

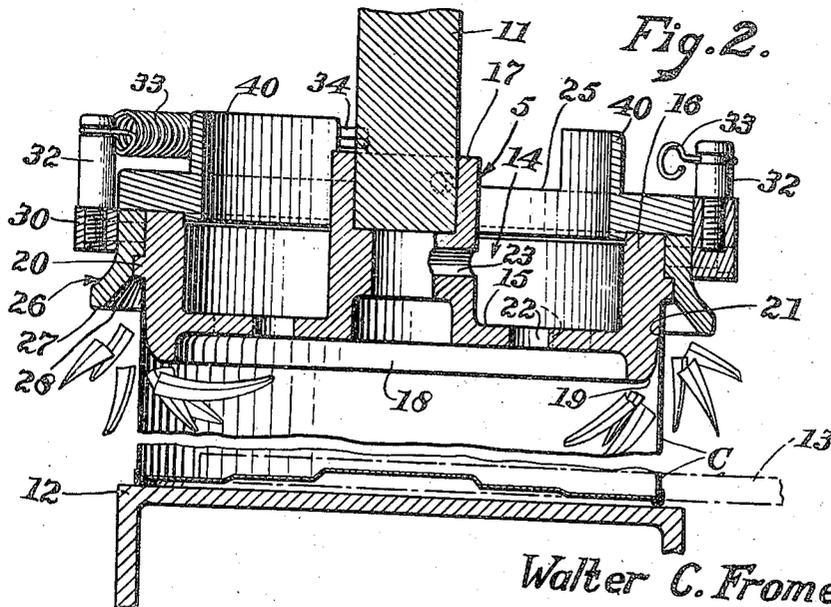
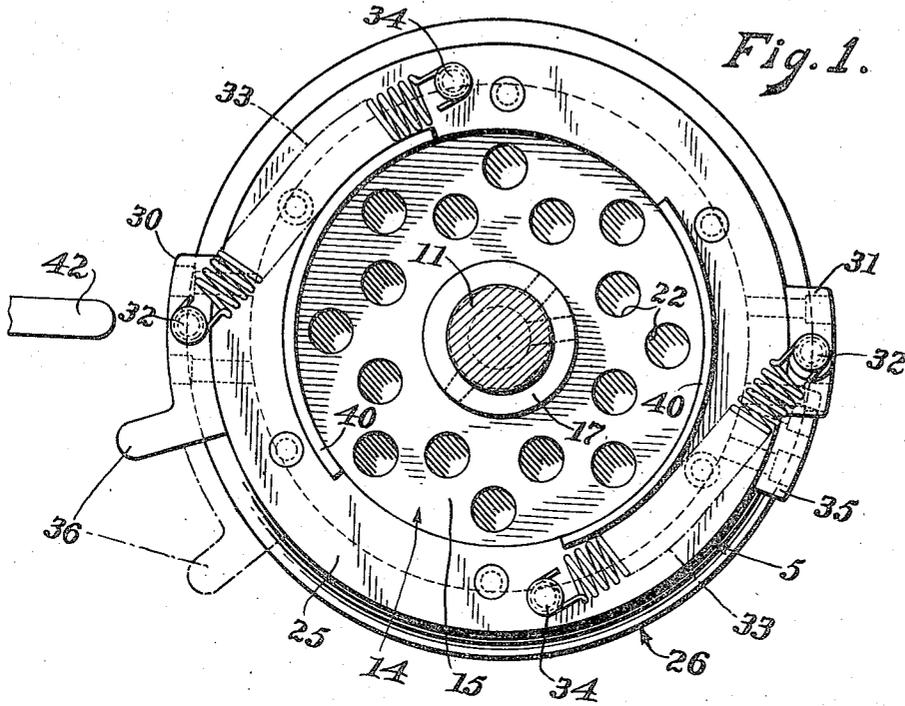
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HEAD SPACING APPARATUS FOR
CONTAINER CLOSING MACHINES

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2 Sheets-Sheet 1



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HEAD SPACING APPARATUS FOR CONTAINER CLOSING MACHINES

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The present invention relates to plunger pad apparatus for container closing machines and, more particularly, to a plunger pad apparatus to compact articles in cans and cut off the portions of articles which hang outside the top edge of a can.

In the packaging of such products as foods in cans it is usual to move a plunger pad into the open mouth of the filled can to insure that the contents will be forced below the top edge of the can before a top or can end is applied by the seaming mechanism. In the handling of products such as string beans, asparagus, greens or other similar products, the action of the above-mentioned plunger pad may leave some of the articles hanging over the edge of the can. When articles are left in this position, it is not possible to firmly apply a can end. As a result, the can may leak so that spoilage results.

An object of the invention is to provide a means to cut off the portions of articles which hang outside the edge of a container.

Another object of the invention is to provide a plunger pad including severing means, the elements being of such design that they will cooperate to force the bulk of the articles down into the can and will sever such articles as may hang or extend over the top edge of the can.

