March 31, 1959 W. ULKE 2,879,589

CAN OPENER

Filed Dec. 12, 1957 4 Sheets-Sheet 1

Fig. 1.

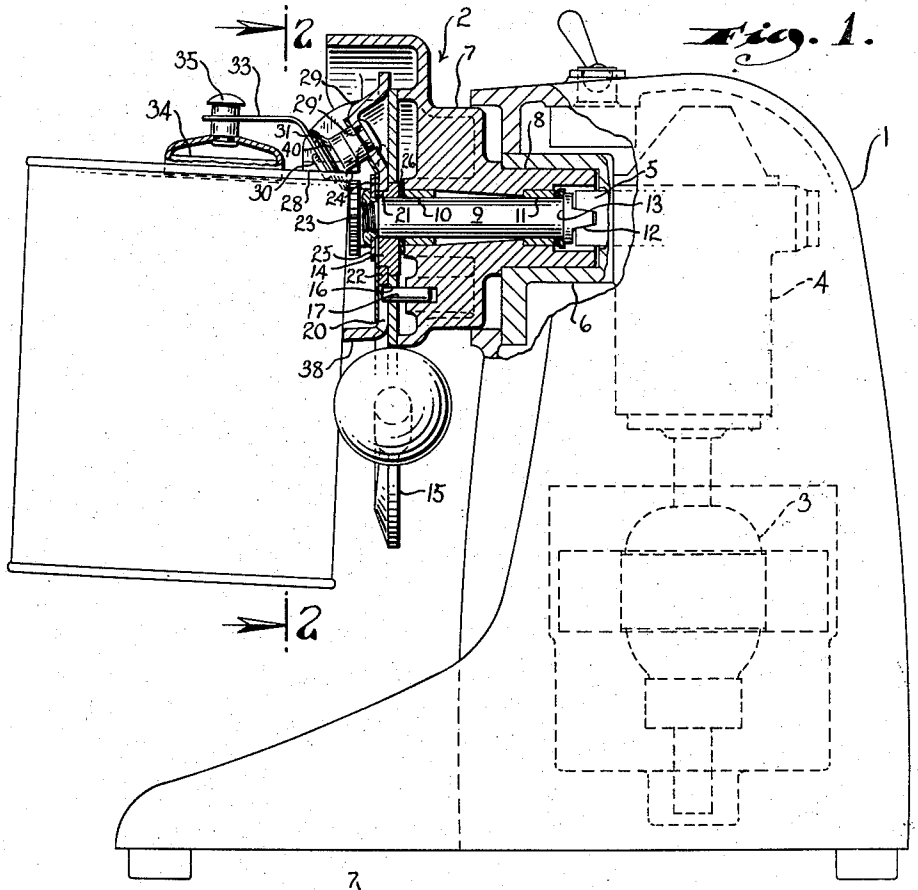
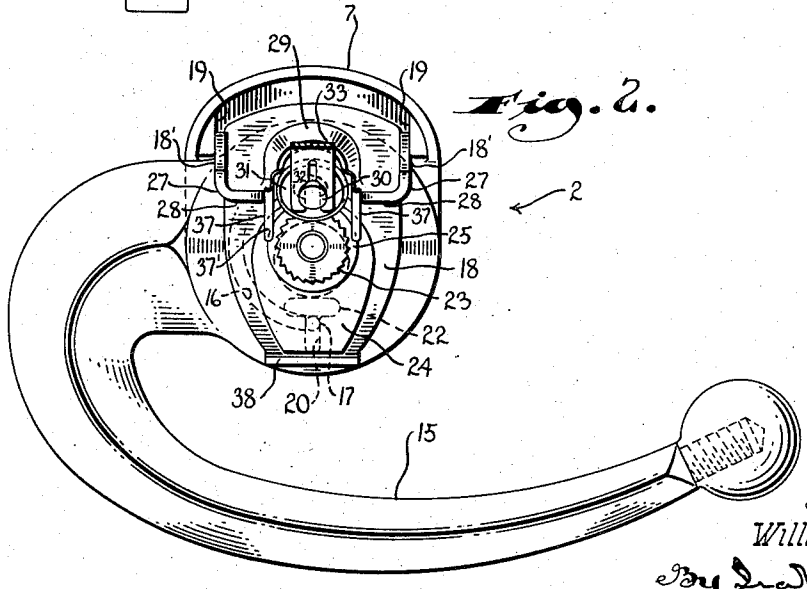



Fig. 2.




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Fig. 4.

