Jan. 5, 1926. 1,568,081

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APPARATUS FOR RECOVERING THE CONTENTS OF CANS

Filed Sept. 22, 1923

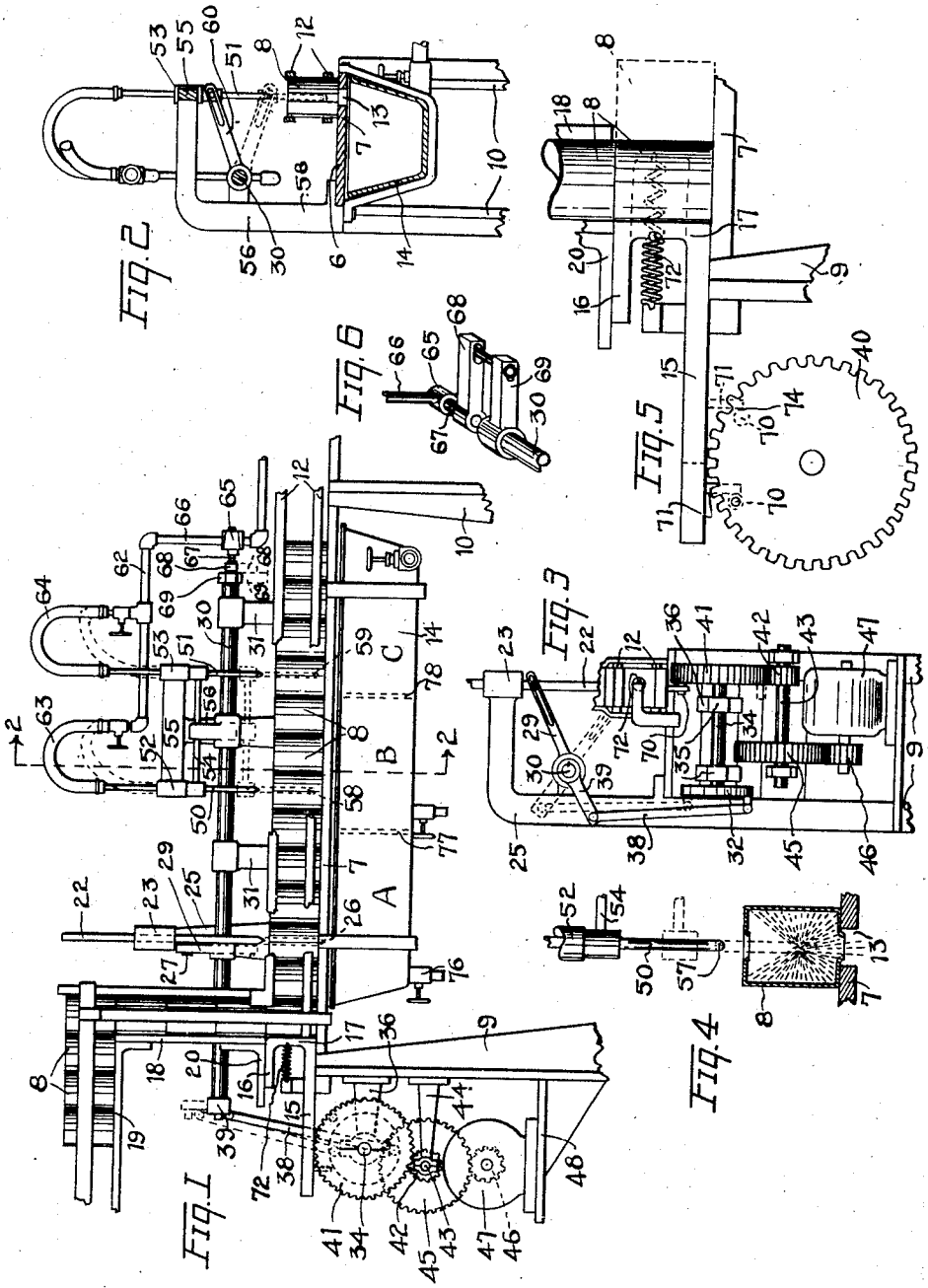


Fig. 2

Fig. 6

Fig. 5

Fig. 3

Fig. 4

Fig. 1

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Patented Jan. 5, 1926. 1,568,081

UNITED STATES PATENT OFFICE.

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APPARATUS FOR RECOVERING THE CONTENTS OF CANS.

Application filed September 22, 1923. Serial No. 664,183.

