F. N. DORLAND.

CAN SEALING MACHINE.

APPLICATION FILED OCT. 9, 1914.

1,160,055. Patented Nov. 9, 1915.

Fig. 2.

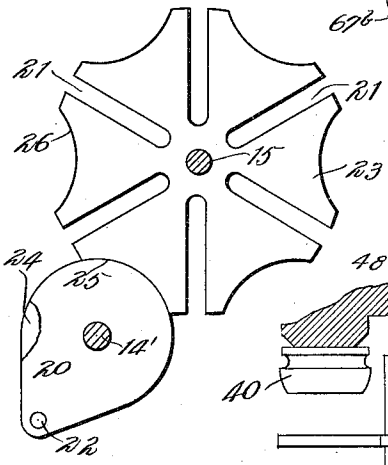


FIG. 3.

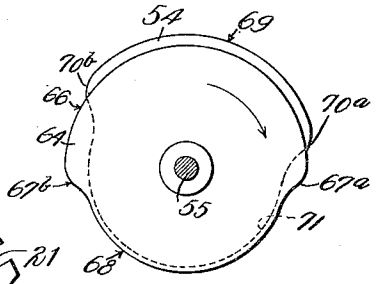


FIG. 1.

Inventor

Frank N. Dorland

Witnesses

M. F. Conroy

W. H. Wakefield

By Mason Fenwick & Lawrence

Attorneys

UNITED STATES PATENT OFFICE.

FRANK N. DORLAND, OF PERU, NEBRASKA.

CAN-SEALING MACHINE.

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To all whom it may concern:

Be it known that I, FRANK N. DORLAND, a citizen of the United States, residing at Peru, in the county of Nemaha and State of Nebraska, have invented certain new and useful Improvements in Can-Sealing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It has been the experience of a good many canners that a considerable percentage of cans filled by the present processes have no market, because the ends of the cans are not tight, but can be "flipped" or "sprung" back and forth. The average purchaser of canned goods considers that the contents of such a can must necessarily be spoiled, and it is impossible to sell cans having this defect, notwithstanding the fact, that the contents of the cans may be perfectly good. This difficulty has been recognized heretofore, and methods have been employed with the view to obviating the difficulty, but these methods have not been as successful as was hoped. For instance, the contents of the cans have been compressed by a plunger with a view to preventing excess in the can which might produce "flippers" or "springers", but this method has not been attended with success.

The present invention aims to eliminate "springers" or "flippers" as they are known by modifying the operation of sealing the top of the can. The process is essentially simple, and can be applied to any one of the various can sealing machines which are at present on the market.

In the accompanying drawings, Figure 1 is a vertical sectional view through the can sealing part of one type of can sealing machines at present in use, Fig. 2 is a plan view showing the Geneva movement employed, Fig. 3 is a detail view showing the cams employed in raising the can-supporting table.

Referring particularly to Fig. 1 there will be described part of a machine at present in use for sealing cans. This machine comprises a base having a platform 53 provided with a pocket which receives the lower chuck or table 52 upon which the can stands when being sealed. Shaft, 15, is mounted in bearings, 16, and carries disks, 17, and 18 provided with arcuate peripheral recesses for receiving cans. The object of the disks is to take the can from the conveyer, 19, and feed the same to the table and then hold the can on the table during the sealing operation. In order to give shaft 15 the necessary intermittent motion to accomplish this, a Geneva movement is mounted within the base and actuated by bevel gears 13, 14 and a shaft 14'. Secured to the latter is a pair of plates 20 and, 24, shown in Fig. 2 which carry pin 22, designed to enter slots, 21, formed in plate, 23. As the shaft rotates constantly by means described below the bevel gear, 14, will also be required to move constantly and with it the disks, 20, and, 24, which carry the pin, 22. A portion of each of the disks, 20, and 24, is made arcuate as at, 25, and is received by the complementary pockets, 26, formed in the plate 23, between the slots, 21. By this Geneva movement, the plate, 23, and the shaft 15 are held against rotation by means of the arcuate portion, 25, referred to, but at times the pin, 22, passes into the slots, 21, and causes a one-sixth revolution of disks, 17, and, 18, which results in moving a can either upon table 52, from the conveyer, 19, or to the discharge chute, 27, from the table.

