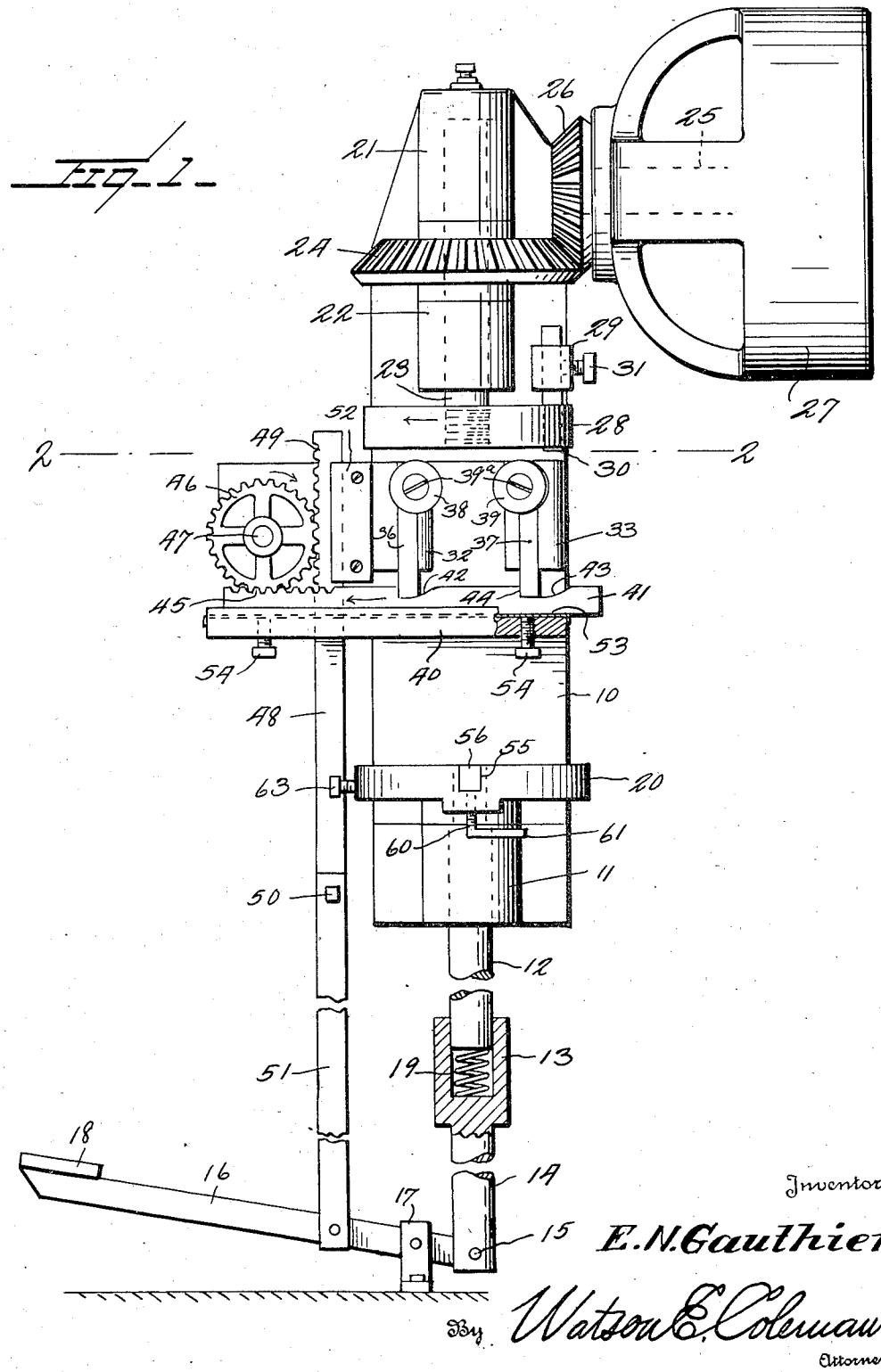
Jan. 21, 1936. E. N. GAUTHIER 2,028,202

MACHINE FOR UNSEALING CAN TOPS