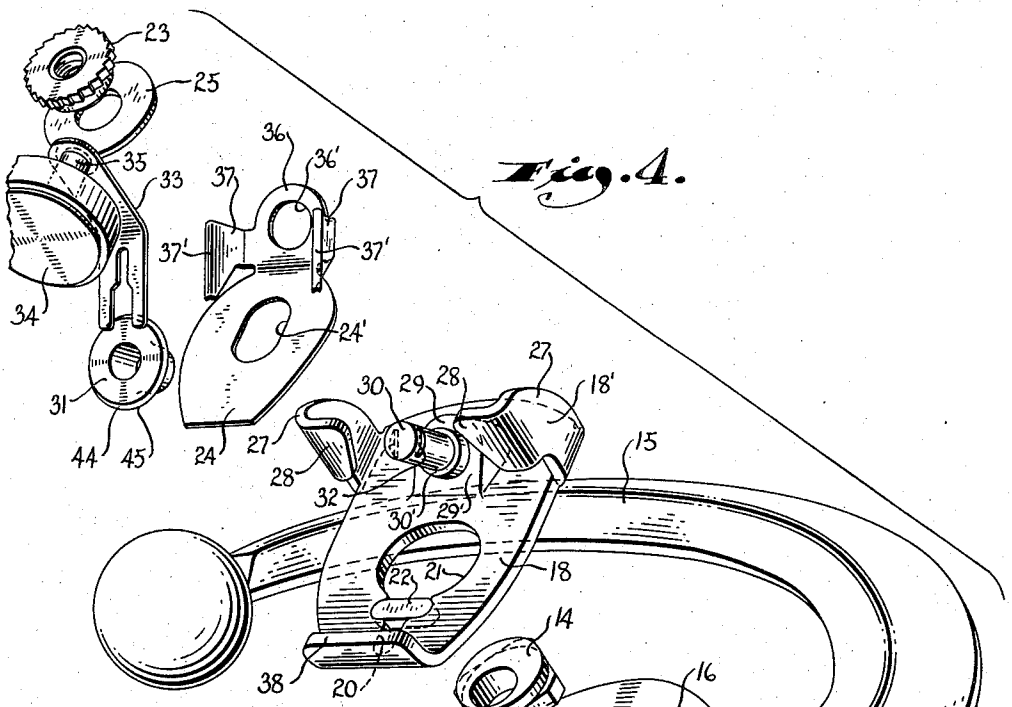
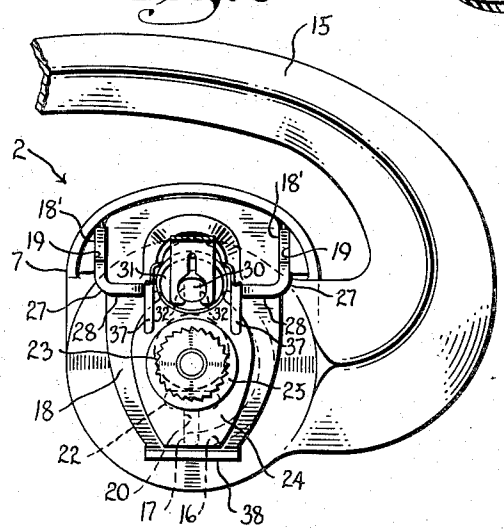



Fig. 3.




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Fig. 5.

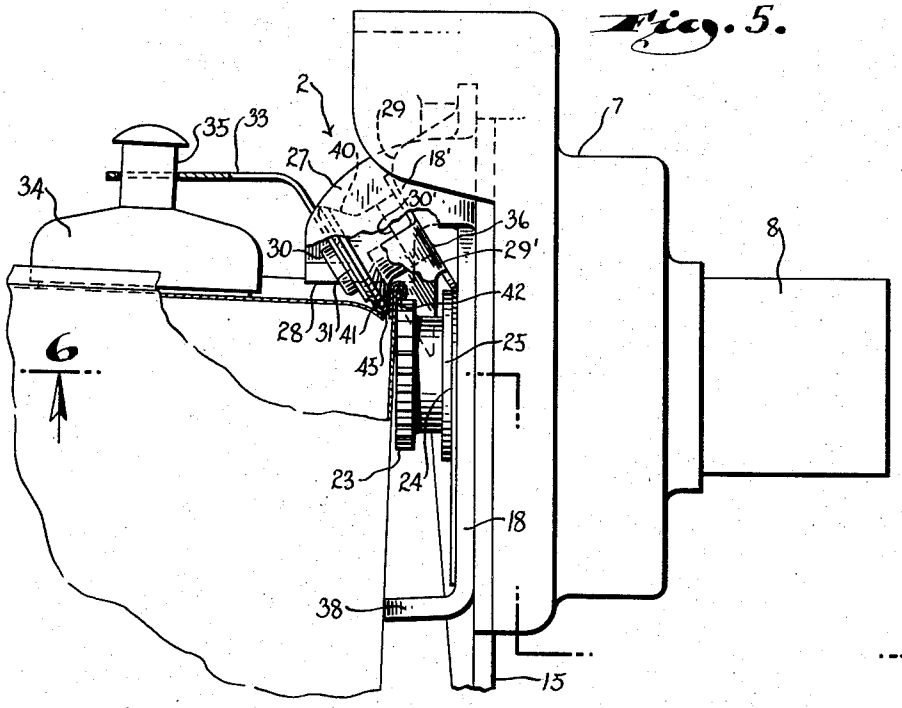
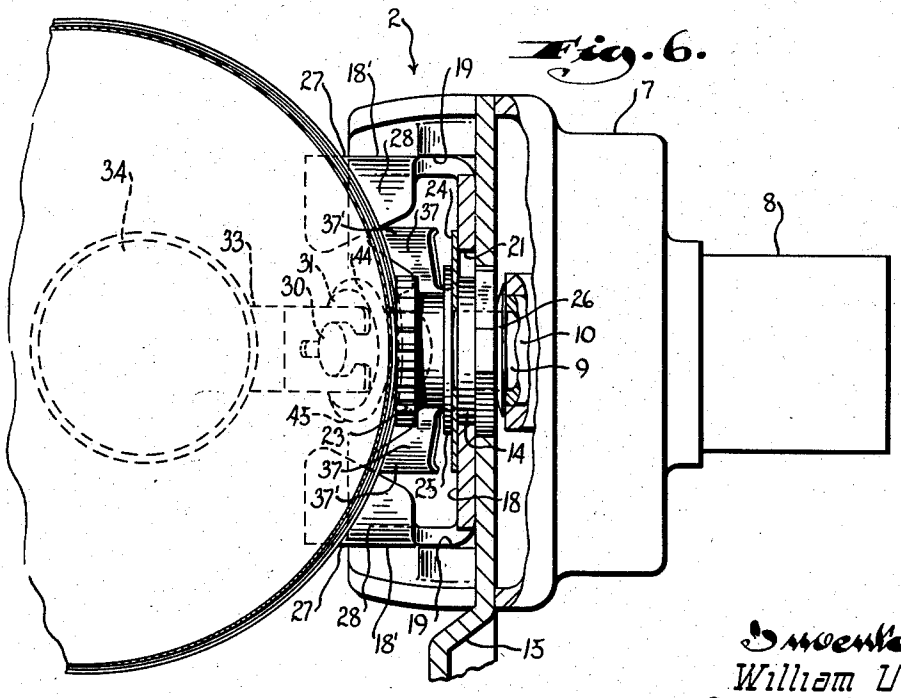



