Oct. 27, 1953 E. R. BIRDSALL 2,656,598

CAN OPENER

Filed Oct. 31, 1952 2 Sheets-Sheet 1

Fig. 1

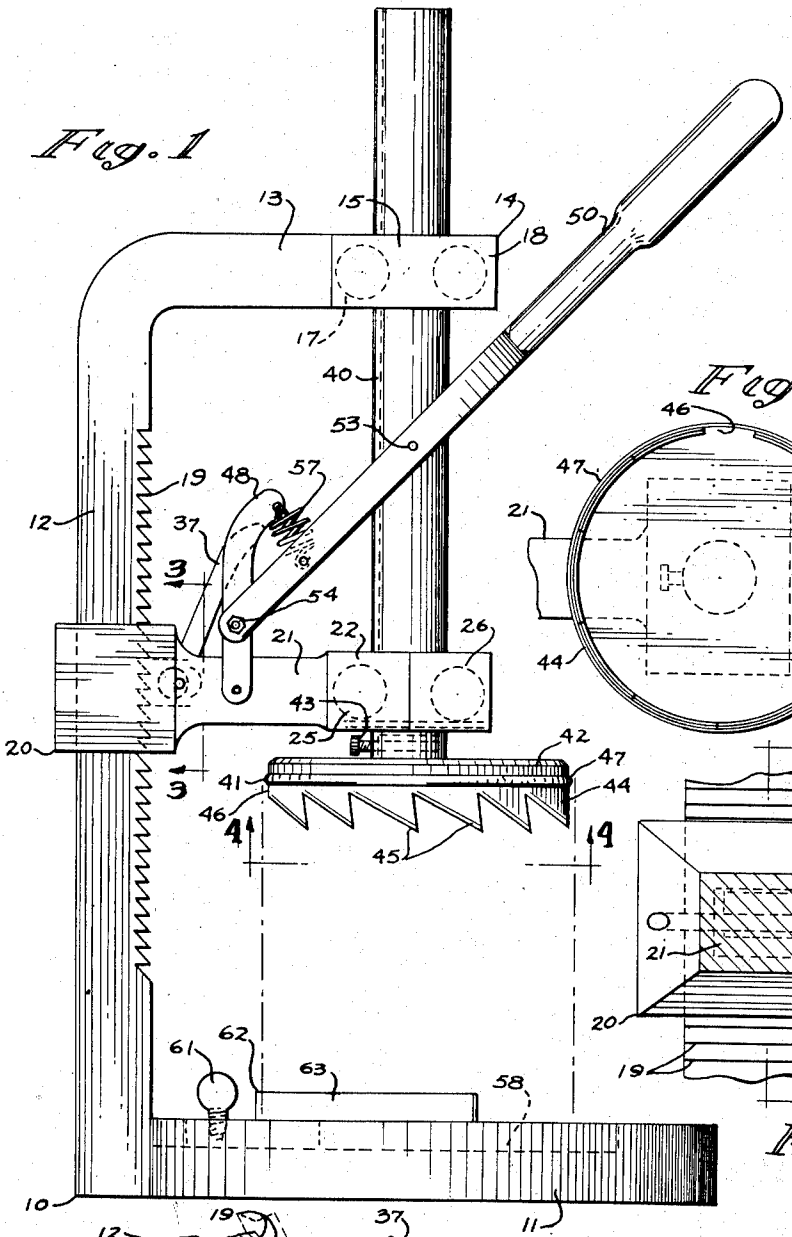
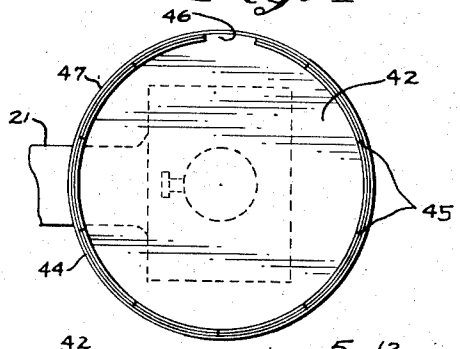