A further object of the invention is to provide a mounting for the plunger pads which will enable them to be readily and automatically operated, preferably with the cans in continuous motion.

Other objects and advantages of the invention will be apparent from the following specification and attached drawing wherein:

Figure 1 is a top plan view of the invention,

Figure 2 is a central axial section, and

Figure 3 is a generally diagrammatic plan view showing the structure for supporting and operating the severing means of the plunger pads.

Referring first to Figure 3, the apparatus of the present invention comprises a plurality of plunger pads 5 supported on a turret 6 continuously rotatable with a shaft 7. Filled cans C are delivered to the apparatus and the plunger pads descend into engagement with the cans as shown in Figure 2. As each plunger pad 5 and its associated can C move in the orbital path defined by the rotary turret, the hereinafter described severing means of the pad will be rotated to cut off the portions of vegetables or similar products which hang over the edge of the can.

Referring to Figures 1 and 2, each plunger pad

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5 is fixed to the lower end of a rod 11 which is vertically reciprocable in the turret 6. A lower table 12 (Figure 2) has a star wheel 13 rotatable above it on shaft 8 to hold the cans in alignment with the plunger pads as disclosed in John A. Woerz patent, No. 2,350,438, issued June 6, 1944.

The central element of each pad 5 comprises a cup-shaped device 14 including a bottom wall 15 and an upstanding annular edge wall 16. An upwardly projecting central hollow boss 17 forms a socket to receive the lower end of the supporting rod 11. An annular flange 18 depends from the periphery of the element 14, the outer lower edge of this flange being rounded as indicated at 19. An outwardly projecting shoulder 20 extends about the outer surface of the edge wall 16 and the peripheral wall 21 provided beneath this shoulder and extending downwardly to the rounded edge 19 is of gradually reducing diameter toward its lower end. The diameter of the wall 21 immediately below shoulder 20 closely corresponds to the inside diameter of the top end of a can C as indicated in Figure 2.

The lower wall 15 of each pad 10 is provided with a plurality of apertures 22 to permit any liquid displaced from a can C to move upwardly into the cup-shaped element 14. The hollow boss 17 may also be provided with an aperture 23 through which liquid flowing up into the boss may reach the exterior of the boss. The fact that element 14 includes the upstanding edge wall 16 will prevent any displaced liquid from being spilled upon the container supporting table 12.

A ring-like element 25 is secured to the upper edge of the central element 14 by means of screws or the like, the element 25 having an outside diameter somewhat greater than the outside diameter of central element 14.

An annular and sleeve-like cutting element 26 surrounds and is rotatable about element 14. As best shown in Figure 2, in radial cross section the cutting element 26 is recessed on its inner surface so that it will be supported upon the radial shoulder 20 of central element 14. Cutting element 26 also includes a lower skirt-like portion 27 having its inner wall 28 inclined outwardly and downwardly. The upper inner edge of the inner wall 28 is directly opposite and closely contacts with the lower outer edge of the shoulder 20 of the non-rotatable central element 14. As is shown in Figure 2, the shoulder 20 is of such outside diameter that it will fully cover the usual top seam flange of a can C with

3 which the device is to be used and the extreme upper portion of the skirt wall 28 will be directly opposite the outer edge of the can flange when the device is in can-engaging position.

The cutting element 26 has an outwardly extending lug 30 secured to one side thereof and a second lug 31 is secured to element 26 at a point diametrically opposite lug 30. Each lug has an upstanding pin 32 secured thereto and a normally contracted coil spring 33 extends from each pin to a corresponding pin 34 fixed to the top of the ring 25. A stop lug 35 is secured to the side of the ring member 25 in the path of the lug 31 and the springs 33 tend to pull the annular cutting device 26 in a clock-wise direction as viewed in Figure 1 to thereby normally hold lug 31 in contact with the stop lug 35.

A radial trip arm 36 is formed integrally with the lug 30 of each cutting or severing element 26 to enable the latter to be rotated about its central element 14 in a counterclock-wise direction; for example, to a position somewhat beyond that indicated in dotted lines in Figure 1. When the arm 36 is released, the springs 33 will return the cutting element 26 to its normal position. In order to prevent the springs 33 from extending over the pocket in the central element 14 and thereby being splashed by displaced liquid from a can, arcuate upstanding shoulders 40 are formed on the inner edge of the ring 25.

The cutting device of the present invention may be automatically operated in connection with a container closing machine, for example, of the type disclosed in said John A. Woerz patent. In such use, the apparatus of the present invention would be positioned immediately in advance of the can top applying means.

Referring to Figure 3, the filled cans will be delivered beneath the present apparatus by an infeed dial 45 in the direction indicated by the arrow associated therewith. Each can will enter a pocket of starwheel 13 rotating with the shaft 7 so that the can will be vertically aligned with a plunger pad 5. As the shaft 7 rotates, the plunger pads will descend to the position indicated in Figure 2 by the action of a cam track cooperating with the rods 11, as described in said Woerz patent.