Fig. 6.




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Fig. 7.

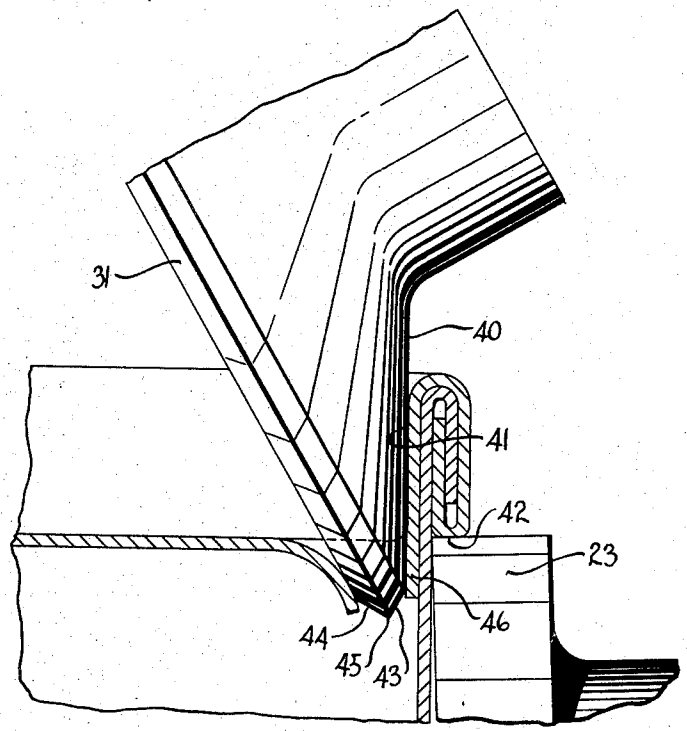
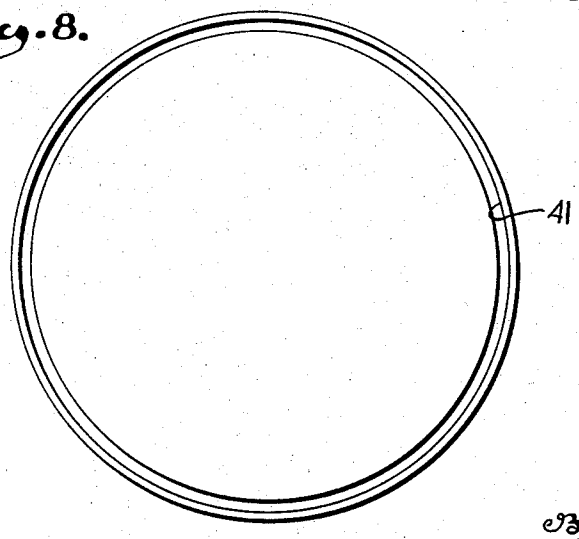



Fig. 8.




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United States Patent Office 2,879,589 Patented Mar. 31, 1959



2,879,589

# CAN OPENER

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Application December 12, 1957, Serial No. 702,423

15 Claims. (Cl. 30—4)

This invention relates generally to improvements in can openers and, more particularly, to that type of can opener having a driven feed wheel which engages the underside of the rim of the can to support and turn the can while a freely rotatable cutting wheel severs the adjacent end wall of the can.

The wide variety of can sizes and different material thicknesses used in the manufacture of cans has made the task of constructing a truly universal can opener of this type very difficult. This is especially true where the opener is to be driven by an electric motor since any jamming of the can may result in damage to the opener or loss of contents of the can to be opened. The problem is further complicated by the fact that to be fully satisfactory, the opener must perform so that the severed end wall may be easily removed.

The meandering cut made by most can openers produces metal slivers and burrs which make careful handling of the opened can a necessity. This objection can be overcome, or at least materially lessened, through accurate positioning and firm holding of the can during the opening thereof, coupled with uniform delivery of power to the opener; but the means heretofore employed in an attempt to gain this result, and which often involved the use of springs and guides to position the can, were effective for only a very limited range of can sizes and shapes.