With this construction the can is held in place on the table by means of feed disks, 17, and, 18, and the top thereof sealed by means of the dies, 40, and 41, the method of the operation being well understood and apparent from the drawing.

All of the mechanisms thus far described are broadly old, but a description is given that a more complete understanding of the invention may be had.

The present invention, as, applied to the type of machine just described, requires no further description than to state that a projection or convex plate, 48, is secured to the upper chuck or head plate, 49, as in Fig. 1, this plate being one part of the present invention.

As has been stated, the desirable thing to be accomplished in the present invention is to press the ends of the cans inwardly immediately prior to and during, the period of sealing. The upper end of the can is handled by said plate 48, but below its lower end is a push pin 50 slidably mounted in the bore 51 of the lower chuck or table 52. This table may be held against rotation, or may be provided with means for pre-

venting vertical movement thereof, but there is shown hereinafter means for providing both the rotary and vertical movements referred to, although these movements are not necessary in this form of the invention but are shown merely for the purpose of producing relative movement between the chucks.

The top of table, 52 stands normally in a plane with the top of the platform 53, so that the can may be fed from the platform onto the table over the top of push pin 50, without being obstructed by the latter. In order that this pin may be reciprocated there is provided a cam, 54, mounted upon shaft, 55, driven in any manner as by pulley, 56, and mounted in bearings, 57, and, 58, respectively. The rotation of shaft, 55 is suitably timed to raise the push pin 50, just prior to the sealing operation. In this way, the bottom of the can can be pushed upwardly or indented while the top of the can can be pushed downwardly by reason of the convexity of plate 48. While a push pin has been shown in the bottom of the machine illustrated in Fig. 1, yet obviously it could be duplicated in the top of the machine, or the top of the machine could be provided with a mechanism designed to reciprocate a push pin and the bottom provided with a plate similar to plate, 48. If the pin 50 is at the bottom as shown in Fig. 1, the gear 13 may be mounted on the shaft 55.

In some forms of machines the lower chuck or table, 52, is rotated and raised and to accomplish that, there is shown a device comprising a gear, 59, meshing with an elongated gear, 60, the former, being mounted upon shaft, 61, driven by mitered gear, 62, which meshes with another mitered gear, 63 rigid with shaft, 55. There is also carried by the shaft, 55, a pair of cams, 64, which engage the bottom of tube, 65, rigid with the chuck 52. By referring to Fig. 3 it is seen that each cam 64 has a dwell, 66, connected by risers 67^a 67^b to the dwell, 68, both dwells being concentric with shaft 55. By this construction the chuck 52, will be rotated and raised and held in a predetermined position for a measured length of time after which the tube, 65, will descend along risers 67^b until it reaches dwell, 68, thus lowering the chuck 52 and permitting it to remain lowered while the feed disks 17, 18 remove the sealed can and supply another.

The mechanism just described is not necessary in all cases, but if it is used then it will be desirable to have cam, 54, constructed and timed with respect to cams, 64, as shown in Fig. 3. This cam, 54, has a dwell, 69, connected by means of risers 70^a 70^b and to dwell, 71. As the shaft, 55, rotates in the direction indicated by the arrow, riser, 67^a, will "lead" riser, 70^a, so that the table or chuck, 52, will be raised and the can held securely before the push pin 50, is raised by cam, 54. After the sealing operation, the riser 70^b, will "lead" the riser 67^b, thus allowing push pin 50, to descend before the chuck is lowered to free the can. In this way the push pin does not obstruct the action of the feed mechanism in removing of the can from the sealing mechanism of the machine and supplying another.

