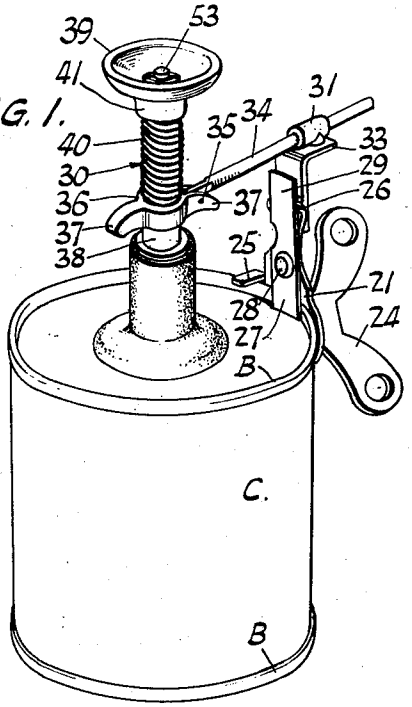
May 29, 1951 E. MESIK 2,554,628

CAN OPENER

Filed Oct. 31, 1946

FIG. 1.



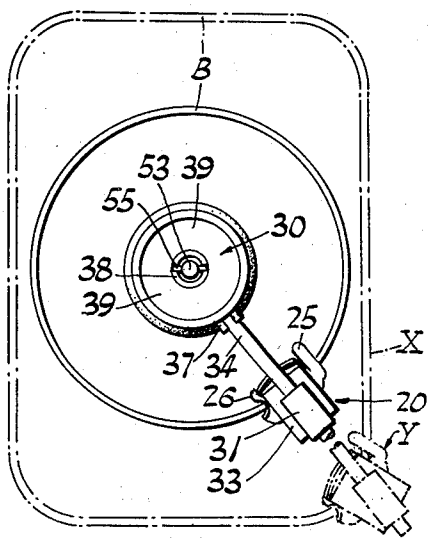


FIG. 3.

FIG. 2.

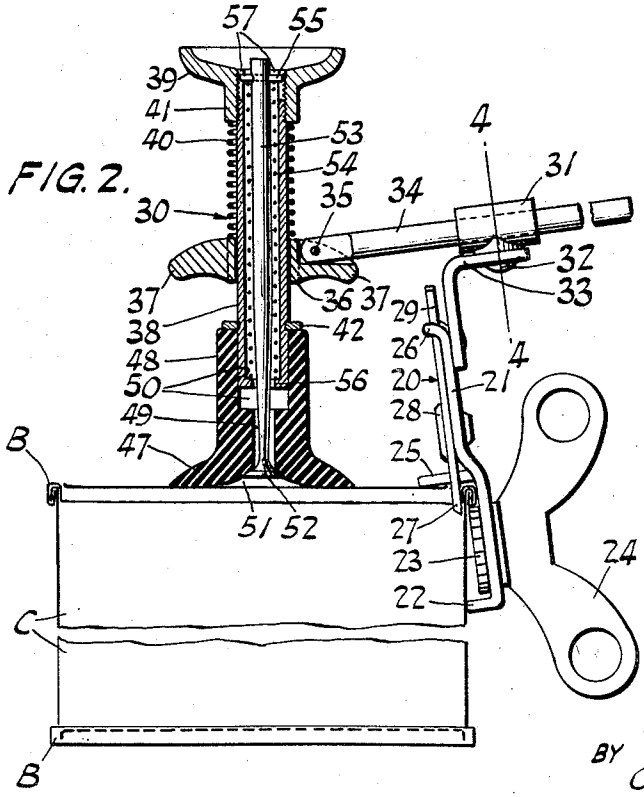
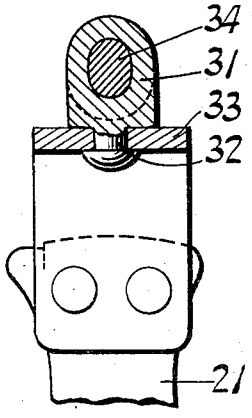


FIG. 4.



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CAN OPENER

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2 Claims. (Cl. 30—124)

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This invention relates to can openers operative completely to sever the top of the can.

Prior constructions so operative have the disadvantage of the liability of the severed top falling into the can.

The objects of the invention are to overcome this objection; and to provide a can opener so operative which will be conveniently adaptable to cans of various diameters, will automatically raise the can top from the can, may be actuated to effect the transfer of the severed can top to a position clear of the can, and will enable the facile and immediate release of the can top so transferred whereby the severed can top may be discharged clear of the can.

In the accompanying drawing:

Figure 1 is a perspective view showing the improved can opener in position for operation.

Figure 2 is a vertical sectional view of the can opener in the relation shown in Figure 1.

