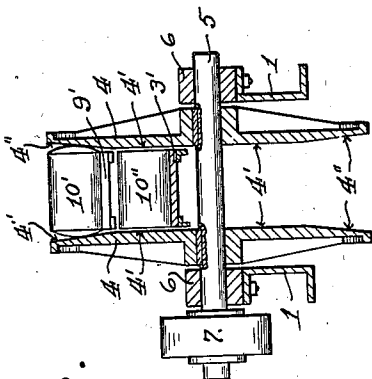
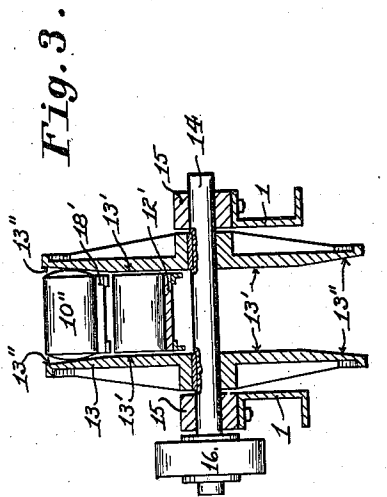
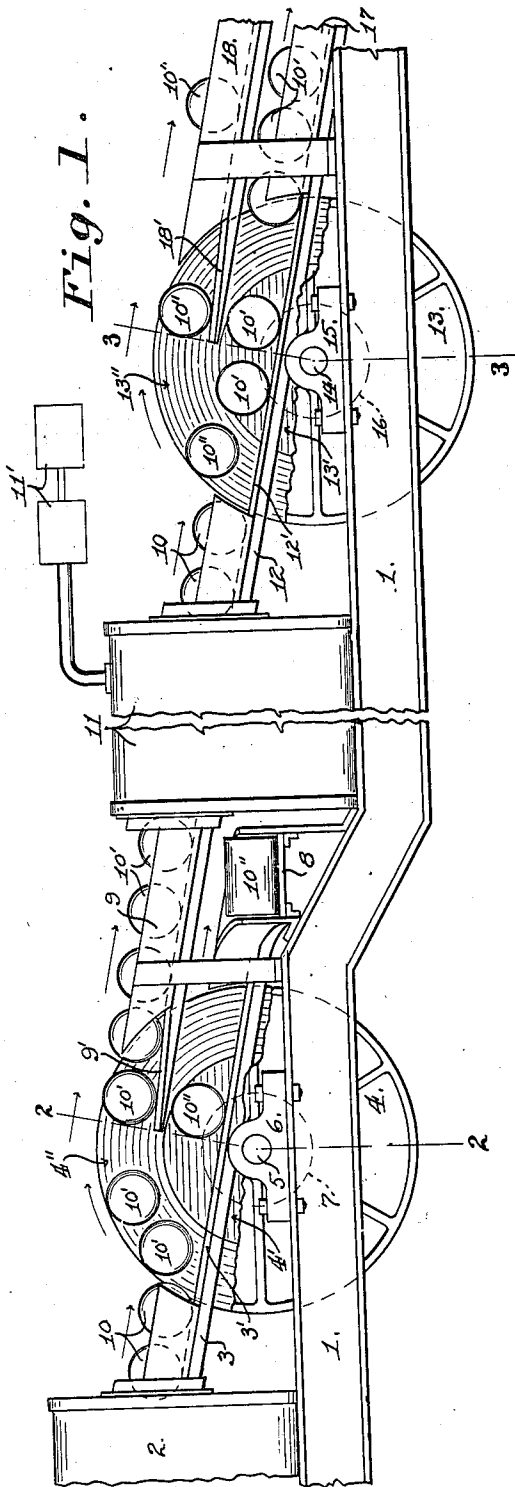


May 6, 1924.

1,492,867

A. R. THOMPSON
PROCESSING CANNED GOODS
Filed Nov. 7, 1923



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UNITED STATES PATENT OFFICE.

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PROCESSING CANNED GOODS.

Application filed November 7, 1923. Serial No. 673,393.

To all whom it may concern:

Be it known that I, ALBERT R. THOMPSON, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Processing Canned Goods, of which the following is a specification.