It is, therefore, the purpose and object of this invention to provide a can opener of the type described which overcomes the deficiencies of prior openers, and which is truly universal so as to perform well, regardless of the size or shape of the can or the thickness of the metal of which it is made.

The invention achieves this objective through a new shape for the cutting wheel and a novel coaction between the cutting wheel and the feed wheel, which not only holds the can in the correct position for opening but also assures free removal of the severed end wall and a smooth edge for the opened end of the can.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate one complete example of the physical embodiment of the invention constructed according to the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a side view, with parts broken away and in section, of a can opener embodying this invention, and illustrating the same mounted on a combination supporting pedestal and power unit;



Figure 2 is a view of the front end of the opener, taken on the plane of the line 2—2 in Figure 1, the can being removed but the opener being shown in its operative cutting condition;

Figure 3 is a view similar to Figure 2, but with the opener in its inoperative can receiving condition;

Figure 4 is an exploded perspective view of the can opener;

Figure 5 is a side elevational view of the can opener shown detached from its supporting pedestal and power unit, but with a can in position being cut, parts of said view being broken away and in section;

Figure 6 is a sectional view taken along the line 6—6 in Figure 5 and looking upward towards the underside of the opener;

Figure 7 is a fragmentary detail view showing a portion of the cutting wheel and feed wheel with a can in position therebetween, the can being shown in section and the entire view being drawn to a greatly enlarged scale to more clearly illustrate the manner in which the cutting wheel forms the cut in the end wall of the can and coacts with the feed wheel to assure free removal of the severed can top and a smooth edge for the opened can; and

Figure 8 is a top plan view of a can which has had an end wall severed therefrom with a can opener constructed in accordance with this invention, but with the severed end wall still in position to illustrate the unusual clearance between the edge of the end wall and the side wall which this invention provides.

Referring to the drawings, in which like numerals designate like parts throughout the several views, the numeral 1 designates a support or pedestal upon which the can opener of this invention, designated generally by the numeral 2, is detachably mounted. The support or pedestal contains an electric motor 3 and a speed reduction unit 4 having an output shaft 5 which projects into a socket 6 opening to the front wall of the support or pedestal. The body or housing 7 of the can opener has a boss 8 thereon which fits into the socket and is held therein with the opener properly oriented, by a thumb screw (not shown) threaded through a portion of the support or pedestal to bear against the boss 8.

The body or housing 7 of the opener has a shaft 9 journalled in bearings 10 and 11 coaxial with its boss 8, to be drivingly connected to the output shaft 5 by means of a tongue and groove coupling 12, upon proper attachment of the can opener to the support. The shaft 9 is held against outward axial displacement by a shoulder 13 on its inner end which bears against the adjacent end of bearing 11 through a suitable thrust washer.

The outer end of the shaft 9 projects beyond the front face of the body or housing 7 and has an eccentric 14 journalled thereon to be eccentrically rotated about the shaft by a handle 15 which has its hub portion keyed to the eccentric, preferably by having a non-circular boss on the rear of the eccentric received in a correspondingly shaped hole in the handle hub. Movement of the handle about the shaft thus rotates the eccentric about the shaft axis, and since the maximum throw of the eccentric is desired, its rotation is limited to 180°. For this purpose, the hub portion of the handle has an arcuate slot 16 to receive a pin 17 which projects from the front of the body or housing 7, the slot extending through 180°.

The handle hub is interposed between the front of the housing or body 7 and a face plate 18 which is constrained to rectilinear up and down motion by having parallel flat surfaces 18' on its upper end portion slidably engaged with inwardly facing flat vertically disposed shoulders 19 on the housing or body, and by the reception of the outer end portion of the pin 17 in a slot 20 which extends straight down from an oval shaped hole 21 in

the medial portion of the face plate. The hole **21** has the eccentric **14** received therein and has its greatest dimension transverse to the permitted motion of the face plate to accommodate the swing of the eccentric as it rotates in its orbit, but in the direction of motion to be produced, i.e. vertical, the eccentric fits the hole **21** quite snugly. In fact, to assure maintenance of this close fit, the bottom edge of the hole **21**, which receives the greatest wear during use, is formed by an insert **22** of hardened steel. Thus, as the handle is swung from one position to another, the resulting 180° rotation of the eccentric raises and lowers the face plate.

The eccentric **14**, the handle, and the face plate are held in proper assembled relationship by the securance of a feed wheel **23** to the outer end of the shaft **9**. The feed wheel is preferably threaded onto the shaft **9** to facilitate assembly and has its hub drawn tight against a shoulder on the front end of the shaft. A rearwardly facing shoulder on the hub of the feed wheel holds a locating spring **24** in place overlying the coplanar front surfaces of the face plate **18** and the eccentric **14**, and coacts with the non-circular boss on the eccentric to hold the face plate on the eccentric. A washer **25** confined between the shoulder on the feed wheel and the locating spring stiffens the latter and covers the ends of a vertically elongated hole **24'** in the spring through which the reduced rear end portion of the hub on the eccentric is received, the vertically elongated shape of the hole **24'** being necessary to permit the spring to move up and down with the face plate.

Since the hub of the feed wheel is drawn tight against a shoulder on the shaft **9**, the provision of a thrust washer **26**, which may be a spring washer, between the eccentric and the front end of the bearing **10** holds the shaft **9** against undue end play.