To all whom it may concern:

Be it known that I, WILLIAM E. MITTON, a citizen of the United States, residing in New London, in the county of Waupaca, in the State of Wisconsin, have invented certain new and useful Improvements in Apparatus for Recovering the Contents of Cans, of which the following is a specification.

The invention relates to an apparatus for recovering the contents of cans.

The object of the invention is to provide an improved and simplified apparatus whereby the contents of damaged or defective cans may be recovered and the material of which the cans are composed salvaged. To this end the invention consists in the provision of means for opening the cans to permit the contents to drain out, means for receiving the contents of the cans and means for thoroughly rinsing or washing the insides of the cans. The invention is more fully described hereinafter and is particularly pointed out in the appended claims.

In the accompanying drawings illustrating the preferred form of the invention, Fig. 1 is a side elevation of the improved apparatus, with certain parts broken away; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is an end elevation, looking from the left in Fig. 1 with part of the hopper broken away to show the parts beyond it; Fig. 4 is a detail illustrating the mode of operation of one of the rinsing nozzles; Fig. 5 is an enlarged detail of the can advancing means; and Fig. 6 is a detail of the means for actuating the water control valve.

The improved apparatus comprises means for supporting the cans in position to be opened so that their contents may be saved; means for opening the cans, as by punching or piercing through their covers; means for receiving the contents of the cans; means for subjecting the insides of the cans, first, to a preliminary rinsing and second, to a final or cleansing rinsing; means for advancing the cans through the apparatus; and means for actuating the opening means and the rinsing means in timed relation to the advance of the cans so that each can of the series may be successively opened and rinsed. The apparatus as illustrated in the drawings is employed for recovering condensed and evaporated milk from damaged and defective cans; but it will be understood that the invention is not to be restricted to this purpose, inasmuch as it is adapted for recovering many kinds of substances put up in cans afterwards found to be defective or damaged.

The apparatus as illustrated comprises a platform 6 part of which constitutes a runway 7 along which the cans 8 are advanced for the opening and rinsing operations. The platform 6 is supported on the upper ends of the uprights 9 and 10. The cans are guided laterally by the horizontally arranged bars 12 so that the contents of the cans may drain down through the slot 13 in the run-way 7 and into the sink 14 located below the run-way. The cans are advanced intermittently and one at a time by means of a plunger 15 arranged to be moved forward at each actuation or reciprocation a distance substantially equal to the diameters of the cans to be operated upon. As the plunger is moved forward (by means presently to be described) the shelf 16 extending rearwardly from the top of the can advancing end 17 of the plunger supports the cans in the hopper 18. When the plunger is retracted, the lowermost can in the hopper falls into place in front of the plunger. The cans are fed into the hopper from a platform 19. The plunger is guided between the left hand end of the run-way 7 and a guide 20 secured to the lower end of the hopper 18.

The means for opening the cans comprises a punch 22 arranged to reciprocate vertically in a guide or head 23 formed on the upper end of a bracket 25 rising from the platform 6. The punch 22 has such a range of movement that when it is forced downwardly it pierces through both the top and bottom covers, as indicated by the dotted lines 26 in Fig. 1. The punch is articulated by a pin and slot connection 27 with the free end of an arm 29 secured to a shaft 30 mounted for oscillatory or rocking movements in the upper ends of the standards 31 rising from the platform 6. The rocking movements are imparted to the shaft 30 from a crank disk 32 mounted on one end of a shaft 34 journaled in the bearings 35 in the outer ends of the brackets 36 secured to the uprights 9. The disk 32 is connected by a universal joint with the lower

end of a link 38 the upper end of which is connected by a universal joint with the free end of an arm 39 secured to the shaft 30. On the other end of the shaft 34 is mounted a gear 41 which is driven by a pinion 42 mounted on a shaft 43 journaled in the brackets 44 secured to the uprights 9. Also mounted on the shaft 43 is the gear 45 which is driven by a pinion 46 mounted on the shaft of the motor 47 supported on a shelf 48 fastened to the uprights 9.

The means for rinsing or washing out the insides of the cans after they have drained for a predetermined time comprise a nozzle 50 for effecting the preliminary rinsing and a nozzle 51 for effecting the final or cleansing rinsing. These nozzles are vertically arranged hollow rods mounted to slide in the guides 52 and 53 supported from the cross piece 55 on the upper end of an upright 56 rising from the platform 6. The lower ends of the nozzles are closed and these closed portions are provided with perforations 57 through which water is forced (as shown in Fig. 4) to rinse out the cans. The nozzles enter the cans through the holes made in the top covers by the punch. The nozzles are lowered to bring the perforated portions thereof within the cans, as shown by the dotted lines 58 and 59 (Fig. 1), when the punch 22 is forced down through the covers of the can under it. For this purpose the nozzles are joined by a cross rod 54 connected by a pin and slot connection with the outer, free end of an arm 60 mounted on the shaft 30.