Filed April 11, 1935 2 Sheets-Sheet 1

Fig. 1



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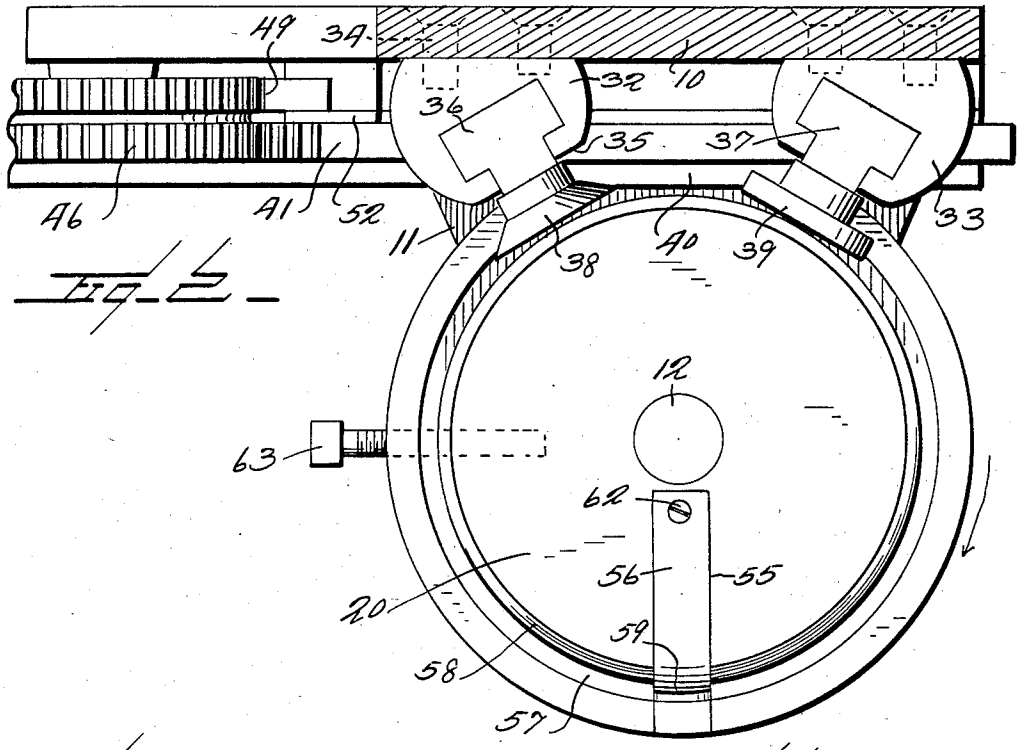