Fig. 4



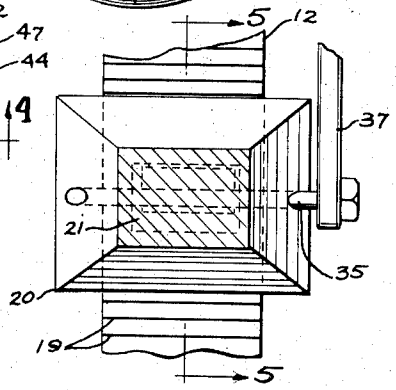


Fig. 3

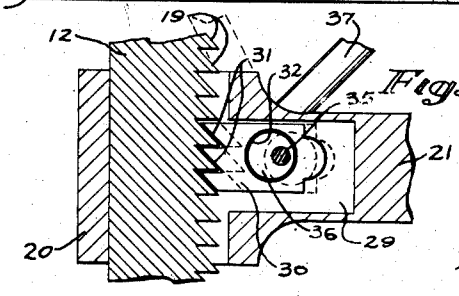


Fig. 5

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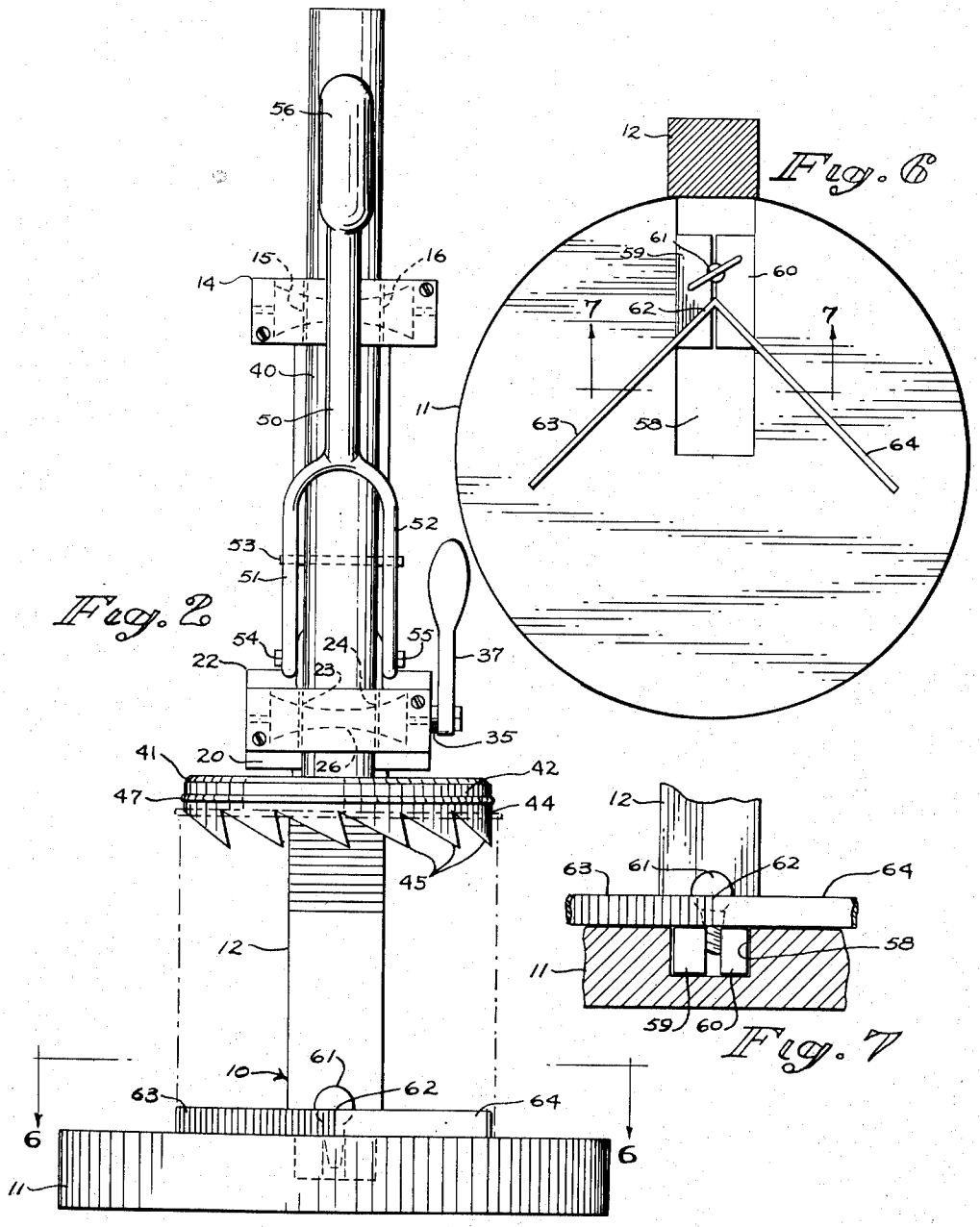

Fig. 2

Fig. 6

Fig. 7

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UNITED STATES PATENT OFFICE

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CAN OPENER

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Application October 31, 1952, Serial No. 318,057

4 Claims. (Cl. 30—5.5)

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This invention relates to can openers and more particularly to a can opener adapted to be mounted on a fixed support and manually operated by a pivoted lever for quickly opening cans in rapid succession.