Figure 3 is a plan view of the can opener in the relation shown in Figures 1 and 2, the availability of the device for cans of standard rectangular cross section being indicated by dot and dash lines.

Figure 4 is a detail sectional view along the line 4—4 of Figure 2.

The drawing shows the ordinary cylindrical can C in which food products are dispensed, its end walls being connected to its cylindrical wall by the usual interlocking joints which provide peripheral beads B.

The can top severing mechanism 20, may be of any suitable construction. The standard construction shown includes a body member 21 having at its lower end an inward projection 22 for abutting engagement with the cylindrical can wall at a point suitably below the upper bead B and immediately above the projection 22 a feed wheel 23 for engagement with the under side of the upper bead B, the pintle (not shown) which carries this wheel being journalled in the member 21 and carrying at its outer end the usual finger piece 24. The member 21 carries lower and upper stops 25 and 26, the stop 25 overlying the upper bead B and serving to locate the wheel 23 beneath the bead, thereby to prevent canting of the member 21 about the bead during the operative rotation of the wheel 23 by the finger piece 24. The cutter 27 is pivotally secured below center, as at 28, to the member 21, its upper portion being of extent suitable to provide a finger piece 29. Its lower end is formed and sharpened to puncture the top of the can, and when the cutting mechanism is moved about the periphery

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of the can by the clockwise rotation of the thumb piece 24, to cut the top from the upper bead B. The cutter, when not in use, has an inoperative horizontal position in which it rests by gravity against the stop 25. When the member 21 is applied to the can the cutter 27 is moved by the finger piece 29 until it reaches a vertical position in which its further movement is arrested by the stop 26. In such position the active lower end of the cutter has punctured the can top and started the kerf which is completed in the clockwise peripheral direction by the peripheral movement of the cutting mechanism effected as aforesaid.

The mechanism designated generally as 30, which engages the can top in order to effect its removal, transfer and discharge is operatively connected to the can top severing mechanism. The operative connections between the mechanisms include a sleeve 31 which has a swivelled mounting 32 upon an outwardly and laterally extending ear 33 carried by the upper portion of the member 21. The sleeve 31 has a non-circular axial bore in which a rod 34 of conforming cross section is slidably mounted. At its inner end the rod 34 is pivotally connected, as at 35, to a projecting part of the can top removing mechanism 30. By reason of the slidable mounting of the rod 34 in the sleeve 31 and the pivotal connection 35 the space between the mechanisms 20 and 30 will be automatically accommodated to the particular diameter of the can. It follows that a device embodying the invention may be used upon cans of varying diameters within a wide range.

The mechanism 30 includes a collar 36 having finger engageable wings 37, one of which serves for the pivotal connection 35 of the rod 34. The collar 36 is loosely mounted upon a tubular post 38 which occupies a vertical position during the can top severing operation and projects above and below the collar. The post 38 carries at its upper end a suitable hand piece or knob 39 which is preferably cup-shaped as shown and is formed with a central boss 41 by means of which it may be conveniently mounted upon the upper end of the post by threaded engagement.

A helical expansion spring 40 surrounds the post 38 and bears at its upper end against the boss 41 and at its lower end against the collar 36, upward movement of the post consequent to the pressure of the spring being limited by a stop collar 42 secured to the post below the collar 36.

The lower end of the post 38 carries a vacuum cup 47 of rubber or any other appropriate flexible and resilient material. The cup 47 is formed with an upright central boss 48 having a central opening 49 which extends to the cavity 51 of the inner or engaging face of the cup and is open at its opposite end to an opening 50 of greater diameter extending to the outer flat face of the boss. The vacuum cup 47 is frictionally secured to the post 38 by forcing the lower end of the post, to the extent permitted by the collar 42, into the opening 50. The openings 49 and 50 and the interior of the post 38 provide a continuous air passage between the cavity 51 and the outer end of the post.

The cavity 51 has the usual concave form and provides a seat for a normally closed valve 52 having a conical engaging face. The valve 52 is carried at the lower end of a stem 53 which extends through the air passage aforesaid and projects suitably beyond the upper end of the post 38. The valve 52 is held normally seated by a helical expansion spring 54 located within the post 38 and bearing at its upper end against a cross pin 55 carried by the stem 53 and at its lower end against a shoulder 56 at the lower end of the post 38. The ends of the pin 55 project into diametrically opposite slots 57 formed in the upper end portion of the post 38.