The face plate is preferably a stamping and has a pair of forwardly projecting arms **27** on its upper end. These arms provide the parallel surfaces **18'** which slidably engage the shoulders **19** to guide the up and down motion of the face plate, and at their extremities the arms are bent inward to provide horizontal flat unyielding hold-down abutments **28**. The abutments **28** engage the top of the rim of a can in position to be opened and press the underside of the rim against the edge of the feed wheel, when the handle is swung around to draw the face plate down. The edge of the feed wheel, being serrated as shown, bites into the rim of the can and advances the same through the cutting zone as the feed wheel turns.

Between its arms **27** the face plate has a forward embosture **29** with an inclined flat lower wall **29'**, and projecting perpendicularly from this inclined wall in fixed relation thereto is a stub shaft **30** upon which the cutting wheel **31** of the opener is freely rotatably mounted. The stub shaft **30** has a forwardly facing shoulder **30'** on its anchored end to provide a thrust bearing for the wheel, and at its outer free end portion the stub shaft has a pair of flat bottomed grooves **32** in the opposite sides thereof.

A bifurcated combination wheel retaining member and magnet holder **33** is tightly though removably engaged in the grooves **32** to detachably secure the cutting wheel in position and also support a magnet **34** by which the severed end wall of the can is held from dropping into the can upon completion of the opening operation. To allow the magnet to position itself properly with respect to the top of the can, the connection between the magnet and its holder comprises a headed pin **35** projecting up from a cage in which the magnet per se is fixed and passing loosely through a hole in the holder. This provides a substantial amount of freedom for the magnet and permits the magnet to seat itself upon the can top as the can is placed in position preparatory to being opened.



The locating spring **24**, as already described, overlies the front of the face plate and partakes of all motion imparted to the face plate. It is secured against edgewise displacement with respect to the face plate by having its upper portion **36** disposed at an angle to overlie the inclined flat lower wall **29'** and provided with an aperture **36'** to closely receive the adjacent anchored end of the stub shaft **30**.

The locating function of the spring **24** is performed by a pair of resilient arms **37** projecting forwardly from the opposite side edges of its upper inclined portion **36**. As best seen in Figures 2 and 6, these arms **37** embrace or straddle the cutting wheel, and have their outer edges curled to provide smooth bearing surfaces **37'** so located and disposed as to bear obliquely against the edge of a can in position to be opened and to press yieldingly thereagainst. In so doing, the spring arms **37** aid in properly positioning the can and steadying it during the opening operation.

The resilience of the locating spring **24** and especially its arms **37** assures proper centering of the can on the feed wheel, regardless of the size or shape of the can, it being understood that the axes of the cutting wheel and the feed wheel lie in a common vertical plane, and that the positioning spring is symmetrically bisected by this plane.

Additional support and guidance for the can is provided by a foot **38** which projects forwardly from the bottom of the face plate to engage the adjacent side of the can and hold the same at a slight angle to the front face of the feed wheel, as best seen in Figure 5.

*Operation*

In using the opener of this invention, its handle is first moved to the position shown in Figure 3, if it is not already in that position. In this position of the handle, the face plate and, of course, all the structure carried thereby including the cutting wheel, is in its elevated or raised position. This permits the can to be placed in position with the underside of its rim (at the top of the can) seated upon the top of the feed wheel, and the side of the can bearing against the foot **38**. The handle is then moved to the position shown in Figure 2. This movement of the handle lowers the face plate, causing the cutting wheel to pierce the top or uppermost end wall of the can and forcing the hold-down abutments **28** against the top of the rim of the can, whereupon the serrated edge of the feed wheel bites into the rim. This lowering of the face plate also brings the magnet support to a position at which engagement between the magnet and the top or upper end wall of the can is permitted.

As shown in Figures 1, 5 and 7, the cutting wheel has a conical rear face **40** which is substantially parallel to the front face of the feed wheel where the common vertical plane containing the axes of the two wheels intersects this conical rear face, and in the lowered position of the cutting wheel its conical rear face overlies the front face of the feed wheel. This condition, of course, results from the fact that the axis of the cutting wheel is disposed at a predetermined downward angle with respect to the horizontal, and from the specific location of the cutting wheel with respect to the feed wheel. The normal clearance between the conical rear face **40** of the cutting wheel and the front of the feed wheel when the cutting wheel is lowered is slightly less than twice the thickness of the lightest gage metal used in the making of cans. Accordingly, as best shown in Figure 7, when the cutting wheel is brought down into its cutting position to pierce the top of the can, the rim of the can is clamped between the conical rear face of the cutting wheel and the front face of the feed wheel, the conical rear face **40** of the cutting wheel engaging the inside flange **41** of the rim and the front of the feed wheel engaging the portion **42** of the side of the can directly beneath the rim.

This clamping coaction between the two wheels, of itself, holds the can in proper position for the cutting operation and, for most can shapes, would be sufficient for this purpose. However, to steady the can and to assure a smooth cut, the locating spring **24** acts obliquely downwardly and laterally against the rim of the can at equispaced distances out from the common plane containing the axes of the cutting wheel and the feed wheel, the resilience of the locating spring accommodating the variations in size and shape of the cans.