Fig. 2

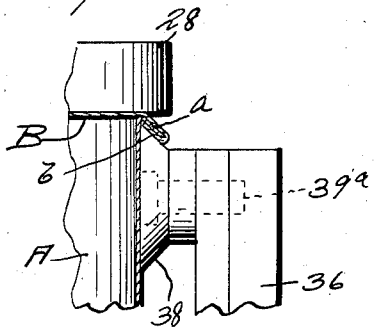


Fig. 4

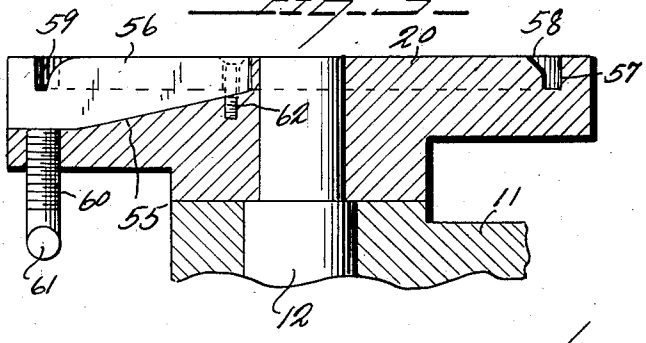


Fig. 3

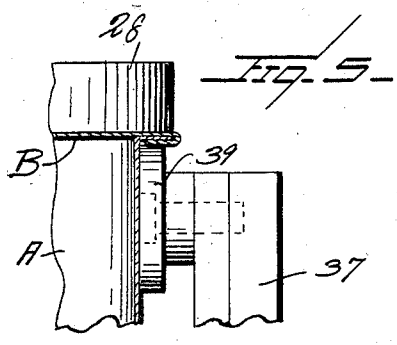


Fig. 5

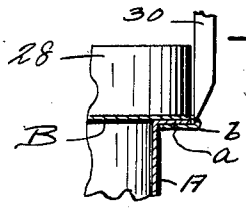


Fig. 6

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UNITED STATES PATENT OFFICE

2,028,202

MACHINE FOR UNSEALING CAN TOPS

Emile N. Gauthier, Rumford, Maine

Application April 11, 1935, Serial No. 15,923

4 Claims. (Cl. 113—1)

This invention relates to devices for unsealing or opening those cans wherein the cover or lid of the can is engaged by a reverted flange which embraces the margin of the lid and is normally forced downward against the side wall of the can, such cans being known as lock seam cans, and the main object of this invention is to provide means whereby such a can as this may be unsealed and the cover removed without damaging the body of the can, and a further object in this connection is to provide means which will unseal the top of the can and permit its being taken off, and which will permit a new top to be put on the can and the can re-sealed. This is oftentimes necessary in canneries where cans have been sealed improperly and are leaky. It is then necessary to take off the imperfect cover or lid, replace it and again bend down the margin of the lid and the flange on the upper end of the can body.

A further object in this connection is to provide means whereby the can top or lid may be unsealed from the body of the can, the contents poured out, other material placed in the can and the can sealed without the necessity of throwing away the body of the can.

A further object is to provide means on the same machine whereby the edge of a can may be flanged outward in preparation for the application of a cover thereto.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings wherein:

Figure 1 is an elevation of a machine constructed in accordance with my invention;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a sectional view through the can support showing means on the can support whereby the can support may be utilized to flange a can;

Figures 4, 5 and 6 are fragmentary sectional views through the can and through a portion of the mechanism showing the several steps in unsealing a can.

Referring to the drawings, 10 designates a back plate or frame upon which the several parts are mounted. Extending outward from the lower end of the plate 10 is a bearing 11 and extending upward through this bearing is a supporting rod 12. The lower end of this supporting rod fits within a socket 13 formed on the upper end of a supporting rod section 14, which is pivotally connected at 15 to a pedal 16, which is pivoted upon the bracket 17, and is provided with a foot piece or treadle 18 at its outer end. This pedal is designed to be forced upward toward the plunger rod 12. A coil compression spring 19 is disposed within the socket 16 between the plunger rod 12 and the plunger rod section 14. The plunger rod section 12 carries upon it the can supporting plate 20. It will be understood that the supporting head or plate 20 and the shaft and the plunger rod 12 are capable of rotation within the socket 13. Mounted in bearings 21 and 22 projecting from the plate 10 in alinement with the plunger rod 12 is a vertical shaft 23 carrying a beveled gear wheel 24. Supported at right angles to the shaft 23 is a shaft 25 carrying a beveled gear wheel 26 which meshes with the beveled gear wheel 24. This shaft 25 is driven by any suitable means which may be a motor or might be a band wheel 27 driven from any suitable source of power. The rotation of the shaft 25 will, of course, cause the rotation of the shaft 23. This shaft 23 carries upon its lower end the plate or head 28. Mounted in a tubular supporting eye or bracket 29 just behind this rotatable head 28 is a knife 30, which is also shown in Figure 6, this knife 30 being adjustable through the bracket 29 so that it projects very slightly below the rotatable head 28. The knife is adjusted by loosening the set screw 31, adjusting the knife and then re-setting the set screw, but it will be understood that any other suitable means may be used whereby the knife can be adjusted to compensate for wear or to suit any particular style of can. The purpose of the knife will be later stated.

Below the head 28, there are attached to the wall 10 or frame, two vertical guides designated 32 and 33. These guides are shown as being held to the plate 10 by means of the screws 34. Each of these guides has a face 35 which is tangential to a circle described around the axis of the shaft 23 or shaft section 12. This face of each of these guides 32 is formed with a T-shaped vertical slot and sliding through these slots are the slides 36 and 37, respectively, which at their upper ends carry the unflanging wheels 38 and 39, respectively. The wheel 38 has its rim beveled inward and radially, as shown clearly in Figure 3. The rim of the wheel 39 is concentric to the axis of the wheel 39. These wheels 38 and 39 are rotatably mounted upon pins or bearing screws 39a.

The slides 36 and 37 extend downward below the guides 32 and 33, as shown in Figure 1. The supporting member 10 carries upon it below the lower ends of the guides 32 a transverse slideway

40 and operating within this slideway is a sliding bar 41 having two recesses 42 and 43 formed in its upper face. As shown in Figure 1, the left hand end of each recess terminates in a vertical stop wall 44. The recess extends longitudinally of the bar 41 from this stop wall and is gradually inclined upward.