My invention relates to the art of processing canned goods, in which a heating effect is followed by a cooling effect, the sealed, product-filled cans being passed in continuous procession through said effects.

The purpose of these effects and the methods of applying them are well known, and vary to a certain extent with the particular products being treated. With these matters my invention is concerned only in so far as they, in a generic way comprise steps in my method and elements in my apparatus.

The object of my invention is to provide effectively and economically both in time and labor, for the separation of the "leaks" from the "tight" cans in any of the forms of processing canned goods, employing a heating effect followed by a cooling effect, to the end that the complete processing may be successful in that the product as finally delivered may consist wholly of "tight" cans, which can, therefore, be conveyed immediately to the labeling machine, packed in cases and placed in the car for shipment, thus avoiding the customary long time interval, waiting for the development of "leaks"; it being necessary at present to stack the cans sometimes for as long as three weeks, for such development.

In the heating effect of the processing of sealed canned goods, the increase of internal pressure due to the vapor expansion within the can, has the effect of bulging the ends of a "tight" can; while with a "leak", no such bulging results, or at least, not to the same extent, since the internal pressure excess is relieved through the leak. This difference in end-bulge can be taken advantage of as the cans leave the heating effect, to automatically and without interruption of the can procession, separate the "leaks" from "tight" cans. In the cooling effect to which a procession of supposedly "tight" cans only is continuously directed, a curious inversion takes place, as will now be seen. The cooling effect, for a purpose now well known is

under a fluid pressure above atmospheric, usually by means of compressed air.

Although we have assumed that the can procession directed to the cooling effect consists of "tight" cans only, this is by no means conclusive, and in practise, it is found that some "leaks" for causes which need not be explained, get by the first segregation and pass into the cooler, or leaks may subsequently develop in the cooling effect. In this cooling region, however, two salient results take place. The first is that the really tight cans, under the reduced temperature lose their end bulge. The second, is that the leaky cans admit the excess of fluid pressure through their leaks, so that the pressure internally and externally is equalized. Then, as the cans pass out from the cooler, the "tight" have no end bulge, but the "leaks" being released from the external pressure, while still under internal pressure, (since the excess internal pressure does not immediately leak out) at once bulge their ends; and opportunity is thus afforded for speedily and without interruption of the can procession, again segregating the leaks from the tight cans according to the difference of end bulge. It will thus be apparent that a complete method is provided for processing can goods in such wise that practically all the leaks are separated from the tight cans and the latter may without loss of time be labeled, cased, and shipped. My method may, therefore, be stated briefly to comprise passing the cans in continuous procession through a heating region, then through a region in which the cans are segregated according to a difference in end-bulge; then passing the end-bulged cans through a cooling region under fluid pressure above atmospheric; and then through a region in which the cans are again segregated according to a difference in end-bulge.

My apparatus consists in an organized means adapted to carry out the successive steps of said method. Referring to the accompanying drawings—

Fig. 1 is a side elevation of my apparatus, partly broken in the upper portion, of the can-selecting member of each of the segregating effects.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 1.

1 are supporting beams. 2 is a box or shell, through which the cans pass and in which they are heated. The can advancing means within the box and the means for applying heat are not herein shown, as these may be of any character, and are well known in the canning art. 3 is a chute leading from the discharge of the box 1. 4 is a can-selecting member mounted for rotation by means of a shaft 5 journaled in boxes 6 and driven by a pulley 7. The selecting member 4 comprises spaced disks, the inner opposing faces of which are parallel at their inner zones as shown at 4' and are flared or relatively divergent at their outer zones, as shown at 4". The floor 3' of the chute 3 leads through between the disks, traverses their parallel-walled inner region 4' and forms beyond said disks the floor of the lower delivery chute 8.

An upper delivery chute 9 has its floor 9' passing in between the disks in their flaring-walled region 4" and terminates on a line at the base of said region about at the beginning of its upper descending quadrant. The chute 9 leads to and communicates with a box or shell 11 constituting a cooling effect. The means for cooling and for advancing the cans through said box 11 are not herein shown, as these are features well known in the art. But I have shown a necessary feature, namely a means indicated at 11' for supplying compressed air to said cooler, whereby it is kept under fluid pressure above atmospheric.

