim 50 and the traction wheel engaging the underside of the rim 50. This operation of closing the arms toward each other also firmly presses the vacuum cup 23 against the can end 51 and causes it to engage adhesively therewith. The hand grip 41 on the crank 40 is then turned to cause the pinion 32 to rotate the gear 31, thus rotating the toothed traction wheel 29, which causes the can 49 to be rotated relative to the cutter 11, which latter cuts the can end 51. As the can rotates, the vacuum cup 23, while maintaining its adhesive grip upon the can end, at the same time permits the can end to slide past the vacuum cup. When the can makes a complete rotation, the end 51 thereof will be completely severed from the can and held from falling into the can by means of the vacuum cup 23. The face of the vacuum cup 23 or the surface of the end of the can is preferably moistened with water or other suitable fluid prior to applying the vacuum cup in position. Also, to facilitate the proper gripping and sliding action between the can end 51 and the vacuum cup 23, the engaging face 52 of the vacuum cup preferably extends at a slight acute angle to the can end 51 in the direction of the axis of the shaft 27, prior to cutting, as shown in Figure 1, and the vacuum cup also extends at a slight acute angle to the can end 51 in a direction at right angles to the axis of the shaft 27 (Figure 2) so as to cause the forward portion 53 of the lip of the vacuum cup toward which the can end rotates to engage the can end more lightly than the rear portion 54 of the lip of the vacuum cup. The vacuum cup 23 is preferably given its tilt in the two directions described by having the seat 22 of the cap-shaped end 21 arranged at a suitable angle to produce this double tilting. Although I prefer to use a vacuum cup, I may use a magnet or other suitable means to adhesively hold the can end.

The guide 12 which slopes downwardly and outwardly away from the cutter 11 serves to both limit the depth of penetration of the cutter and to maintain the cutter in a proper cutting position adjacent the rim 50 of the can. Where the modified cutter and guide shown in Figure 6 is used, the resilient bearing portion 16 serves to maintain the traction wheel 29 in close driving engagement with the rim 50 of the can.

Although the can opener may be made of any suitable material, I prefer to make the arm 1 and the gear housing 25 as a single die casting, preferably of aluminum or a suitable strong aluminum alloy. The arm 2, gear-housing cover 38 and crank 40 can also be advantageously made by die casting.

Since it is obvious that various modifications may be made in the specific details hereinbefore described without departing from the spirit of the invention, the invention is not restricted thereto except as defined in the appended claims.

I claim:

1. A hand-supported can opener comprising means to cut the end out of a can in combination with means to adhesively engage said can end and retain it after severance.

2. A hand-supported can opener comprising means to cut the end out of a can in combination with vacuum means to adhesively engage said can end and retain it after severance.

3. A hand-supported can opener comprising means to relatively move around the rim of a can to cut the end out of said can in combination with means to adhesively engage said can end and retain it after severance.

4. A can opener comprising means to relatively move around the rim of a can to cut the end out of said can in combination with means to adhesively engage and slide on said can end during the cutting operation and retain it after severance.

5. A hand-supported can opener comprising means to relatively move around the rim of a can to cut the end out of said can in combination with vacuum means to adhesively engage said can end and retain it after severance.

6. A can opener comprising means to relatively move around the rim of a can to cut the end out of said can in combination with vacuum means to adhesively engage and slide on said can end during the cutting operation and retain it after severance.

7. A hand-supported can opener comprising means to relatively move around the rim of a can to cut the end out of said can, said means having an arm extending over said can end, and a vacuum cup carried by said arm to adhesively engage said can end and retain it after severance.

8. A can opener comprising means to relatively move around the rim of a can to cut the end out of said can, said means having an arm extending over said can end, and a vacuum cup carried by said arm to adhesively engage and slide on said can end during the cutting operation and retain it after severance.

9. A can opener comprising an arm and a gear housing secured together, a shaft having one end extending into the gear housing,

a gear within the gear housing on the end of the shaft therein, a traction wheel on the other end of the shaft and cutting means cooperating with the traction wheel to cut the end out of a can.

10. A can opener comprising an arm and a gear housing integral therewith, a shaft having one end extending into the gear housing, a gear within the gear housing on the end of the shaft therein, a traction wheel on the other end of the shaft and cutting means cooperating with the traction wheel to cut the end out of a can.

11. A can opener comprising an arm and a gear housing secured together, a shaft having one end extending into the gear housing, a gear within the gear housing on the end of the shaft therein, a pinion in the plane of said gear and in driving engagement therewith, means for rotating the pinion, a traction wheel on the other end of the shaft, and cutting means cooperating with the traction wheel to cut the end out of a can.

12. A hand-supported can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on one arm and adapted to cut the end out of a can upon rotation of the traction wheel, and a third arm extending from one of said pair of arms and carrying means to adhesively engage said can end and retain it after severance.

13. A can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on one arm and adapted to cut the end out of a can upon rotation of the traction wheel, and a third arm extending from one of said pair of arms and carrying means to adhesively engage and slide on said can end during the cutting operation and retain it after severance.

14. A hand-supported can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on one arm and adapted to cut the end out of a can upon rotation of the traction wheel, and a third arm extending from one of said pair of arms and carrying vacuum means to adhesively engage said can end and retain it after severance.

15. A can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on one arm and adapted to cut the end out of a can upon rotation of the traction wheel, and a third arm extending from one of said pair of arms and carrying a vacuum cup to adhesively hold and slide on said can end during the cutting operation and retain it after severance.

16. A can opener comprising in combination a pair of arms pivoted together, traction means, cutting means adapted to enter the end of a can when the arms are pressed together in operative position on said can and cut said end out of said can upon actuation of said traction means, and vacuum means adapted to automatically adhesively engage said can end when the arms are pressed together and retain it after severance.

17. A hand-supported can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on the other arm and adapted to enter the end of a can when the arms are pressed together in operative position on said can and cut said end out of said can upon rotation of the traction wheel, and means mounted on the arm with the cutting means and adapted to automatically adhesively engage said can end when the arms are pressed together and retain it after severance.

18. A can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on the other arm and adapted to enter the end of a can when the arms are pressed together in operative position on said can and cut said end out of said can upon rotation of the traction wheel, and means mounted on the arm with the cutting means and adapted to automatically adhesively engage said can end when the arms are pressed together and slide on said can end during the cutting operation and retain it after severance.

19. A hand-supported can opener comprising a pair of arms pivoted together, a traction wheel rotatably mounted on one arm, cutting means mounted on the other arm and adapted to enter the end of a can when the arms are pressed together in operative position on said can and cut said end out of said can upon rotation of the traction wheel, and vacuum means mounted on the arm with the cutting means and adapted to automatically adhesively engage said can end when the arms are pressed together and retain it after severance.

In testimony whereof, I have affixed my signature to this specification.

GEORGE W. BUNGAY.