It will thus be seen that as the sliding bar 41 is shifted to the left in Figure 1, that it will cause the slides 36 and 37 to move upward and that they will be held in this raised position until the slide bar 41 moves back to the position shown in Figure 1. For the purpose of shifting this slide bar toward the left in Figure 1, I form the slide bar with the rack teeth 45. Meshing with these teeth are the teeth on a gear wheel 46 mounted upon a shaft 47 extending outward from the rear plate 10. For the purpose of oscillating this wheel 46, I provide a vertical rack bar 48 having teeth 49 which engage the teeth of the gear wheel 46, the lower end of this rack bar being flexibly connected at 50 to a link 51, which link is pivoted at its lower end to the pedal lever 16. Thus it will be seen that as the pedal is depressed, the plate 20 is moved upward and the rack bar 48 is moved downward, turning the gear wheel in the direction of the arrow in Figure 1, and shifting the slide 41 in the direction of the arrow thereon, thus forcing the wheels 38 and 39 upward. As shown in Figure 1, the rack bar 48 is disposed behind the slide 41 and the wheel 46 is of sufficient thickness to permit both sets of rack teeth to engage the wheel. The vertically sliding rack bar 48 is mounted in a guide 52 which acts to hold this rack bar to its work and against the teeth of the gear wheel 46.

In order that the slide 41 may be vertically adjusted to take up wear in the wheels 38 and 39 or to adjust these wheels to suit variations in cans, I provide a shim 53 disposed within the groove of the member 40 and provide adjusting screws 54, which can be turned to lift the shim and thus lift the slide bar 41.

In the use of this mechanism for the purpose of unsealing cans, a can is placed upon the rotatable plate 20, the can being placed concentric to this plate 20 and with the flanged rim of the can disposed above the wheels 38 and 39. As soon as the can touches or engages against the rotatable plate 28, it is rotated in the direction of the arrow applied to plate 28 in Figure 1. The depression of the treadle also acts to pull downward on the rack bar 48, which rotates the gear wheel 46 in the direction of the arrow, drawing the slide 41 toward the left and pushing the slides 36 and 37 upward, bringing the wheels 38 and 39 into contact with the under edge of the can. The first wheel to act is the wheel 38, and as shown in Figure 4, the flat inner face of this wheel engages against the side wall of the can A and as the wheel is lifted, the beveled margin of the wheel engages between the outer face of the can body and the reverted margin *b* of a can top B shifting this reverted margin of the can top and the flange *a* of the body of the can outward from a position where the margin of the can top and the flange *a* are parallel with the side wall of the can body to the position shown in Figure 4. The can continues its rotation and the wedged out flange is now engaged by the wheel 39, as shown in Figure 5, which engagement forces the flange outward to a horizontal position, as shown in Figure 5. As the can is further rotated, this horizontal flange engages with the knife 30, the sharpened edge of this knife cutting into the horizontal portion of the can top B and cutting the can top at the marginal fold, thus completely detaching the can top B from the can A. When the can has made an entire revolution and the can top has been completely separated along its margin from the flange of the can A, the pedal is lowered and the can removed and then another can may be put in place and the operation repeated.

It will be seen that the can itself is not harmed by this mechanism in any way. The can top has been cut off at the fold but the flange *a* of the can remains perfect so that it is an easy matter to replace a can top on the flange *a* and again bend the margin of the can top over this flange and bend the composite flange down flat against the side of the can by machinery which is not part of my invention.

It is sometimes necessary to reflange a can body where the flange has been damaged or where the can body is not provided with a flange, and I have provided mechanism whereby this can be accomplished. To this end, the rotatable head 20, as shown in Figures 2 and 3, is provided upon its upper face with a radial recess 55, the bottom of which is inclined downward and outward and then straight outward, as shown in Figure 3. Disposed within this recess is a member 56 which extends radially outward to the rim of the head or wheel 20. Extending concentrically to the center of the head 20 is a groove 57. The outer wall of this groove extends straight downward but the inner wall extends upward and then centrally, as at 58. This groove is extended across the member 56, as at 59. The outer wall of the groove 59 is perpendicular to the upper face of the head 20 but the inner wall is rounded upward and inward. Extending upward through the head 20 and through the member 56 is an adjusting screw 60, the lower end of the screw having an angular handle 61. The inner end of the member 56 is loosely held to the head by a screw 62. Projecting radially from the head 20 is a stop screw 63, which may be readily removed or replaced. When this stop screw 63 is in position and screwed outward to a sufficient degree, it will strike against the wall 10 and prevent any rotation of the head 20 with the rotating head 28. If now a can be placed in an inverted position upon the head 20 and the head 20 be lifted, the bottom of the can is brought upward against the rotating head 28 and the can is caused to rotate and the beveled face 58 turns the lower edge of the can outward, as shown in Figure 3. By adjusting the member 56 vertically, the extent of this flanging movement may be increased. Of course, where cans are to be flanged in this manner, the slides 36 and 37 with the wheels 38 and 39 are removed from their position in the guides 32 and 33.