It is among the objects of the invention to provide an improved can opener which can be rigidly mounted on a fixed support to receive in rapid succession cans disposed in upright position and provide in the tops of the cans openings through which the contents of the cans can be discharged; which provides openings of sufficient size for convenient discharge of the can contents including such contents as canned peach halves and solid pack tomatoes; which will receive cans of different sizes and position the cans for removing the can tops or cutting openings in the tops; which is effective to open a can by a single movement of a manually operated lever; which has a can opening cutter and means accurately guiding the cutter in its can opening movements; which is easily adjustable for cans of different heights; and which is simple and durable in construction, economical to manufacture, easy to use, and positive and effective in operation.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawings in which:

Figure 1 is a side elevational view of the can opener illustrative of the invention;

Figure 2 is a front elevational view of the can opener illustrated in Figure 1;

Figure 3 is a fragmentary cross sectional view on the line 3—3 of Figure 1;

Figure 4 is a bottom plan view of the can cutter looking from the line 4—4 of Figure 1;

Figure 5 is a fragmentary cross sectional view on the line 5—5 of Figure 3;

Figure 6 is a transverse cross sectional view on the line 6—6 of Figure 2; and

Figure 7 is a fragmentary cross sectional view on the line 7—7 of Figure 6.

With continued reference to the drawings, the can opener comprises a frame, generally indicated at 10, including a base 11 illustrated as a flat plate of substantially circular shape, and a standard 12 secured at one end to the base at the edge of the latter and extending upwardly from the base substantially perpendicular thereto. The standard is of square or rectangular cross sectional shape and has at its end remote from the base a perpendicularly extending portion 13 provided at its distal end with a bifurcated formation 14 including spaced apart and

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substantially parallel legs 15 and 16. A pair of longitudinally concave rollers 17 and 18 extend between the legs 15 and 16 and are journaled at their ends on these legs in spaced apart relationship to each other. Between the base 11 and the top end portion 13 the standard 12 is provided on the side thereof nearest the base with a series of abutment teeth 19 the bottom faces of which are substantially perpendicular to the longitudinal center line of the standard and the top surfaces or faces of which are inclined outwardly and downwardly.

A sleeve structure 20 of rectangular cross sectional shape surrounds the standard 11 and an arm 21 extends from one side of the sleeve structure 20 substantially perpendicular to the standard 11 and is provided at its end remote from the standard with a bifurcated formation 22 providing spaced apart and substantially parallel legs 23 and 24. Longitudinally concave rollers 25 and 26 are disposed between the legs 23 and 24 and journaled at their opposite ends on these legs in spaced apart relationship to each other.

The arm 21 is provided in its end adjacent the sleeve structure 20 with a longitudinally extending recess 29 opening at one end to the interior of the sleeve structure 20 and a block 30 is disposed in the recess 29 and has on one end thereof abutment teeth 31 which are engageable with the abutment teeth 19 on the standard 12 to releasably lock the sleeve structure 20 and arm 21 in selected positions of adjustment longitudinally of the standard 12.

The block 30 is provided with a circular aperture 32 extending transversely therethrough and the arm 21 at opposite sides of the recess 29 therein is provided with registering apertures receiving a shaft 35 having a diameter materially less than the diameter of the opening 32 in the block. A cam 36 is disposed in and substantially fills the opening 32 in the block 30 and this cam is eccentrically mounted on the shaft 35 so that when the shaft is rotated in one direction the cam will move the block 30 upwardly and toward the standard 12 until the teeth on the block are fully engaged with the teeth on the standard and upon rotation of the shaft in the opposite direction will move the block 30 downwardly and away from the standard 12 so that the teeth on the block are clear of the teeth on the standard and the arm and sleeve structure can be moved up and down longitudinally of the standard. A small lever 37 is connected to the shaft 35 at one side of the arm 21 for rotating the shaft to move the latch block 30 in the manner indicated above.