The operation of the improvement will be described in connection with tomato-canning, although it is obvious that the invention will lend itself to the canning of other products. When tomatoes are put into the cans, after having been washed and skinned, it is necessary, in order to get a full can, that the tomatoes extend somewhat above the top of the can, and the cover to be sealed is placed on top of the tomatoes automatically by mechanisms not herein disclosed but well understood in the art of canning machinery. The natural result of this surplus material is to support the cover above the top of the can, this being true whether hot water is first poured into the cans, or whether the tomatoes are canned without the use of water. When the can has been fed into the machine by the partial rotary movement of shaft 15 and disks 17 and 18, the pin 22 comes out of a slot 21 in the Geneva movement and commences to travel around shaft 14′ while the can being treated is held between the chucks. The risers 67^a of Fig. 3 come under the tube 65, and the lower chuck or table 52 is raised—thus lifting the can so that its cover strikes whatever form of projection is carried by the upper chuck, whether said projection be a plate or a pin. Said projection will therefore depress or indent the upper end or cover of the can so that its center stands on a line below the upper end of the can body before the sealing operation begins, by this means all surplus material is expelled. The can covers are put under a slight strain while being sealed, but as they are clamped tightly between the upper chuck and the upper end of the can body, they cannot get out of place. Meanwhile the lower end of the can body will be indented or depressed by the same operation of the machine shown in Fig. 1, wherein, after the risers 67^a have raised the table 52 and while the dwell 66 is holding it raised, the riser 70^a strikes the lower end of the push pin 50 and the latter is raised within the bore 51 so that its upper end is projected above the face of the table by reason of the fact that the dwell 69 is more remote from the axis of the cam 54 than the dwell 66. The table is shown in its lowermost position where it is supported by the smaller dwells 71 and 68, and while so supported the pin 22 of the Geneva movement enters another slot 21 and the feed disks 17 and 18 remove the

sealed can and supply another in its place, and when the cans come from the sealing machine it is found that there are practically no "flippers" or "springers." As usual, the cans are then steam heated to cook the tomatoes, during which process, of course, the ends of the cans are bulged outwardly, but on cooling it is found that very few, if any, of the cans sealed with my improvement applied to the machinery employed are found to be "flippers" or "springers".

What I claim is:

1. In a can sealing machine, the combination with an upper chuck, the sealing dies, a base, a lower chuck movably mounted therein and having an upright bore through its center, means for raising and lowering said chuck at intervals, and the can feed mechanism; of a pin movably mounted through said bore, and means for raising it at intervals so that its upper end stands above the highest position of the face of the lower chuck, for the purpose set forth.

2. In a can sealing machine, the combination with an upper chuck, the sealing dies, a base, a lower chuck movably mounted therein and having an upright bore through its center, a pin mounted in said bore, a shaft having a cam beneath said chuck and another cam beneath said pin for raising the latter with its upper end higher than the highest position of the face of the chuck.

3. In a can sealing machine, the combination with an upper chuck, the sealing dies, a base, a lower chuck movably mounted therein and having an upright bore surrounded by a depending tube, a horizontal shaft, a pair of cams thereon acting against the lower end of said tube to raise and lower the chuck, and a single cam between the other two acting on the lower end of said pin to raise and lower it and project its upper end above the face of said chuck, for the purpose set forth.

4. In a can sealing machine, the combination with an upper chuck having a convex face plate, the sealing dies, a base, a lower chuck movably mounted therein and having an upright bore surrounded by a depending tube, a pin mounted in said bore, and a feed mechanism for moving the cans intermittently onto the base and off of the same; of a horizontal shaft in the base, a Geneva movement for actuating said feed mechanism, gearing connecting this movement with said shaft, a pair of cams fast on said shaft and acting against the lower end of said tube to raise and lower the chuck, and a single cam between the other two acting on the lower end of said pin to raise and lower it and project its upper end above the face of said chuck, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK N. DORLAND.

Witnesses:
JOHN LACE,
W. H. WAKEFIELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."