The wash fluid (preferably hot water) is supplied to the nozzles 50 and 51 from a pipe 62 with which the nozzles are connected by means of the flexible hose or pipes 63 and 64. It is only while the lower perforated ends are within the cans that the water is supplied to the nozzles. For this purpose a valve 65 is interposed in the pipe 66 and the stem 67 of the valve is provided with an arm 68 loosely articulated with an arm 69 secured to the shaft 30. The arrangement is such that when the nozzles have entered the cans a sufficient distance the valve 65 is opened by the turning of the arm 68; and the water being under pressure is forced into the interiors of the cans as a spray and so effectually rinses them.

The plunger 15 is actuated to push the cans forward by a pin 70 which projects laterally from the rim of the gear 40 and which, during each revolution of the gear, strikes and pushes forward the pin 71 which projects downwardly from the under side of the rear end of the plunger. The plunger is retracted by a coil spring 72. The pin 71 is of such length that the plunger is moved forward the diameter of a can as the pin 70 leaves the pin 71, as shown at 74 in Fig. 5. When the pin 70 passes out of engagement with the pin 71 the spring 72 returns the plunger to its normal position with the pin 71 in the path of rotation of the pin 70.

When a can has been advanced into place under the punch 22, the rotation of the disk 32 causes the punch to descend and pierce through both covers of the can. When the punch is lifted the contents of the can drain through the slot 13 into the compartment A of the sink, whence it is drawn out through the cock 76. A sufficient space separates the nozzle 50 from the punch 22 so that by the time the can has reached nozzle 50 substantially all the contents of the can have drained into compartment A. Compartment B is separated from compartment A by a partition 77 and receives the first or preliminary rinsing from the can, which rinsing may usually be utilized. It will be observed that nozzle 50 is located over the left hand end or entrance of compartment B. This is so that the first rinsing may drain from the can into compartment B before the can reaches compartment C which is separated from compartment B by the partition 78. The nozzle 51 is located over the left hand end of compartment C so that the second or cleansing rinsing may drain off before the can passes beyond the end of the sink. The final rinsing is usually run to waste; and the thoroughly cleansed cans sent to scrap.

It will be understood that the punch and the nozzles may be in multiple so as to operate on two or more lines of cans simultaneously. Moreover the number of nozzles in series may be increased or decreased depending on the nature of the contents of the cans. Other changes and arrangements will be suggested by and come within the purview of the claims.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:—

1. An apparatus for recovering the contents of cans comprising, means for advancing the cans through the apparatus, means for piercing through each can to permit its contents to drain off, means for receiving the contents of the cans, and means for introducing a spray of wash fluid into the interior of each can.

2. An apparatus for recovering the contents of cans comprising, means for intermittently advancing a series of cans, means for piercing through each can as it comes to rest to permit its contents to drain off, means for receiving the contents of the cans, means for introducing wash fluid into the drained can, and means for receiving the rinsing from the can.

3. An apparatus for recovering the contents of cans comprising, means for intermittently advancing a series of cans in vertical position, a punch for piercing through

the top and bottom covers of each can as it comes to rest, means for receiving the contents of the can, a nozzle for introducing wash fluid into the cans, and means for receiving the rinsing from the cans.

4. An apparatus for recovering the contents of cans comprising, means for intermittently advancing the cans in vertical position, a punch for piercing through the top and bottom covers of each can as it comes to rest, means for receiving the contents of the can, a nozzle for introducing wash fluid into each can, means for receiving the rinsing from the can, means for supporting the punch and the nozzle so that they may be actuated simultaneously, and means for actuating the punch and nozzle simultaneously.

5. An apparatus for recovering the contents of cans comprising, a sink divided into a plurality of compartments, a can runway over the sink, means for advancing a series of cans one at a time along the runway, a punch arranged over the first compartment to pierce through each can as it comes to rest to permit the contents of the can to drain into the first compartment, a nozzle spaced apart from the punch and arranged over the next compartment to enter the drained can to introduce wash fluid into the can, so that the rinsing may drain into the second compartment, means for supplying the nozzle with wash fluid, and means for actuating the punch and the nozzle simultaneously.

WILLIAM E. MITTON.