The bifurcated structure 14 together with the rollers 17 and 18 and the perpendicularly extending portion 13 of the standard 12 constitutes an upper plunger guide and the structure including the sleeve 20, the arm 21, the bifurcated structure 22 and the rollers 25 and 26 constitutes a lower plunger guide which is adjustable along the standard 12 toward and away from the base 11 and which can be locked in selected positions of adjustment along the standard by the mechanism including the block 30, shaft 35, eccentric 36 and lever 37.

A plunger 40 in the form of an elongated shaft of cylindrical shape extends slidably through the upper and lower plunger guides between the rollers 17 and 18 of the upper guide and between the rollers 25 and 26 of the lower guide and is longitudinally movable through the plunger guides toward and away from the base 11, this plunger preferably having its longitudinal center line substantially parallel to the longitudinal center line of the standard 12.

A cutter 41 is mounted on the lower end of the plunger 40 nearest the base 11 and comprises a circular disc 42 having a centrally located boss thereon received in a socket in the adjacent end of the plunger 40 and secured in the socket by suitable means, such as the set screw 43, and an annular and preferably circular band 44 of a hard metal alloy extending marginally around the disc 42 and projecting perpendicularly from the disc in a direction away from the plunger 40. The cutter band 44 has its edge remote from the disc serrated to provide cutting teeth 45 of substantially triangular shape. Each tooth has on one side thereof a cutting edge inclined at an acute angle to the plane of the adjacent face of the disc 42 and has its other edge disposed at an obtuse angle to the plane of the disc so that the point of each tooth slightly overlies the cutting edge of the adjacent tooth. With this arrangement, when the teeth are forced through the top of a can they will make a continuous cut and no portions of unsevered metal will be left between adjacent teeth. The cutter band 44 does, however, have a discontinuity 46 therein to leave between the severed portion of a can top and the remainder of the top a narrow width of unsevered metal which maintains the severed portion attached to the remainder of the top, this connecting portion preferably having a width of approximately one-quarter of an inch.

Adjacent its side remote from the plunger 40 and from which the cutting teeth 45 project, the disc 42 is provided with an external annular bead or flange 47 which presses against the top of a can around the cut made by the teeth 45 to force any rough burr or other formation on the can top inwardly so that the edge of the top around the opening provided therein will be smooth and will not injure the hands of a person handling the can after the can has been opened.

A post 48 has at one end a bifurcated portion straddling and pivotally connected to the arm 21 between the sleeve 20 and the bifurcated formation 22 and this post extends upwardly from the arm 21 between the standard 12 and the plunger 40 and is curved toward the plunger at its upper end. A hand lever 50 has at one end an elongated bifurcated or U-shaped portion providing spaced apart and substantially parallel legs 51 and 52 and this U-shaped portion straddles the plunger 40 which is pivotally connected to the U-shaped portion of the lever 50 near the closed

end of such U-shaped portion by a pivot pin 53 extending through registering apertures in the plunger 40 and in the legs 51 and 52 of the U-shaped or bifurcated portion of the handle. At the open end of the U-shaped portion of the handle, the legs 51 and 52 are disposed one at each side of the post 48 and pivotally connected to the post by the pivot screws 54 and 55 respectively.

The lever 50 projects outwardly from the side of the plunger 40 remote from the standard 12 and is provided on its distal end with a hand grip 56 which is used to force the distal end of the lever upwardly and downwardly and consequently move the plunger 40 and cutter 41 away from and toward the base 11 of the frame 10 of the can opener.

A tension spring 57 is connected between the upper end of the post 48 and the bifurcated portion of the lever 50 between the pivot pin 53 and the pivot screws 54 and 55 and acts to resiliently urge the plunger 40 and cutter 41 in a direction away from the base 11.

The base 11 is provided with a radially disposed groove or recess 58 in its upper surface which groove is of rectangular cross sectional shape and opens to the peripheral surface of the base within the width of the face of the standard 12 nearest the base. A pair of blocks 59 and 60 shorter than the groove 58 are slidably disposed in the groove in side by side relationship to each other and a thumb screw 61 is threaded into a tapped, tapered hole provided in the adjacent faces of both blocks and is effective to wedge the blocks apart and into binding relationship with the sides of the groove 58 to lock the blocks in selected positions of adjustment longitudinally of the groove when the screw is threaded inwardly of the blocks. A can abutment member 62 is secured to the block 60 and comprises straight legs 63 and 64 of elongated, rectangular cross sectional shape joined together at the corresponding ends and disposed at right angles to each other. The abutment member 62 is secured to the block 60 near the end of this block remote from the standard 12 and near the juncture of the two legs 63 and 64 of the abutment member in a manner such that the legs 63 and 64 extend away from the standard 12 and a line bisecting the angle between these legs is substantially parallel to the longitudinal center line of the grove 58.