In the use of the device the can top severing mechanism 20 is applied to the can as above described (and as shown in Figures 1 and 2) and the can top removing mechanism 30 is centered upon the top of the can, such centering being provided for by the slidable engagement of the rod 34 in the sleeve 31. As thus centered the collar 36 is held by the spring 40 in the lowermost position permitted by the linkage 34. The heel of the hand (or the thumb) is then applied to the knob 39 and the index and second fingers are engaged under the wings 37, the knob 39 and post 38 being then pushed down in opposition to the pressure of the spring 40. As the knob is pushed down the vacuum cup is flattened and by the concomitant application of hand pressure to the projecting upper end of the stem 53, the downward movement of which relative to the post 38 is made possible by the slots 57, the valve 52 is opened and the air under pressure in the cavity 51 escapes past the valve and through the continuous air passage aforesaid. When the vacuum cup has thus been flattened the pressure upon the knob 39 and stem 53 is released, the valve 52 is reseated by the spring 54, and the vacuum cup, by virtue of its resilience and flexibility, assumes its normal operative shape in which the volume of the cavity 51 is increased, the marginal portion of the vacuum cup the while having sealing engagement with the top of the can in the usual manner whereby a partial vacuum is created in the cavity 51 which is amply sufficient firmly to secure the can top removing mechanism to the top of the can. The cutter 27 is then moved to its vertical operative position, puncturing the can and starting the kerf, all as above described. The thumb piece 24 is then rotated clockwise to effect the clockwise movement of the can top severing mechanism 20 in peripheral relation to the can. The movement of the mechanism 20 is continued until the cutter completes a circular kerf, thereby severing the can top from the upper bead B.

The pressure of the spring 40 is exerted continuously upon the boss 41 during the can top severing operation whereby when the can top is completely severed the post 38, carrying with it the vacuum cup and the top of the can, is raised until its movement is limited by the engagement of the collar 42 against the collar 36. The can top holding mechanism may then be swung about the pivot 32 in order to move the elevated can top to a position clear of the can, that is to say at one side of the can. Thereupon the valve 52 may be opened to break the vacuum in the cavity 51 with the resultant release of the can top. Obviously the device as an entirety may be removed from the can at the completion of the severing operation and the can top discharged at a remote point, i. e. into any suitable waste receptacle.

The swivelled sleeve 31 and the linkage rod 34, slidable therein, considered as operative connections between the can top severing mechanism 20 and the can top holding mechanism 30, provide for the use of the device with cans of rectangular outline having curved corners. This is shown in Figure 3 by dot and dash lines, the line X representing a can of rectangular cross section and the lines Y representing the device. In such use the swivel mounting of the sleeve 31 and the slidable mounting of the rod 34 permit the relative shifting of the mechanisms 20 and 30 in the radial direction, pursuant to the movement of the severing mechanism 20 in conformity to, and about, the upper margin of the can, without disturbing the centered position of the mechanism 30 in holding and sealing engagement with the can top.

Since the collar 36 is loosely mounted upon the post 38 the latter may turn about its axis relatively to the collar. Thereby the can top engaging mechanism is available for use with can top severing mechanism of the wall mounted type in which the can rotates about its axis relatively to the severing mechanism, the connections between the two mechanisms being the same as in the embodiment disclosed wherein, as above described, the severing mechanism is movable peripherally about the can.

In the subjoined claims words indicative of positions such as "horizontal" and "vertical" are, of course, used with reference to the operative position of the device as shown in the drawing and as herein described.

I claim:

1. A can opener having a can top engaging mechanism supported at a fixed point and which comprises a vacuum cup for sealing engagement with the can top, a post carrying the vacuum cup, a collar loosely mounted upon the post above the vacuum cup and which is utilized in the support of the mechanism from the fixed point, the post having a shoulder on its upper portion, a spring mounted on the post between, and bearing against, the collar and the shoulder, the spring urging the collar and the shoulder away from one another, said post and vacuum cup being formed to provide a continuous air passage between the cavity of the vacuum cup and the upper end of the post, a valve for normal seating engagement upon the surface of the vacuum cup cavity sealing said cavity from said passage, the valve having a stem which projects beyond the upper end of the post, and a spring mounted within the post to act on said stem, thereby to hold the valve normally closed.

2. A can opener having a can top engaging mechanism supported at a fixed point and which comprises a vacuum cup for sealing engagement

with the can top, a post carrying the vacuum cup, a collar loosely mounted upon the post above the vacuum cup and which is utilized in the support of the mechanism from the fixed point, the post having a shoulder on its upper portion, a spring mounted on the post between, and bearing against, the collar and the shoulder, the spring urging the collar and the shoulder away from one another, the post carrying a knob at its upper end, the collar having finger pieces, the post and the vacuum cup being formed to provide a continuous air passage between the cavity of the vacuum cup and the upper end of the post, a valve for normal seating engagement upon the surface of the vacuum cup cavity normally sealing said cavity from said passage, the valve having a stem which projects beyond the upper end of the post with its projecting part exposed

through the knob, and a spring mounted within the post to act on said stem, thereby to hold the valve normally closed and to hold the stem in a position from which it may be depressed by finger pressure applied to its projecting part.

EDWARD MESIK.

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