Since the normal clearance between the back of the cutting wheel and the front of the feed wheel is less than the combined thickness of the two layers of metal interposed therebetween, it is evident that the mounting of at least one of the wheels must be resiliently yieldable. The feed wheel, being solidly supported against rearward displacement with respect to the face plate by having its hub bearing thereon through the washer **25** and the locating spring **24**, cannot yield. Hence, it is the mounting for the cutting wheel which must yield slightly as the rim of the can is clamped between the two wheels. This requirement is conveniently satisfied by the inherent resiliency of the stamped metal face plate which allows it to flex under a force tending to spread the wheels apart. By this simple expedient, therefore, the opener is adapted to handle cans made with different metal thicknesses.

Heretofore, in can openers of this type where rotary cutting wheels were employed, the cut formed thereby was made directly adjacent to the rim, as shown for instance in Patent No. 2,244,846. With the cut thus located, it is difficult to lift the severed top from the opened can, since the diameter of the severed top invariably is so close to that of the open end of the can that the top cannot be lifted directly off the can. To overcome this difficulty, the present invention locates the cutting zone at a substantial distance radially in from the inside **41** of the rim. This is done by bevelling the extreme outer edge portion **43** of the conical rear face **40** to dispose the same at an angle somewhat steeper than that of the conical rear face **40** and, preferably, the front face of the cutting wheel is likewise bevelled, as at **44**, so as to give the cutting wheel a V-shaped marginal portion defining a sharp cutting edge **45**.

By this specific shape of the cutting wheel, the cutting zone or, more specifically, the circular line of the cut, is spaced a substantial distance inwardly of the inner surface **41** of the rim and the inside surface of the side wall of the can. But locating the cut radially inwardly in this way introduces another problem. Since the cut is made some distance away from the side wall of the can, the pressure exerted on the top of the can by the cutting wheel stretches the material considerably more than it would if the cut were directly adjacent to the side wall. In other words, the ratio of shear to stretch is less favorable to the attainment of good clearance between the severed can top and the open end of the can. To overcome this disadvantage and assure the desired results, the parts are so constructed and related that the conical rear face **40** of the cutting wheel overlies the inner surface of the side wall of the can well below the plane of its top wall and thus the unsevered marginal edge portion of the end wall is flattened against the side wall, as shown at **46** in Figure 7. As a result, the open end of the can is substantially larger than the severed top or lid, and, since the clearance is uniform all the way around, as shown in Figure 8, no difficulty is experienced in lifting the severed top from the opened can.

Also, by virtue of this flattening or ironing action produced by the conical rear wall of the wheel, the opened can has an exceptionally smooth edge entirely free from burrs or sharp slivers.

Obviously, of course, after the cut is completed, the magnet retains the severed top or lid as the handle is swung back to its Figure 2 position, to raise the cutting wheel and free the can for removal.



From the foregoing description, taken in connection with the accompanying drawings, it will be readily apparent to those skilled in this art that the can opener of this invention is an important and significant improvement over all prior can openers.

What is claimed as my invention is:

1. A can opener having a feed wheel which rotates on a substantially horizontal axis and has its periphery formed to have driving engagement with the underside of the rim at the top of a can to be opened, a cutting wheel to pierce and sever the top of the can from the rest thereof, and means mounting the feed wheel and the cutting wheel for relative vertical motion to and from an operative positional relationship, characterized by the fact that: the feed wheel has a front face, the upper portion of which supportingly engages the side of the can directly below its rim; the cutting wheel rotates on an axis inclined to the horizontal and lying in a vertical plane containing the axis of the feed wheel, the cutting wheel has a conical rear face radially inwardly of its cutting edge and substantially tangent to a vertical plane which is normal to said first designated vertical plane and is spaced from the can supporting face portion of the feed wheel a distance less than twice the wall thickness of the can, the cutting wheel has a substantially flat front face normal to the axis about which the cutting wheel rotates and hence inclined to said vertical plane to which its rear face is tangent, said front and rear faces of the cutting wheel being beveled to define the actual cutting edge of the wheel and to locate said cutting edge farther from the can supporting face portion of the feed wheel than its rear conical face so that the cut formed in the can top by the cutting wheel is spaced a distance in from the rim of the can, and said cutting wheel being so disposed with respect to the feed wheel that when said wheels are in their operative positional relationship the lower peripheral portion of the cutting wheel extends down substantially below a horizontal reference plane tangent to the top of the feed wheel which reference plane substantially coincides with the top of a can in position to be opened so that said portion of the cutting wheel protrudes through and extends a distance below the top of the can with the conical rear surface of the wheel pressing against the unsevered marginal edge portion of the can top for substantially its full width, to thus iron the same tightly against the side of the can while the inclined front face of the cutting wheel and its beveled edge coact to curl down the inner edge of the cut being formed by the wheel during the opening of the can.

2. In a can opener: a cutting wheel to pierce and sever the top of a can, said cutting wheel comprising a hub with a flange at one end, said flange having a front face substantially normal to the axis of the wheel and a substantially conical rear face, and the contiguous portions of said front and rear faces being uniformly and substantially identically beveled to define the cutting edge of the wheel, the bevel on the substantially conical rear face locating the cutting edge forwardly of said substantially conical rear face and the bevel on the front face providing an inclined approach from the cutting edge to said front face.