The abutment 62 can be adjustably moved toward and away from the standard 12 and locked in selected positions of adjustment, being moved toward the standard when it is desired to place on the base a can larger than a can for which the abutment was previously set and being moved away from the standard to receive cans of smaller diameter. By properly positioning the abutment 62 the cutter 41 can be approximately centered on the tops of cans of different sizes.

In order to open cans with the device, with the abutment 62 and the lower plunger guide adjusted for the particular size of cans to be opened and with the can opener mounted in upright position on a firm support, a can is placed on the base or platform 11 and moved into contact with the abutment 62, the cutter 41 and plunger 40 being held in elevated position by the spring 57. With the can in position on the base, the hand grip 56 on the lever 50 is grasped and the lever is forced downwardly moving the cutter 41 toward the top of the can and forcing the cutter teeth 45 through the can top to sever a portion of the top from the remainder of the top and provide an opening in the top. The lever is then released

for upward movement by the spring 57 or is manually raised, if necessary, to free the cutter from the can and the opened can is then removed from the base 11 and an unopened can placed on the base and the operation repeated.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the range and equivalency of the claims are, therefore intended to be embraced therein.

What is claimed is:

1. A can opener comprising a frame adapted to be mounted on a fixed support and including a base, a standard adapted to extend upwardly from the base and a first plunger guide on said standard at the end thereof remote from said base, a second plunger guide mounted on said standard between said base and said first plunger guide for movements of adjustment toward and away from said base, means releasably locking said second plunger guide in selected positions of adjustment along said standard, a plunger extending slidably through said plunger guides for longitudinal movements toward and away from said base, a toothed cutter mounted on the end of said plunger adjacent said base for cutting openings in the tops of cans supported in upright position on the base, and a hand lever pivotally mounted on said second plunger guide and connected to said plunger for moving said plunger and said cutter toward and away from said base.

2. A can opener comprising a frame adapted to be mounted on a fixed support and including a base, a standard adapted to extend upwardly from the base and a first plunger guide on said standard at the end thereof remote from said base, a second plunger guide mounted on said standard between said base and said first plunger guide for movements of adjustment toward and away from said base, means releasably locking said second plunger guide in selected positions of adjustment along said standard, a plunger extending slidably through said plunger guides for longitudinal movements toward and away from said base, a toothed cutter mounted on the end of said plunger adjacent said base for cutting openings in the tops of cans supported in upright position on the base, a hand lever pivotally mounted on said second plunger guide and connected to said plunger for moving said plunger and said cutter toward and away from said

base, and spring means operatively connected between said second plunger guide and said plunger resiliently urging said plunger and said cutter in a direction away from said base.

3. A can opener comprising a frame adapted to be mounted on a fixed support and including a base, a standard adapted to extend upwardly from the base and a first plunger guide on said standard at the end thereof remote from said base, a second plunger guide mounted on said standard between said base and said first plunger guide for movements of adjustment toward and away from said base, means releasably locking said second plunger guide in selected positions of adjustment along said standard, a plunger extending slidably through said plunger guides for longitudinal movements toward and away from said base, a toothed cutter mounted on the end of said plunger adjacent said base for cutting openings in the tops of cans supported in upright position on the base, and a hand lever pivotally mounted on said second plunger guide and connected to said plunger for moving said plunger and said cutter toward and away from said base, said cutter comprising an annular body having cutting teeth on the edge thereof remote from said plunger and having a discontinuity therein to leave a portion of the severed part of a can top intact to maintain the severed part attached to the remainder of the top.

4. A can opener comprising a frame adapted to be mounted on a fixed support and including a base, a standard adapted to extend upwardly from the base and a first plunger guide on said standard at the end thereof remote from said base, a second plunger guide mounted on said standard between said base and said first plunger guide for movements of adjustment toward and away from said base, means releasably locking said second plunger guide in selected positions of adjustment along said standard, a plunger extending slidably through said plunger guides for longitudinal movements toward and away from said base, a toothed cutter mounted on the end of said plunger adjacent said base for cutting openings in the tops of cans supported in upright position on the base, a hand lever pivotally mounted on said second plunger guide and connected to said plunger for moving said plunger and said cutter toward and away from said base, and abutment means mounted on said base and movable to different positions of adjustment thereon to properly position cans of different sizes relative to said cutter.

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No references cited.