The advantages of this machine are obvious from what has gone before. The machine is relatively simple and has been found to be thoroughly effective in practice.

While I have illustrated certain details of construction and arrangement of parts, I do not wish to be limited thereto, as obviously many minor changes might be made therein without departing from the spirit of the invention as defined in the appended claims.

What is claimed is:

1. A machine for removing can tops including an upper driven shaft, a lower shaft formed in two sections, a spring between the two sections of the shaft, a lower can supporting head mounted

upon the lower shaft, an upper can engaging head adapted to engage the top of the can and mounted upon the upper shaft, the heads confronting each other, a treadle connected to the lower shaft whereby the lower shaft and head may be raised to clamp a can between the heads, a support mounted adjacent the heads, vertical guides carried by said support, slides mounted in said guides for vertical movement, a beveled edged flange spreading wheel carried upon the upper end of one of said slides, a flat-faced wheel carried upon the other of said slides, a knife carried upon said support, the wheels and the knife being disposed in the path of movement of the flange, said wheels as they are raised acting to spread the flange and raise it to a horizontal position and the knife impinging against the margin of the raised flange to cut the top of the can at the margin, and means for raising said guides including a slide having cam-shaped recesses in its upper face in which the lower ends of said first named slides project, the second named slide having rack teeth, a gear wheel having teeth engaging the rack teeth, and a rod having rack teeth operatively connected at one end to said pedal and at the other end having its teeth engaging said gear wheel whereby upon the depression of the treadle the gear wheel will be rotated to shift the second named slide in a direction to cam the first named slides upward toward the upper head.

2. A machine of the character described, including a driven shaft, a freely rotatable opposed shaft, one of said shafts being movable toward or from the other shaft, heads carried by said shafts and between which a can may be clamped, a can flange-spreading element disposed in the path of movement of the rim of the can and shiftable toward or from the driven head, a cam reciprocatable to shift said spreading element toward the driven head, and unitary means for shifting the shafts toward each other to clamp a can between said heads and simultaneously shift said cam to its operative position.

3. A machine of the character described, including an upper driven shaft, a lower freely rotatable shaft, a can supporting head on the lower shaft, a can engaging head on the upper shaft, the freely rotatable shaft being movable toward or from the opposed shaft, a can flange-spreading element disposed in the path of movement of the rim of the can and vertically shiftable toward or from the upper head, a cam shiftable in one direction to raise said element toward the upper head and in the other direction to lower said element, and unitary means for reciprocating the second named shaft to thereby clamp a can between the heads and rotate the can and simultaneously to operate the cam.

4. A machine for removing can tops including a driven shaft, an axially alined opposed shaft, one of said shafts being movable toward or from the other shaft, opposed heads carried by said shafts and between which a can is adapted to be clamped, a support disposed to one side of and tangential to the rotating heads and between the fixed head and the movable head, guides extending parallel to the shafts and carried upon said support, slides mounted in said guides, a straight cam movable longitudinally upon said support and having cam faces adapted to engage the adjacent ends of the slides to shift the slides toward the rotatable head, a bevel edged flange-spreading wheel carried upon one of said slides, a flat faced wheel carried upon the other of said slides, a knife carried upon said support, the wheels and knife being disposed in the path of movement of the can flange, said wheels as they are shifted toward the driven head acting to spread the flange and move it to a position perpendicular to the can and the knife impinging against the margin of the raised flange to cut the top of the can at said margin, and unitary means for shifting one of said shafts toward the other and simultaneously shifting said cam in a direction to render the flange engaging wheels operative.

EMILE N. GAUTHIER.