3. In a can opener of the type having a feed wheel for engaging and driving the rim of a can and a cutting wheel for piercing and severing the end wall of a can adjacent to the rim driven by the feed wheel: means for positioning a can in driving engagement with said feed wheel and in cutting engagement with said cutting wheel; a peripheral cutting edge on said cutting wheel disposed to pierce and sever the end wall of the can; a substantially conical face on said cutting wheel inwardly of its cutting edge to engage the inside of the rim of the can and thereby clamp the rim of the can against the feed wheel, said substantially conical face overlying enough of the feed wheel to flatten the peripheral, unsevered portion of the end wall against the side wall of

the can and provide clearance to facilitate removal of the severed portion of the end wall from the remainder of the can; and a second steeper angled conical face on the cutting wheel circumscribing the first substantially conical face and joining the same, said second conical face terminating in the cutting edge of the wheel so that the cutting zone of the opener is spaced radially in from the surface of the can engaged by the first substantially conical face.

4. In a can opener: a cutting wheel having a substantially V-shaped cutting edge defined by front and rear conical faces, the rear conical face joining with a second rear substantially conical face which is flatter than said first designated rear conical face; means to support a can to be opened; and means freely rotatably mounting the cutting wheel for rotation about an axis so inclined with respect to the can positioning means that the flatter substantially conical rear face of the cutting wheel engages the inside of the rim of the can to be opened and thereby disposes the cutting edge of the wheel at a distance in from said rim.

5. In a can opener of the character described: a feed wheel having a serrated edge to engage the underside of the rim of a can, said feed wheel having a substantially flat front face to engage the side of the can; a cutting wheel having a substantially V-shaped peripheral portion defining a sharp cutting edge; a hub on the rear of the cutting wheel substantially smaller in diameter than the cutting edge; a substantially conical rear face for the wheel joining the hub with its cutting edge, said substantially conical rear face being substantially flatter than the adjacent conical rear face of the cutting edge; means rotatably mounting the cutting wheel for rotation about an axis lying in a common plane with the axis of rotation of the feed wheel and inclined with respect to the feed wheel axis an amount such that where said common plane intersects the conical rear face of the cutting wheel said conical rear face is substantially tangent to the front face of the feed wheel, said faces of the two wheels opposing one another and being spaced apart a distance to clamp the rim of a can therebetween, said disposition of the wheels locating the cutting zone a substantial distance away from the rim of the can.

6. The can opener of claim 5, further characterized by the fact that the conical rear face of the cutting wheel overlies the front of the feed wheel an amount greater than the depth of the rim of a can to be cut so that the unsevered marginal portion of the end wall of the can is rolled flat against the inside surface of the can during the opening operation.

7. A can opener comprising: a body having a front face which is disposed vertically in the normal use of the opener; a drive shaft journalled in the body with its outer end portion projecting perpendicularly from the front face thereof; a feed wheel having a serrated edge fixed to the projecting outer end portion of the shaft; a face plate overlying the front face of the body; cooperating means on the body and the face plate constraining the face plate to translatory motion transverse to the shaft, said permitted motion of the face plate being up and down when the body is in the position it occupies in the normal use of the opener; an eccentric journalled on the shaft between the feed wheel and the front face of the body; the face plate having a hole in which the eccentric is received, said hole being elongated in the direction transverse to the permitted motion of the face plate to accommodate the swing of the eccentric but fitting the eccentric closely in the direction of face plate motion so that rotation of the eccentric imparts translatory motion to the face plate; a handle having a hub portion connected to the eccentric and lying between the face plate and the front face of the body for imparting rotation to the eccentric; a stub shaft fixed to the face plate with its axis lying in a plane containing the axis of the feed wheel and drive shaft and parallel to the permitted motion of the face plate, said stub shaft being above the feed wheel in the normal position of the body but being inclined downwardly; and a cutting wheel freely rotatably journalled on said stub shaft, said cutting wheel having a conical rear face to overlie the front face of the feed wheel when the handle is actuated to move the face plate to its lowermost position whereby the rim of a can to be opened may be clamped between the conical rear face of the cutting wheel and the front face of the feed wheel while the serrated edge of the feed wheel engages the underside of said rim and the cutting wheel pierces the top of the can.

8. The can opener of claim 7, further characterized by the fact that the cutting edge of the cutting wheel is spaced farther away from the front face of the feed wheel than said conical rear face of the cutting wheel to thereby locate the cutting zone at a predetermined distance inwardly of the rim of the can.

9. The can opener of claim 7 further characterized by the fact that the face plate has a degree of resilience to yield slightly under a force tending to increase the distance between the rear conical face of the cutting wheel and the front face of the feed wheel to thereby accommodate cans formed of different gage material.

10. The can opener of claim 7 further characterized by the fact that the outer end portion of the stub shaft has a pair of grooves in its opposite sides just forwardly of the front face of the cutting wheel, and by the provision of a bifurcated retaining member detachably engaged in said grooves to removably hold the cutting wheel in place, said retaining member having a portion thereof extending forwardly to provide a magnet support overlying the top of a can in position to be opened.

11. The can opener of claim 7 further characterized by the provision of a pair of spaced downwardly facing abutments on said face plate lying in a common plane parallel to the axis of the shaft and intersecting the axis of the cutting wheel with one abutment at each side of the cutting wheel to engage the top edge of a can in position and thereby press the underside of its rim against the serrated edge of the feed wheel.