Continued rotation of turret 6 will move the plunger pad 5 under discussion adjacent a trip 42 fixed to the base of the machine so that the plunger pad arm 36 will contact with the trip.

Contact of trip 42 with a trip arm 36 will cause the severing sleeve 26 to be rotated in a clock-wise direction about the axis of a pad 5 as indicated by the dotted line showing 5A of Figure 3. However, as a plunger pad 5 continues to move bodily past the fixed trip 42, its trip arm 36 eventually will be swung so far rearwardly as to clear the trip 42. Then the springs 33 will snap the severing element 26 to the normal position indicated in solid lines in Figure 1.

During further rotation of the turret 6, the plunger pad 5 will lift clear of the can C and the can will then be moved by a conveyor 46 to a top-applying means such as disclosed in the above-mentioned Woerz patent. In accordance with the usual practice, the top will thereafter be sealed upon the can.

Referring in more detail to the operation of each plunger pad 5, when the rod 11 of each pad is moved downwardly toward a can positioned beneath the pad, the central element 14 of the pad will move into the top of the can, as shown in Figure 2. The contents of the can will there-

by be forced downwardly in the can. Because the upper portion of outer surface 21 of the central element 14 closely corresponds to the proper inner diameter of the can, the can will not be distorted by the downward pressure exerted thereon. This downward pressure serves to hold the can against rotation with the severing sleeve 26.

10 Although cans filled with vegetables or similar products usually contain brine or other liquid and are well filled, there are always small air pockets within the contents which permit the latter to be more thoroughly compacted without danger of being crushed.

15 While the downward movement into a can of a pad 5 will force contents such as string-beans, asparagus, greens, etc. downwardly into the can, nevertheless, if any such articles happen to overhang the top edge of the can, they may remain in the overhanging position when a pad not equipped with a cutting device moves down into the can. Also, when a non-cutting pad rises, the articles will be left hanging over the edge of the can.

20 The difficulties just described as resulting from the use of the ordinary or non-cutting plunger pad are eliminated in the present device by the provision of the cutting sleeve 26. In more detail, when the plunger pad has reached the lowermost position illustrated in Figure 2, the cutting sleeve 26 will be rotated in a clock-wise direction as described above so that the upper portion of its inner wall 28 will move opposite and in brushing contact with the outer edge of the top flange of the can. When the cutting device is released and returned by the action of the springs 33, the movement of sleeve 26 along the edge of the can flange will be reversed. As a result of these movements, the portion of any article hanging over the edge of the can will be severed and fall away from 40 the can. The portion of the overhanging article within the can will then drop into the interior of the can.

45 As has been stated above, any liquid displaced from the can will move upwardly through the holes 22 and into the cup-shaped central element 14. Because this element has substantial depth, the displaced liquid cannot overflow its side edges. Therefore, when the device again moves out of the can, the liquid will simply move back into the can through the holes 22.

50 The terminology used in the specification is for the purpose of description and not of limitation, the scope of the invention being indicated in the claims.

55 I claim:

1. In combination, supporting means for a filled and open-topped container, and means to engage the container contents to force them downwardly into the container and to rotate with respect to the container to cut off any contents which overhang the container edge.

2. In combination, supporting means for filled and open-topped containers, pad means adapted to engage the top of the container contents and cutting means extending about and movable upon the periphery of the pad means to cooperate with the edge of the container to cut off any contents which overhang the container edge.

3. In combination, supporting means for filled and open-topped containers, pad means adapted to engage the top of the container contents, cutting means extending about and movable upon the periphery of the pad means to cooperate with 75 the edge of the container to cut off any contents

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which overhang the container edge, and means to move the cutting means about said pad.

4. In combination, pad means to engage the top of the contents of a top-flanged container to force the contents downwardly into the container, a cutting device of arcuate form movable about the periphery of the pad and in contact with the edge of the top flange of the container to thereby sever articles overhanging such flange, and resilient means to move said cutting device in one direction.

5. In combination, a central pad element including a laterally extending shoulder adapted to bear upon the top flange of a can, a sleeve element rotatably mounted upon the pad shoulder the sleeve element including an outwardly and downwardly inclined inner surface having its upper end adjacent the outer and lower edge of the pad shoulder, the sleeve element being adapted to be rotated with respect to the pad shoulder and the flange of a can upon which the shoulder is positioned so that the sleeve element will cooperate with the can flange edge to sever articles hanging over the can flange.

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6. In combination, means to move a filled and open-topped container along a predetermined path, means moving with said first-named means to engage the top of the container, cutting means carried by and rotatable with respect to said last-named means to cut off any contents which overhang the container top edge, and means effective during travel of a container with said container moving means to rotate said cutting means with respect to a container.

7. In combination, means to move a filled and open-topped container along a predetermined path, means moving with said first-named means to engage the top of the container, cutting means carried by and rotatable with respect to said last-named means to cut off any contents which overhang the container top edge, and means in the path of movement of said cutting means with said container moving means to rotate the cutting means with respect to a container associated therewith.

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