Associated with the can discharge from said cooling box 11 is a can separating device similar in all particulars to the separating device which is associated with the discharge from the heating box 2. This device may be briefly described as follows:—

12 is the chute leading directly from the cooler box. 13 is the rotatable can-selecting member with its shaft 14, shaft boxes 15 and driving pulley 16. At 13' is the inner parallel zone of the selecting member and at 13" is the flared outer zone thereof. 12' is the floor of chute 12, which passes through the inner zone 13' and forms the floor of the lower delivery chute 17. 18 is the upper delivery chute, with its floor 18' associated with the flaring zone 13".

The method carried out in this apparatus is as follows:—

The product-filled, sealed cans are passed through the heating box 2 in continuous procession. Under the temperature in this box, the tight cans bulge their ends, while the leaks do not. In employing these affirmative and negative expressions throughout this specification it must be understood that both are open to some latitude, the extent of the bulge in the "tight" varying and the absence of bulge in the "leaks" being relative, since some "leaks" may slightly bulge; but on the whole the difference in end bulge is,

in practise, a factor which may be taken advantage of in the segregation step.

The cans, both tight and leaks, discharging from the heating box 2 into the chute 3 are in Fig. 1 indicated without distinction, by the numeral 10. When, however, a "tight" can indicated by 10' reaches the disks of the selecting member 4, it passes into the flaring outer region 4" and on account of its bulging ends it becomes lightly wedged in said region as seen in Fig. 2, and cannot pass down therein below the functional level of the floor of the upper delivery chute 9, so that when, by the rotation of the disks, it reaches said floor it will pass out into said chute, as seen in Fig. 1.

But when a "leak" indicated by 10" reaches the disks of the selecting member 4, it will, on account of its lesser-bulging or non-bulging ends pass freely across the flaring-region 4" of the disks and will continue along the floor 3', across the parallel inner region 4' of the disks and across the opposite side of the flaring region and into the lower delivery chute 8, as seen in Fig. 1. The tight cans 10' continue without interruption, through the chute 9 and enter the cooling box 11. In this box they are cooled under pressure. In cooling, the bulge in the ends of the cans disappears. But, there is always the possibility and in practise, it sometimes happens, that some few cans which have been passed in the first segregation as tight cans, are in fact "leaks"; or such leaks may develop in the cooling effect. In the cooling box air enters such "leaks" and thus equalizes the external and internal pressure upon such cans and their ends remain non-bulged while in the cooler. But as all the cans, designated still by 10, without distinction leave the cooler and enter the chute 12, a distinctive change takes place, in that the external pressure being released, the unbalanced internal pressure on the "leaks" will immediately cause their ends to bulge. Therefore when such a "leak" designated by 10" reaches the disks of the selecting member 13, it passes into the flaring outer region 13" and on account of its bulging ends, it becomes lightly wedged therein as seen in Fig. 3 and cannot pass down below the functional level of the floor of the upper delivery chute 18, so that when, by the rotation of the disks, it reaches said floor it will pass out into the chute as shown in Fig. 1.

But the tight cans 10', with their non-bulging ends will pass into the lower delivery chute 17, and these cans will be directed at once to the labeling machine.

I claim:

1. The method of processing canned goods comprising passing product-filled sealed cans in continuous procession through a heating region; then passing said procession

through a region in which the cans are automatically segregated according to a difference in end-bulge; then passing in continuous procession the end-bulged cans to and through a cooling region which is under fluid pressure greater than atmospheric; and finally passing said procession through a region in which the cans are again automatically segregated according to a difference in end-bulge.

2. An apparatus for processing canned goods comprising a heating box through which product-filled sealed cans are passed; means associated with the discharge from said box for receiving said cans and auto-

matically segregating them according to a difference in end-bulge, and passing the end-bulged cans forward; a cooling box to which said segregating means passes said end-bulged cans and through which they pass; means for maintaining in said cooling box a fluid pressure above atmospheric; and means associated with the discharge from said cooling box for receiving the cans and automatically segregating them according to a difference in end bulge.

In testimony whereof I have signed my name to this specification.

ALBERT R. THOMPSON.