12. The can opener of claim 11 further characterized by the provision of a pair of resilient locating fingers projecting forwardly from the face plate, one at each side of the cutting wheel and between said pair of abutments, said locating fingers having inclined edges lying in a plane substantially parallel to the plane of the cutting edge of the wheel to resiliently engage and press obliquely against the top edge of the can.

13. The can opener of claim 12 further characterized by the provision of a forwardly projecting foot on the face plate spaced a substantial distance beneath the feed wheel to engage the side of a can and hold the same tilted slightly away from the front face of the wheel.

14. A can opener having a feed wheel which rotates on a substantially horizontal axis and has its periphery formed to have driving engagement with the underside of the rim at the top of a can to be opened, a cutting element to pierce and sever the top of the can from the rest thereof, and means mounting the feed wheel and cutting element for relative vertical motion to and from an operative positional relationship, characterized by the fact that: the feed wheel has a front face the upper portion of which supportingly engages the side of the can directly below its rim; and the cutting element has a downwardly facing cutting edge disposed at a negative angle to the direction of relative motion between the cutting element and the can top portion upon which the cutting edge acts during the can opening operation, said cutting edge crossing a horizontal reference plane tangent to the top of the feed wheel when the cutting element and the feed wheel are in their operative positional relationship, and which horizontal reference plane substantially coincides with the top of a can in position to be opened so that the working portion of the cutting element pro-

trudes through and a distance below the can top, the working portion of the cutting element being intersected by a first vertical reference plane which contains the axis of the feed wheel, and on said plane being V-shaped in cross section with upwardly diverging front and rear surfaces, its rear surface being convex and tangent to a second vertical reference plane normal to said first vertical reference plane and spaced from the can supporting face portion of the feed wheel a distance less than twice the wall thickness of the can, its front surface being substantially flat and by virtue of the divergence of the front and rear surfaces being inclined and where it crosses horizontal reference plane being spaced a substantial distance from the can supporting face portion of the feed wheel, the contiguous edge portions of the front and rear surfaces being uniformly beveled to form the cutting edge, the bevel on the rear surface spacing the cutting edge farther from the can supporting face portion of the feed wheel than said convex rear surface so that the cut formed in the can top is spaced from the side wall of the can and leaves an unsevered marginal edge portion, the bevel on the front surface, by virtue of its uniform width disposing the cutting edge in a plane parallel with and rearwardly of said substantially flat inclined front surface of the cutting element and forming an abrupt approach to said front surface to more effectively roll down the inner edge of the cut as it is being formed in the can top to assure the severed can top being substantially smaller than the mouth of the opened can, and the width of the bevel on the rear surface being such that where said first vertical reference plane intersects the cutting edge the heel of said bevel lies below said horizontal reference plane far enough to assure the convex rear surface of the cutting element acting upon the entire width of the unsevered marginal edge portion of the can top to iron it down against the side wall of the can.

15. In a can opener: a rotatably mounted feed wheel; means for driving the feed wheel; a cutting wheel having a substantially V-shaped cutting edge defined by front and rear conical faces, the rear conical face joining with a second rear conical face which is flatter than



said first designated rear conical face; means for positioning a can to be opened in driving engagement with the feed wheel and in cutting engagement with the cutting wheel; means freely rotatably mounting the cutting wheel for rotation about an axis so inclined with respect to the can positioning means that the flatter conical rear face of the cutting wheel engages the inside of the rim of the can to be opened and thereby disposes the cutting edge of the wheel at a distance from said rim; the axes of the two wheels lying in a common plane; and the means for positioning a can in driving engagement with the feed wheel and in cutting engagement with the cutting wheel, including spring arms embracing the feed wheel symmetrically of said common plane, the extremities of said spring arms providing bearing surfaces disposed at an angle to exert both a lateral and a downward force against the upper edge of the can.


**References Cited in the file of this patent**

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,071,974 | Walther | Sept. 2, 1913 |
| 1,553,599 | La May | Apr. 14, 1925 |
| 1,989,807 | Jeppsson | Feb. 5, 1935 |
| 2,012,955 | Cabot | Sept. 3, 1935 |
| 2,204,368 | Kublin | June 11, 1940 |
| 2,244,846 | Moeller | June 10, 1941 |
| 2,437,234 | Webb | May 2, 1948 |
| 2,441,322 | Jager | May 11, 1948 |
| 2,532,898 | Drugman | Dec. 5, 1950 |
| 2,568,962 | Lindahl | Sept. 25, 1951 |
| 2,573,031 | La Forto | Oct. 30, 1951 |
| 2,573,427 | Frolich | Oct. 30, 1951 |
| 2,579,189 | Jenson | Dec. 18, 1951 |
| 2,601,303 | Landry | June 24, 1952 |
| 2,602,991 | Landry | July 15, 1952 |
| 2,615,241 | Lawrence | Oct. 28, 1952 |
| 2,624,110 | Acker | Jan. 6, 1953 |
| 2,736,091 | Moore et al. | Feb. 28, 1956 |
| 2,789,345 | Klassen | Apr. 23, 1957 |
| 2,825,963 | Stykes | Mar. 11, 1958 |

# UNITED STATES PATENT OFFICE

# CERTIFICATE OF CORRECTION

Patent No. 2,879,589 March 31, 1959

William Ulke

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 9, line 13, after "crosses" insert -- said --.

Signed and sealed this 14th day of July 1959.

(SEAL)
Attest:
KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents